The Investigative Research Report into

Learning to Elearn

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The Agreement is the result of the Assurances made to the Tasmanian Government at the time of the Bank’s merger with the Colonial Group. The Bank committed to a training partnership with the Tasmanian tertiary education sector of which Unitas was the successful party.

The purpose of the Agreement is to permit the Bank and Unitas to work together in order to identify and develop work-based learning programs for education in the Bank and in the market place.

The Agreement’s aims are:

1. The design, development and maintenance of project products by Unitas, working as a consultant to the Bank, for the subsequent use by the Bank;

2. To enable Unitas to develop expertise in the commercial, technical and operational aspects of the business of developing learning programs, such that Unitas is in a position to build a list of consulting clients other than the Bank over the term of the Agreement and is subsequently in a position to establish a commercial venture, the Unitas Knowledge Centre (Knowledge Centre), following the expiry of the Agreement.

*The fundamental outcomes of the agreement are being delivered via the longer-term project, Learning to Elearn, which supports the elearning requirements of the Bank, with the development of learning methodologies and processes that in turn provide a core of business as a platform for the establishment of this commercial venture.*
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Executive Summary

Abstract

The purpose of this Investigative Research Report is not to produce a new theory of elearning but to survey the literature, analyse it and produce a series of observations. The report also proposes a considered definition of elearning and translates the research findings into a commercial process. The study is intended to inform decision-makers about the relationship between elearning and return on investment. This approach requires consideration of efficiency, agility and productivity. This report, which focuses on organisations, has required an independent and integrated analysis of how elearning connects to the key fields of knowledge, learning, performance and human resource management.

This report surveys and analyses these areas in the research literature to identify observations on independent and related variables that are then applied to elearning. The purpose is to develop a series of observations that can lead to principles that suggest how elearning can be more efficiently and effectively employed by individuals and communities of individuals within and across organisations.

It might be asked, if we lived in a utopian world, where the search for competitiveness and productivity did not exist, what value would elearning have? Would it be for individual gain, in terms of personal development? For social reasons (health, societal, philosophical) so that people’s time could be better spent on worthwhile pursuits? In other words, beyond organisations, what are the broader societal implications?

While this research focuses on organisations and business, the principles involved can be elaborated and applied to a number of other areas. These include universities (higher education, pure theory), the arts, non-profit and non-government.
organisations, government institutions, organisations and individuals engaged in community development.
1.1 Executive Summary

This Investigative Research Report has been chartered to re-investigate how to implement efficient and effective elearning within an organisational setting. The investigation is global and without geographic or intellectual boundaries. The general assumption is that literature and models currently presented on elearning have become engulfed in such a detailed debate on technical and educational issues that the implications for those implementing elearning within an organisation or a community are hard to extrapolate. This research report is intended to extend analysis to benefit the project sponsors (the Commonwealth Bank of Australia, the Tasmanian Government and the University of Tasmania) and to re-establish why organisations should engage in efficient and effective elearning practices.

What the Investigative Research Report has uncovered is a field of research and literature that when examined from the perspective of maximising business outcomes appears surprisingly obtuse. The great majority of the publications are either speculative undertakings or simply volumes on the art of elearning that do nothing to advance the applied science. While of concern the gap reinforces the timely and vital nature of this investigation aimed at ‘learning’ elearning.

It seems worth stating that elearning is not just traditional learning delivered electronically. Facilitating learning via electronic media presents advantages and impediments that do not exist in traditional modes of learning. While elearning may be considered a new form of learning that builds on past practices and pedagogies, it is not the same as that which has previously existed. Elearning is a means for transferring content, a process and a factor of production and change. It is able to make the relatively static modes of learning experiences, such as distance (dlearning) and classroom (clearning), more dynamic.

Another basic fact is that organisations are not receiving sufficient information to make rational decisions about adoption of elearning. This is because the information they receive is based only on the innovation’s technical efficiency and contribution to operational effectiveness and profitability. Much of the information beyond efficiency and effectiveness either is not communicated to potential adopters, or is so ambiguous that it does not positively influence adoption decisions. Therefore, beyond the issues of this research project, assisting to justify investment and technology deployment, and coming to terms with elearning is critical to the ability to ‘do it’; i.e. make informed decisions and implement elearning with full awareness of its advantages and impediments.

This point leads to the next most immediate question, What does a study of elearning encompass? The view on what elearning represents is fragmented. The report investigates elearning in order to present a snapshot, and to offer an understanding of key variables that interact in any given situation to dynamically transform elearning into an effective and efficient reality.

It is not the intent of this report to select a simple niche and feed another detailed analysis into the frenzy of educators, leaders, managers, instructional designers, multimedia developers, IT architects, policy-makers and the like, who have been collectively writing on elearning since the mid-1990s. This would simply add to the
body of anecdotal experiences and areas of specific interest, all of which has unfortunately further fragmented elearning approaches and thinking.

Undertaking this research invokes a paradoxical position. The report is intended to investigate a field of endeavour, its content and meaning; at the same time, one of the major constraints is the limited understanding that key decision-makers have on the subject due to the lack of a theory on elearning. The theory is emergent, and the process of producing and explaining theory has to reflect and reinforce the existing substance of the theory. In effect, the topic and task of presenting research in this report are directly related.

This Investigative Research Report does not seek to develop a definitive theory of elearning based on any set of parameters, processes, or propositions and principles that may emerge. Isolating variables and linking existent research and writings can establish important parameters around those factors controlling or inhibiting implementation of efficient and effective elearning. Prognosing an ideal solution in a given context, for an individual, group, community or organisation, across all identified variables is not feasible for this research report. It is also not the intention of this report to produce or sell the type of ‘absolute theory’ that makes modern managers and academics justifiably uncomfortable.

What this research does furnish is greater insight into elearning and its meaning for individuals both within and outside an organisational setting. The report investigates elearning from both novel and conventional perspectives. Much of the more ‘dense’ investigation of fields of study will seem for many practitioners like the proverbial ‘walking through treacle’. Yet through such investigations the authors have successfully isolated current limitations and problems impacting the use of elearning.

The Investigative Research Report sets parameters that define not just why the variables exist, but also where the variables come into play. This is important when determining how to design and implement learning within an electronic environment. The study then considers the different dimensions and variables that mix in a myriad of ways to impact different situations whereby individuals, groups and organisations may engage in an electronic exchange, especially as an elearning transaction.

In many ways, this research report filters and refines the existing understanding of elearning. For the most part it is not hard to find researchers or practitioners who comprehend and support the link between problems with an organisation’s adoption of elearning and their subsequent failure to achieve the desired human and business development outcomes. Since most of those who are knowledgeable about workplace learning can ascribe to the problems with implementing efficient and effective elearning it is indeed a contradiction that rigorous research on the overall problem still remains embryonic. By and large, most of the excellent works are very technically focused (‘how-to’) (Beer, 2000; Horton, 2000; Kim, 2000; Rosenberg, 2001; Weller, 2002; Clark & Mayer, 2003; Bielawski & Metcalf, 2003) or short articles and web publications reflecting anecdotal stories or research that is so situational that it is hard to separate it from the rhetoric pumped out by industry vendors and early adopters.

Whether there is a requirement for an elearning theory is not the subject of this report; nor is establishing a new theory the intent. This is an investigative report. The absence of a theory does, however, have an impact on the research process. Much of
the difficulty in understanding what makes elearning effective or in comparing perspectives from divergent fields of study and practice has been attributed to the relatively recent nature of ‘elearning’ as a discipline. The lack of a defining theory and elearning’s ongoing evolution are posited as the reasons that critical understandings are still emerging.

This Investigative Research Report argues that elearning models and theory are evolving from poor foundations. These foundations lack sufficient rigour to support the evolution of elearning. They will also inevitably crumble as the hype and false promises are unmasked; it will become apparent that the value-add deliverables are not quantified in terms of sustainable, strategic business results.

The growing use of the term ‘second wave of elearning’ by practitioners and vendors is indicative of a separation of post-2003 approaches to elearning from previous approaches. This second wave promises greater value-add to businesses and individual users. Nevertheless, as this report uncovers, the ‘second wave’ while focused on improved outcomes, still fails to appreciate the overall lack of theoretical rigour in the conceptualisation of elearning when implemented in a business institution.

Overall there seems to be a grossly inadequate basis for defining elearning in a way that either can promote consistent judgments on how it can satisfy individual needs or can actively contribute to an organisation’s competitiveness. This investigation cannot be concentrated on one theory or approach. Nor can it, in spite of William of Ockham’s principle of simplicity (Occam’s Razor, advocating the simpler the explanation, the better — or the ‘K.I.S.S. principle’; keep it simple, stupid), avoid surveying the literature and theories to filter out redundancy and assess common understandings. This investigation is not limited to a single set of products, services or technologies. Observations and insights offered by multiple writers and researchers are canvassed to permit judgments and conclusions on the forces at play and the alternative practices that can affect elearning.

The investigation report assembles a method for better understanding learning transactions — and, on a wider plane, knowledge exchanges — within an electronic environment. The method is advanced through propositions forged by assembling facts. This has included connecting and making more explicit relationships between the authors’ observations and previously advanced research and hypotheses (Feyerabend, 1988:205). In most cases the observations and principles suggested represent common sense. Together they provide a consistent set of observations and anchor principles that consolidate effort to make elearning a major contributor to individual, organisational and community development. They also suggest the ideal demands and variables that impact elearning as a means to complete knowledge acquisition, generation and transfer.

The Investigative Research Report suggests that the reality of what modern managers and theorists are promoting in the early twenty-first century as an understanding of elearning is not sound. The report indicates that the foundations of elearning are so poorly defined they are actively stunting its evolution and the development of more useful business and theoretical models. Continuing to develop understandings based on the existing parameters of discourse — dominated by technology and learning
pedagogy perspectives on what constitutes effective and efficient elearning — is too
narrow a basis for useful business and cross-organisational or societal outcomes.

The Investigative Research Report clearly signals the opportunity for a community or
business to develop its own basis of understanding about elearning practices. If this
opportunity is taken organisations can leapfrog over competitors by using elearning
effectively, overcoming some of the barriers inherent in the approaches advanced by
some vendors and prevailing research. Moreover, utilising a coherent strategic
implementation model, backed by simple tools and applications within integrated
business processes as proposed in this report, can enable elearning to be quite
effective and efficient in its contribution to an organisation’s improved productive
capacity, agility and sustainable competitive advantage.

This project was allocated five months to survey the literature, complete the research
and produce this Investigative Research Report; the objectives established for this
phase in the Learning to Elearn project have been achieved. The journey was
difficult. As the reader will see, the initial grounded theory approach used to master
the analysis generated by research processes that crossed so many disciplines had to
be modified to accommodate one of the main findings. This related to the need to
translate analysis into applied observations during the reporting process. This
translation was completed in addition to surveying the literature, analysing the
research and comparing and contrasting theories. Since the review of literature
offered only partial insights into the issues, and no overall meta-theory explaining
elearning emerged, the analysis of such findings identified gaps in research and in
many cases supplied conclusions based on researched observations.

Ultimately this Investigative Research Report provides the foundations for
understanding the complex interactions that will permit later elearning practices to be
more efficient and effective, particularly for individuals and groups operating within
organisations or across organisations. The basis of the observations and concluding
principles of efficient and effective elearning are applied to real-world situations and
business users. This enables them to be tested, validated and further refined in the
next stages of this Learning to Elearn project.

1.1.1 Research objectives

This Investigative Research Report is the first part of the project signed off by the
UNITAS Board and the Joint UNITAS–CBA Steering Committee. The key research
hypothesis presented to the research team by the project sponsors was:

_The efficiency and effectiveness of elearning is not well understood and as a
result implementation has failed to deliver desired levels of performance
improvement and agility within organisations and societies._

The hypothesis is framed to maximise investigation and deployment of multi-method
research. Stated limitations include attainment of two critical outcomes:

1. Reinvestigation and development of an elearning methodology and
   process;
2. Translation of research findings into a commercial learning process or
   platform able to support elearning — with special regard to the needs
of the community of Tasmania and the Commonwealth Bank of Australia.

While this is a very broad brief, the original Project Design Specification sought profound and immediate benefits, such as to:

1. Establish how different learning and knowledge transfer variables impact individual, group and organisational change;
2. Accelerate and enable better transformation of existing learning strategies and individual behaviours to more effectively use elearning approaches;
3. Improve customer acquisition and retention by more effective consideration of how needs and preferences of external customers can be met through electronic transactions;
4. Confirm how elearning can impact external customers and especially the impact on internal human capital value and capacity as it directly relates to provision of brand promise and service excellence;
5. Accelerate effective compliance training;
6. More rigorously classify and maximise relationships between competencies, capabilities, behaviours, culture, values and the like;
7. Provide invaluable insights into how technology, standards and systems design can individually and collectively impact an elearning design, delivery, assessment and record-keeping solution; and
8. Provide a filter to sort complex and hard-to-understand issues or move elearning research into actionable knowledge (i.e. synthesised and summarised abstracts, action-oriented observations and diagrams).

Learning is the acquisition of new mental models and/or capabilities.

In an electronic context, some people, groups and organisations provide services to assist collaborative learning processes and outcomes. The design of these learning services has a substantial impact on the learning accomplished by the service recipient. A study of elearning therefore must feature a view of how individuals conduct certain classes of collaboration activities in an electronic context, including learning and service transactions that involve knowledge transfer.

The overall Learning to Elearn project is concerned with technology-enabled collaboration, and more specifically within this context, collaboration activities in the twin areas of:

- Learning — where collaboration focuses on nurturing new and/or enhanced mental models in one or more collaboration participants; and
- Service transactions — where collaboration focuses on service–service transactions (e.g. online communities), and service–fee transactions (e.g. ebanking).

The Learning to Elearn research aims to establish the protocols and processes for effective online collaboration of these two areas. It is envisaged that these protocols
and processes will be applied to multiple learning and service transaction contexts, which can advance the strategic outcomes for an organisation.

Basically, the project focuses on assisting organisations and individuals to engage in elearning that enables them to achieve better outcomes in their personal roles and role relationships. This assistance applies at multiple levels:

- Organisations — achieving outcomes by applying/coordinating resources towards learning;
- Organisation training and development — delivering organisational and individual learning outcomes;
- Employee competencies — learning to develop capabilities to deliver agreed outcomes;
- Facilitator competencies — recommending how employees as facilitators can better assist learners to complete elearning;
- Customer — engaging with an organisation’s employees to achieve personal outcomes.

Each role carries with it a concept of performance. For example, return on investment (ROI) is a concept of organisational performance, and is shaped by role concepts of people participating in an organisation that subscribes to the organisation’s purpose. This means that an act of collaboration between two people has many performance concepts, as each person acts within multiple roles at any one time (e.g. as a person, an employee, a colleague, an advisor, a friend).

Three distinct but related dimensions are involved when an organisation implements elearning:

1. How/why to provide elearning services within an organisation (organisational performance justification);
2. How to conduct/organise/facilitate an organisation’s elearning collaboration and services (including processes, what roles technology plays, etc.);
3. How to conduct/facilitate the specific elearning and collaborative transactions between people (including use of technology).

1.1.2 Elearning and organisational institutions

The final observations and all findings are presented in this report to elucidate elearning for businesses or other organisational institutions.

The Investigative Research Report was tasked with a set of outcomes, set out in Section 1.1.1. In completing the research it became evident that elearning is a critical strategic function. Moreover, the function apparently is generally implemented and conceptualised using suboptimal models. While the component solutions for addressing many of these problems can be linked to observations that are ‘common sense’, integrating these findings into a framework for strategic action and then linking these activities to business outcomes is a more complex matter.
An organisation that applies the principles uncovered in this Investigative Research Report can improve existing approaches to the implementation of elearning.

There are a number of broader reasons for concentrating on the study of efficient and effective elearning in organisations, particularly business institutions or corporations. Importantly, elearning has a great capacity to affect organisational performance and agility. This impact has a flow-on effect in terms of the roles that businesses play in leading both economic growth and evolution of societies. The largest market for elearning around the globe is corporate; placing business at the centre of research, however, has less to do with the value of the corporate market to vendors and more to do with the stark contrast between the business’s expectations and the outcomes currently delivered by elearning. Despite investment of time, effort and most of all money, organisations that purchase and implement elearning solutions can be shown to generally be suboptimising not only resulting business and employee outcomes, but also customer outcomes.

These organisational-focused observations can be extrapolated to other sectors of society. While it is recognised that small business approaches differ from those of corporations, and educational and training providers certainly are driven by different imperatives than either, the observations and findings in this report deal with fundamental issues. The organisation is a diffuse, basic means to organise work and conduct transactions. Therefore the organisation can illustrate not only how knowledge flows and is transferred, but also how individuals transact and interact, organise collective endeavours and at all times learn. It is within organisations that how individual employees and customers conduct knowledge exchanges and transact in electronic environments can be examined. All of these factors lie at the heart of the original research undertaken by the authors of this report.

### Structure

This is an Investigative Research Report and should not be confused with a final ‘how-to manual’ or a polished publication for public consumption. Both of these outcomes are intended to follow this report. Drawing on the experiences of the authors and then drilling down to key topics, the report is intended to investigate, analyse, synthesise wherever possible and make observations. The report has been completed to allow the research to follow a logical journey for the reader, with each chapter and its topics serving as a stand-alone investigation of existing research and literature.

Each chapter examines topics in important areas of analysis, but the grounded theory methodology employed means some avenues of investigation have ended up revealing little. Other topics have not been pursued as part of the final conclusions in this report; this was either because they were tangential to the core focus or because they were outside the scope of the research brief. In some cases areas have been uncovered where significant follow-up research can usefully contribute to current research and derived knowledge; for instance, mobile learning (mlearning), metacognition, capability-based reporting, and data on business users’ needs and preferences outside North America — especially in Oceania and Asia.

The observations that are derived from this Investigative Research Report are supported by research within the individual chapters and then synthesised on a report-
wide basis. Validation of findings in the report will occur in a later phase through follow-up case studies and direct field surveys with some 600 businesses.

Figure 1.1 depicts the structure for the Investigative Research Report. This simple diagram illustrates the sorting of research into four logical levels: theory and foundations of understanding on elearning; re-examination of the key issues and dimensions; isolation of variables and insights into elearning; and implications and findings.

**Figure 1.1 Overall investigative research report structure**

The **Theory and Foundations of Understanding on Elearning**

This first level establishes the platform for the report and later analysis. Chapter 2 follows this Executive Summary and elaborates on the methodology used to compile this research. Assistance with framing the theoretical approach and foundations in key areas of this research has come from the Centre for Research in Learning in Regional Australia at the University of Tasmania and the Centre for Teaching and Learning in Diverse Educational Contexts at the Northern Territory University. Respectively led by Dr Sue Kilpatrick and Professor Ian Falk, every care has been made to ensure that the research team and contributors fit into the modified grounded theory approach. Chapter 2 outlines the approach and rationale behind the methodology for this report.

**Chapter 3** is more detailed and lengthy. It tackles the questions *What is elearning?* and *What are the parameters for any study of elearning?* The chapter seeks to define elearning by surveying the literature and takes the unusual step of defining elearning by incorporating literature on the elearning market. The use of definitional works by academic and market researchers on who uses elearning and how it is used provides an important contrast to the usual focus for a report such as this; that is, to examine research exclusively by academics. The examination of early literature shows a continuum of thinking and orientation of study on elearning that has its foundations in works mostly written in 1998–1999. It can be shown that these definitions were often derived from researchers working on papers for investment and banking companies.
Subsequent literature, which reinforces the messages and market speculation in the earlier works, originates from the elearning content and technology vendors. Only literature from educational providers writing on the importance of pedagogy, teacher competencies and evaluation of student satisfaction with elearning broadens the study of elearning beyond technologies and levels of adoption.

From 1998 there has appeared a dichotomy in how elearning has been defined. Many authors have emphasised web-based training and online learning as either distinct from elearning or as the main focus for elearning study. This legitimate perspective has intensified the confusion over what constitutes elearning. Further, it has diffused effort to examine the whole field of endeavour.

It is only relatively recently, from mid-2002 to early 2003, that works reinforcing the importance of developing a theory for elearning have begun to appear (Nichols, 2003).

Leveraging the first level’s more tightly defined foundations, the second level of research re-examines the key issues and dimensions established in the research brief, including investigating elearning in light of how its efficiency and effectiveness are affected by:

- The relationship between learning and knowledge management;
- Comparing, measuring and reporting performance, learning and behavioural outcomes;
- Organisational transformation and the need to respond to change; and
- Electronic transactions, and specifically the relationship between elearning and eservice transactions.

Re-examination of the Key Issues and Dimensions

Chapter 4 disentangles the concepts of learning and knowledge management, and then fits both into a framework that demonstrates their relationship to intellectual or knowledge capital. Critical to the evolution of elearning has been the sense that it accelerates knowledge transfer and enables organisations to be both more agile and better able to build knowledge capital. Theories and definitions abound on all these terms and, as suggested earlier, the lack of a core understanding of elearning has meant its role in knowledge management cannot be accurately determined.

Chapter 4 illustrates how learning and knowledge, far from being interchangeable terms and deliverables of elearning, are in fact some of the core variables shaping elearning within an organisation. Potential productive capacity and agility in an organisation can be greatly enhanced by elearning that provides capabilities on demand to individuals to meet immediate needs. This enhancement can occur only where elearning is sensitive not only to the individuals’ elearning needs and preferences, but also to the type of learning and knowledge being orchestrated.

Another finding in Chapter 4 is the need to recognise that a majority of knowledge held by an individual and organisation exists in the undiffused or tacit form (knowledge that cannot be easily shared as it resides in people’s beliefs, shared understandings or mental models, contextual knowledge or experience, work procedures, or networks that are not in tangible form). Codifying such knowledge can
make it explicit and allow it to be transferred but that may not always be wise or even possible. Once codified, knowledge is easier to transfer through learning, yet this renders the knowledge more mobile and easier for competitors to replicate. Some forms of tacit knowledge, if left in their current state as shared mental models, experiences, practices and values, are far easier than codified knowledge to embed in the organisation and context. Tacit knowledge is much harder for competitors to replicate and transfer. As the Investigative Research Report uncovers, elearning has focused on the transfer of codified, explicit knowledge, yet this may not be where elearning has its greatest strength.

It is important to recognise that elearning is both a process and a means to deliver various types of learning content. As a process and a mechanism for delivery, elearning can provide a whole new dimension on designing learning that can enhance the transfer of both explicit and tacit knowledge.

Chapter 5 introduces the concept of capability. Based on research and work with corporate users seeking to integrate learning, knowledge and performance systems, the concept of capability-based human resource management is advanced. This is intended to demonstrate how elearning can target, and be evaluated in terms of, not just learning outcomes, but also business outcomes. Capabilities provide a way to starkly separate competency-related skills and knowledge that relate to task performance from identity attributes such as culture, roles and behaviours that denote an individual, group and organisation’s disposition to deploy competencies.

Chapter 5 examines how in the New Economy an employee’s skills, knowledge and motivation to deploy their individual and collective capabilities have economic value to organisations seeking performance and the ability to adapt to change. In this context, value has come to mean people as they constitute the organisation’s human capital. Evaluating elearning in this context centres on not only individual learning outcomes but also how the investment and intervention has advanced individual capabilities and the overall human capital necessary to support the organisation’s competitive capabilities. Using capabilities as examined in Chapter 5 provides an integrated capability-based HR approach that not only can better target elearning, but also can consistently report outcomes across training, learning, performance and knowledge management dimensions using a consistent, comparable index. All these measures can be analysed and reported to determine an organisation’s potential productive capacity and agility.

Agility and productive capacity are the two key components in an organisation’s development of knowledge capital. The ‘potential’ capacity is heavily influenced by another known dimension: change. Chapter 6 confirms how evaluation of outcomes and implementation of elearning must at all stages be based on a realistic match between the organisation’s existing business systems and the available elearning technologies. Seeking high-level business benefits from the investment in elearning may not be possible, both because the business is not ready to adopt the advanced strategy and because the technology and content are limited due to their current evolution or affordability.

Chapter 6 confirms that a new wave of change in elearning is generating surprising convergences between IT and communication technologies and applications. Such changes are anticipated to create a further series of breakthroughs that will accelerate
advances to elearning products, services and content. While elearning continues to evolve, the integrative impact on existing business systems and academic research will become more pronounced. As elearning is provided across converged networks such as mobiles, televisions and intranets, users will again refer to the literature (academic research, business reports and management texts) for guidance on how to efficiently and effectively implement elearning. But once again the literature may offer only partial solutions or information based on past practices, not emerging contingencies. Chapter 6 provides evidence that as technologies converge so will more fields of research and literature. This convergence not only creates depth and breadth to the study of elearning, but also further increases the complexity surrounding these studies.

Linking investment in elearning to outcomes that measure customer satisfaction and loyalty may seem a strange element to include in the scope of this report. However, for many service organisations, linking training outcomes to overall customer metrics makes business sense. Chapter 7 addresses the basic premise that the relationship between elearning and eservice not only exists, but also makes eminent sense from a research and development perspective. Not only does this approach link elearning to service outcomes, the research can support a direct and tangible link between service transactions in an electronic environment, and effective and efficient elearning. Many of the lessons on how elearning advances eservice outcomes illustrate how not just individuals designing, delivering and participating in elearning but also customers are part of a service chain. By considering the relationship between eservice and elearning, it is possible for business to:

- Learn from its customers;
- Capture and respond to customer needs and preferences as part of a formal organisational design and learning process;
- Link staff training to internal and external service experience (based on analysed data capture);
- Use the same data capture and reporting systems for service, learning and people management;
- Improve efficiency across the business;
- Detail and target customer service excellence;
- Increase sales through product and compliance information (real-time learning);
- Enhance brand value and propositions; and
- Achieve greater efficiency and integration with suppliers.

Elearning is part of the electronic environment within which the customer may be serviced; this presents an opportunity to use elearning to target improved service excellence. In addition, high levels of satisfaction can be achieved if the customer can quickly learn to use services and adopt behaviours and mental models that provide a unique link with that service provider and a reason for remaining loyal. In effect, competitors cannot achieve the same level of service satisfaction with businesses that offer electronic service exchanges. This suggests unique competitive advantage for
companies that build elearning into service transactions and move beyond a focus on competently provided services, to also build unique behaviours and mental models in employees and customers who undertake transactions. This also has a clear, but as yet insufficiently researched, value-added relationship with corporate image, market position and brand equity.

**Isolation of Variables and Insights into Elearning**

The next level examines how variables impact elearning at the individual, group or community (internal and external to the organisation), and organisational levels. This commences with **Chapter 8**’s investigation of the variables that influence how individuals approach and complete elearning. The research examines learning as a form of interpersonal transaction. From this viewpoint the chapter builds on the previous chapters, which depict knowledge as an individual and organisational asset that can be deconstructed into capabilities. Classically, organisations deploy capabilities to achieve improved performance and competitive outcomes. Yet the competence to ‘do things’ has to be matched by the need to be agile and responsive to customers across all functions. Knowledge embodied in capabilities is seen as residing not just within but also outside the organisation; for instance, with customers or in interactions staff may undertake outside the organisation’s sphere of influence. At all these levels the individual remains the consistent source of the main variables.

While Chapter 8 concentrates on the individual, the overall investigation seeks to understand individuals as the key component in transactions for both personal and collective purposes. The individual may be a staff member or a customer, a student or a teacher. What determines the success of an elearning transaction for each can be better understood if the variables that impact how individuals engage in elearning transactions and influence its successful completion can be isolated.

**Chapter 9** elaborates upon the research in Chapter 8 to examine collaboration, where a number of individuals are involved in elearning. This chapter addresses communities within and outside the organisation’s sphere. Drawing on previous chapters, Chapter 9 reinforces the distinction between building learning within an organisation and maximising an organisation’s knowledge assets through management of individual collaboration. This analysis includes an investigation of collaboration by networks such as communities of practice or learning communities. The chapter also focuses on how collaboration influences the design of elearning and the transfer of both tacit and explicit knowledge. The literature is reviewed for insights on how elearning can contribute to the capture, transfer and generation of knowledge that can build an organisation’s knowledge capital. From this perspective, an investment in elearning is not just about improving collaborative learning exchanges, but also about how well an organisation can use elearning to generate and utilise knowledge from both its existing pool of human capital, and pools of social capital held in networks of interaction beyond the organisation (for instance, with suppliers, customers or community groups).

**Chapter 10**’s examination of elearning variables at an organisational level is heavily influenced by earlier chapters. A conventional approach would zero in on the heated discussion on the return on investment (ROI) that organisations enjoy, or as many are suggesting, do not enjoy when investing in elearning. Instead, the chapter seeks to confirm why elearning should not be considered an extension of workplace training and development activities. This distinction reinforces earlier research, which states
that restricting a knowledge base to one developed by traditional training systems and structures would be too narrow to allow an organisation to capture the capabilities resident in individuals within and outside its boundaries. Therefore, any elearning solution must maximise relationships across 'networks' that hold knowledge capital. The networks should utilise electronic transactions as part of the service relationship with supply chain partners or customers. Chapter 10 stresses how all interactions represent opportunities for the organisation to learn and acquire valuable knowledge capital.

Chapter 10 also suggests that elearning must be viewed as a strategic activity. Gearing elearning only to raise performance and fitting it within training and development structures and processes is to inherently suboptimise both its impact and any ROI. To demonstrate how a systematic approach to learning can be shaped within an organisation, the chapter analyses the learning organisation and organisational learning. This analysis sets the groundwork for examining elearning ROI issues. Using tools available in current literature, this study points out how limited the current debate on ROI has been. This limited view on ROI underscores the inadequacy of the models used to understand elearning. Current ROI business cases depict elearning as an extension of training activities, or in effect, restrict elearning to an etraining activity. Viewing elearning as a strategic activity paints a more accurate picture of the benefits that extend beyond competency acquisition; this more complete picture encompasses growth of identity and human capital attributes that enhance the organisation’s knowledge capital.

Chapter 11 concludes the variables analysis and insights level with research on technology, standards and compliance requirements; it also outlines the nature and dynamics of elearning technologies. While many previous studies have focused exclusively on the technologies, this chapter investigates how technology can enable elearning, given the findings of previous chapters. The chapter does not explore and compare every technology and application; nor does it make judgments on the efficiency and effectiveness of each technology for a given type of learning scenario. Chapter 11 separates out ‘technology-driven’ views on the elearning strategy and instead considers how approaches to technology and applications can enable individual, collective and organisational elearning.

Chapter 11 uncovers that emerging standards in the elearning market (e.g. IMS, SCORM, Cetis, IEEE, EduSpecs, OASIS) are responses to the failure of technology to evolve with consistent features across elearning content and technologies. In terms of elearning standards, the current focus is on technology. Concerns centre on conformance and how content and technologies are designed and managed to ensure that they are interoperable across multiple platforms; that is, how to interlink different vendors with each other and other technologies existing in the marketplace (i.e. knowledge management systems). This technology focus may not necessarily promote the strategic elearning interests of an organisation.

Some organisations may actively seek customised content, technology and infrastructure. Nevertheless, many of the technology solutions being advanced by elearning vendors appear to reinforce arbitrary divisions within an elearning supply chain. This has seen technologies influencing how effective management of learning, knowledge, performance and HR are organised within organisations. Compounding this is evidence to suggest that the models for content management focus on
managing the transfer of codified knowledge, which may again limit the potential of elearning solutions to interface with knowledge and HR management systems seeking to develop both tacit and explicit knowledge. Chapter 11, for instance, raises questions such as *How does a focus on meta-tagging advance the movement of tacit knowledge?* No provision is made to recognise that some knowledge cannot be tagged, managed or ascribed a purpose under available learning content management systems (LCMS). Even if that were possible, reporting does not show how elearning affects knowledge capital generation, business benefits and ROI at the strategic level indicated in earlier chapters.

**Implications and Findings**

**Chapter 12** provides a detailed summary of the Investigative Research Report. This chapter consolidates the different chapters and organises the miscellaneous observations into a set of underlying principles for the implementation of effective and efficient elearning. The chapter also proposes a blueprint for implementing elearning within a business. This blueprint includes recommendations on tools and applications to support a strategic, capability-based approach to elearning that has been proposed after extensive insights derived through research in Chapters 7 to 11.

**1.1.4 Key observations**

Within each chapter of the Investigative Research Report a series of observations were made. At the beginning of each chapter a proposition was canvassed to give broad orientation to the data that would be collected, analysed and reported. Each chapter also had an abstract an indication of key themes. These served more to summarise the data presented and the thematic focus. While the chapters presented an investigation of the research and literature relevant to the given topic, the observations represented formative conclusions. The following represent the 37 Observations made on all chapters.

**Observation 2.1**
The research for this report uses a modified grounded theory approach to produce observations based on new and existing research; these are expected to generate substantive findings relevant to implementing efficient and effective elearning. While particularly chartered to examine the corporate context, observations also provide insights relevant to the wider community or educational context.

**Observation 3.1**
By adopting narrow definitions of elearning that ignore emerging technologies (i.e. non-browser-based, mobile and other innovations), online learning and even more specifically, web-based training technology and content providers needlessly limit future opportunities.

**Observation 3.2**
The market is maturing to a point where inconsistent, technology-based definitional parameters and vendor and investor forecasts employing definitions from 1998 to 2001 no longer offer a reliable insight into elearning advancement around the globe or any useful user or organisational-level data on the full range of electronic technologies, satisfaction levels, enabling behaviours, needs and preferences, or trends. This is especially the case in Australia and Asia.

**Observation 3.3**
Learning is a constant, so the elearning debate should shift its focus from the technology perspective to the learning perspective, including what the technology can do for individuals.

**Observation 3.4**
For the purpose of this Investigative Research Report, elearning can be broadly defined as encompassing a learning experience involving the acquisition or transfer of knowledge delivered or transacted via electronic means.

**Observation 4.1**
The types of learning and knowledge are critical variables influencing how elearning is designed and conducted.

**Observation 4.2**
Assumptions that learning and knowledge are somehow combined to form elearning is flawed. How learning and knowledge in reality affect elearning is dynamic and dependent on the context of application, the
individuals involved and the mode of collaboration.

**Observation 4.3**
Improved knowledge transfer and overall skills performance is best achieved when learning in an electronic environment avoids a focus exclusively on ‘skills’ training for performance and instead seeks to additionally build situated meaning and identity creation during the learning exchange.

**Observation 4.4**
It does not matter how far or fast learning practices develop beyond the classroom; whether online, virtual learning or other, good educational pedagogy still influences the effectiveness and efficiency of elearning.

**Observation 5.1**
Elearning has inherited a workplace education and training debate where reporting and distinguishing skills, knowledge, behaviours, culture and roles still remain less than clear.

**Observation 5.2**
Building identity and relevant skills and knowledge not only provides a more effective way to enhance performance but also enhances the willingness of people to learn, change behaviours and deploy tacit and explicit knowledge in a manner that can benefit the organisation.

**Observation 5.3**
Elearning is a form of exchange that can hold meaning, and positively reinforce identity and performance capabilities.

**Observation 5.4**
Elearning has accelerated the need for learning to target, develop and report learning and performance outcomes in terms that can be linked to value as determined by business outcomes. Increasingly this means reporting contributions to growth in knowledge/intellectual capital.

**Observation 5.5**
Elearning can contribute to human capital management only if human capital management is understood to be a component of knowledge capital, which builds overall productive capacity by enhancing both competency and identity capabilities.

**Observation 5.6**
Capabilities provide a common ‘currency’ that is portable and comparable across individuals, occupations, jobs, functions, teams or communities, locations and, indeed, cultures. It is also the currency for reporting these outcomes across performance, knowledge, learning, human resource and human capital management systems.

**Observation 6.1**
Elearning is an enabling of change while subject to stages of evolution evidenced in the progress of information and communication technologies. The efficiency and effectiveness of elearning therefore depend on accurately aligning the organisation’s own evolution to the capacity of the proposed elearning strategy to accelerate learning cycle times that generate improved business results — most importantly the individual’s capacity to learn and overall organisational performance and agility.

**Observation 7.1**
Elearning can at the very minimum accelerate progress of an organisation along a learning curve and shorten the cycle time for individuals new to a job to reach the required performance proficiency threshold.

**Observation 7.2**
How individuals interface with eservice providers continues to evolve. Not only will needs and preferences of online customer change, but also the technologies for interaction will evolve. For instance the employee and customer interface for eservice or elearning in the future will not necessarily be a fixed computer or browser based, as evidenced by the emergence of mobile devices such as PDAs.

**Observation 7.3**
Elearning is a two-way process. If it is understood as a human transaction it has to be accepted that elearning can convey information as well as collect information from individuals within and outside the organisations.

**Observation 7.4**
Elearning should be seen as an activity enabling both employees and those external to the organisation to participate in an effective and efficient eservice transaction. While scant real research has been done on this relationship, a case can be made for brand positioning and value to be usefully considered within this construct.

**Observation 8.1**
The knowledge, experience, learning and beliefs (trajectory) that individuals have formed before a learning exchange greatly affect learning outcomes.

**Observation 8.2**
Learning exchange is a form of interaction, which, even in an electronic environment, has a specific situation and meaning for each individual involved.

**Observation 8.3**
Particular types of individual cognitive and metacognitive structures influence how individuals engage in elearning processes and construct and transfer new learning into knowledge that can enhance current
performance and future learning proficiency.

**Observation 8.4**
Organisations promoting elearning content and processes that encourage identities inconsistent with an individual’s identity actually promote resistance to learning.

**Observation 8.5**
Reinforcing identity and building self-efficacy in a learning process are stronger forces for sustained learning and performance than competency outcomes linked to performance alone.

**Observation 9.1**
As a broad gauge it seems at least 70 per cent of knowledge held by an individual and therefore by an organisation is tacit and everyday interactions and performance require this form of knowledge so elearning should not be limited to mental models that view elearning as only a means to communicate explicit knowledge in codified content.

**Observation 9.2**
Elearning can maximise collaborative learning exchanges, which are known to greatly enhance the transfer of tacit knowledge held by individuals.

**Observation 9.3**
All learning involves communication, yet outmoded mindsets on communication as a linear sender–receiver process have limited use for elearning transactions. Elearning can encourage communication to build a shared sense of meaning that enhances collaboration and amplifies the purposeful exchange of knowledge.

**Observation 9.4**
Elearning can be used to enable learning communities within virtual or electronic environments that generate new knowledge networks and relationships with diverse participants within and outside the organisation.

**Observation 10.1**
The elearning process should assist the integration of individual learning (competencies and identity) with the group level (team performance and development of shared identity), and organisational level outcomes (knowledge capital, systems, procedures and culture).

**Observation 10.2**
To sustain organisational agility, identity must be co-oriented and learning used to enhance collective trajectories (mental models).

**Observation 10.3**
Creating learning partnerships, focusing learning on the organisation’s strategic objectives and measuring elearning activities’ contribution to business success create the preconditions for organisational learning.

**Observation 10.4**
Current elearning ROI calculators are limited to cost reduction for etraining, and do not address organisational outcomes such as the formation of knowledge capital or even human capital.

**Observation 10.5**
Given the limitation of instructional and systems designers to build electronic content and environments that can accommodate all the variables impacting how individuals learn in a given situation, the second wave of elearning is focusing on how elearning technologies can respond to an individual’s needs and preferences.

**Observation 11.1**
The absence of ‘grounding’ in known use and experience, standards may even undermine the immediate needs-led evolution and innovation in elearning by (for example) ignoring new technologies or tacit knowledge. Standards organisations necessarily build compliance requirements on the basis of past experience and future expectations. However, past experience is not particularly either deep or diverse in elearning at this stage, and the future of elearning still appears as a quickly moving target. Elearning’s early current stage of evolution means that few organisations have the experience to participate in standards decisions, meaning that the entire industry may be directed by a narrow spectrum of elearning interests and uses. This risk is more likely to be pronounced in elearning-specific areas than in areas that already have an extensive community of user-participants in standards setting (e.g. in the HTML, XML standards for the Internet).

**Observation 11.2**
It can be argued that elearning technologies, such as LMS and LCMS, are more to do with vendors seeking discrete market differentiation than they are real divisions in a supply chain or elearning operation. This arbitrary separation of functions compounds the complexity and costs associated with better integration of content, learning, performance, knowledge and human capital management functions within large corporations and across organisations within a community.

**Observation 12.1**
Instructional design is to elearning what architectural planning is to building; it is at once the blueprint and the vision of the process, designing the unifying or coherent structure. More specifically, instructional design accommodates learning transfer, customer needs and preferences (useability), as well as information systems design and architecture.
1.1.5 **Learning to elearn principles**

This section outlines the eight foundation principles that have emerged from the preparation of this Investigative Research Report on elearning.

**Learning to Elearn Principle 1**

*Elearning has maximum strategic impact when it is used to enhance both performance and thinking.*

Trivialising elearning to accelerate its adoption has had a major counterproductive effect. The result is a prevailing mental model that fails to either encompass the complexity of elearning or appreciate the true strategic contribution elearning can make to organisations and societies. In effect, early literature has ‘dumbed down’ elearning to such an extent that its development is being stymied.

Elearning is a major reform involving convergence, integration and exchange between huge areas of endeavour. Much of the elearning research and literature has focused on interchanges between different elements within fields of endeavour, such as those depicted in Figure 1.2. A holistic view of these different areas of exchange or the overall field of endeavour appears to be lacking. This gap means there is no cogent, valid and reliable conceptual framework to separate rhetoric from well-researched studies on elearning.

**Figure 1.2  Elearning as a field of disparate research topics**

The grounded theory approach was adopted to support the Investigative Research Report data selection and analysis process. As the field under study covered so many disciplines and sources of insights, grounded theory offered a logical methodological approach. As research progressed, generalising and integrating categories of research represented by the main issues under investigation (chapters) quickly showed that the analytical rationale needed to respond to some quite profound insights gained from
early investigations. Figure 1.2 indicates why the Investigative Research Report shifted its focus to addressing problems with synthesising and integrating research and literature across broad fields of endeavour. Despite different categories of effort undertaken in each chapter (data collection and analysis on specific topics) and a range of disciplines represented by the authors of the research materials being investigated, the literature could be broadly sorted into perspectives from information technology (IT), education and training, and the management of knowledge and human resources.

This report started by surveying the existing research works and available literature; it is from these sources that insights, critical observations and understandings on the field of elearning were derived. The first insight to emerge, however, was the overall lack of literature based on a valid research methodology to present applied or conceptual understandings that encompass the whole field. While discourse within and across the disciplines abounds, this research report seems to be unique in its investigation of elearning from diverse perspectives. This synthesis required more than merely reporting, comparing and contrasting authors’ findings. It consolidates the various findings as individual chapters and then amalgamates the subjects as an integrated report. In the absence of an overall theory for elearning research, this report provides an amalgamated viewpoint supported by data analysis that can ground subsequent implementation of elearning in organisations and theory development.

In conducting this research the difficulty of synthesising findings across such disparate and dense fields of academic endeavour cannot be understated. Each field of endeavour demarks its own theories and perspectives. Each has its own subsets with unique intellectual insights, frameworks and terminology. Undoubtedly, researchers working in any one of these fields or working on specific subsets of intellectual pursuit will criticise the Investigative Research Report for not fully ‘integrating’ or considering their contributions. Yet despite the volume of work generated on elearning from writers in all of these fields it was necessary for the survey and analysis of research in all chapters to reconsider foundation publications or seminal theories. For many topics, the most recent works are relegated to secondary references. For example, knowledge management and knowledge capital sources were dominated by original works written between 1992 and 1995 and organisational learning, between 1992 and 1998; IT evolution and transformation revisited works in the 1980s, and foundations of learning theory in cognition, evaluation and educational taxonomies went even further back, to the 1950s.

Criticisms for not referencing more works on some topics may prove valid, but the report has sought to build a base for understanding elearning as an integrative activity. The approach that encompasses investigation of initial as well as recent works strengthens the understanding of both elearning’s role in a business, and its theoretical foundations. The investigation of foundational theories has permitted integrated understanding and thence observations that significantly reinforce the base upon which elearning models can be positioned.

The augmentation of research and consolidated analysis of available research suggests that elearning is still based on underdeveloped cognitive models. As depicted in Figure 1.3, a paradoxical situation exists. The focus of elearning on enhancing training for skills related to performance outcomes has in some ways apparently
limited the conceptualisation of models that relate to development of intangible, knowledge capabilities.

**Figure 1.3 S-curve of elearning implementation and understanding**

What this report observes reflects on the overall investigation of *What is elearning?* The concept of elearning has been trivialised to the point where it can be understood sufficiently well to be implemented. While the simplification of the concept and practice of elearning has allowed it to be accepted, it also has limited its effectiveness. This simplification has occurred without sufficient rigour to support the mental models required to actually implement elearning with a high degree of effectiveness and efficiency.

As depicted in the above figure, one of the inherent strengths of elearning is its very ability to advance learning beyond skills and knowledge to promote learning processes and pedagogies that convey deeper understanding and mental models. Now elearning is itself subject to the lack of deeper understanding that is stunting its implementation.

**Learning to Elearn Principle 2**

*Effective elearning occurs when technology and processes are built to enable improved individual learning. This includes responding to the changing interaction between the type of learning and knowledge, the situated outcomes sought and the individual’s needs and preferences (including the designer, facilitator and user).*

Designing and implementing elearning effectively depends on understanding the dynamics of distributed learning that occur through a specific learning intervention for a given individual or audience. Within this context the individual is the single major variable.

The individual and the organisation form the core of this Investigative Research Report’s focus. The report investigates how elearning impacts the individual, or individuals collaborating within groups, organisations and communities. Groups may include multiple individuals. Organisations may include individuals or groups in
collaboration. Communities may encompass all the previous interactions, with individuals, groups, organisations and even other individuals, groups and organisations beyond the main organisation.

**Figure 1.4 The individual and elearning**

For learning, and no less particularly elearning, to achieve maximum advantage for an individual, organisation or community, it must be based on a full appreciation of the different types of knowledge and how it is structured and ‘flows’. Learning also must deal with knowledge that may be invisible or not ‘known’ to the individual who is required to harness it to achieve personal, customer or community outcomes. In this sense, the type of learning may also vary. It may be structured to known learning outcomes or unstructured to achieve what is more akin to the communication of information.

Learning within an organisation is not about converting information into knowledge that individuals can hold and competently deploy for an organisation. Nor is it contrived to develop knowledge that only the organisation will own and deploy to maximise productive capacity or profit. Learning is more a means to absorb, generate and transfer all available forms of knowledge in order to enhance an organisation’s human and productive potential. To understand this, the relationship between learning and knowledge has to be understood in far greater depth and some lessons extrapolated and applied to the deployment of elearning.

Learning is a lifelong process; it is ubiquitous, occurring in every aspect of work and life. Each individual designing, completing or implementing elearning, however, shapes the learning transaction by drawing on past experience and current skills and knowledge. These experiences and overall perceptions shape future elearning activities; this shaping may be called elearning trajectories.
Figure 1.5 Individual elearning trajectories

Learning to Elearn Principle 3

Elearning is both a process of learning and a means for achieving knowledge transfer.

This principle suggests that elearning is far more than online learning or etraining that delivers knowledge in pre-packaged learning objects and codified content across a World Wide Web network. At its heart, learning and the transfer of knowledge is a social activity and to be successful the elearning processes must be constructed with a conscious effort to not only transfer competencies attached to explicit outcomes, but also build a process and environment that encourages the transfer of tacit capabilities associated with building a shared identity. This identity orientates individual and group trajectories towards a collective purpose. The purpose provides a sense of meaning that motivates individuals to want to effectively deploy competencies within an organisation or situation.

Collective learning is shaped by the individual’s entire prior learning and their perceptions of purpose and benefits from completing learning. Collaboration is a foundation activity in human society. The early limitations on elearning have been the lack of capacity (bandwidth, technologies and tools) to actually promote human interaction and two-way learning exchanges.

Figure 1.6 Promoting shared identities through elearning exchanges

Individual purpose and learning trajectories vary. However, learning is a means not only for collaboration but also for the co-orientation of behaviours and alignment of personal capabilities to group and organisational outcomes. Within this frame of reference, learning reinforces not only performance outcomes but also a sense of identity. Reinforcement is derived from activities that hold meaning for each individual and on a shared basis.
The development of shared trajectories that align individual purpose with the purpose of an organisation or community of individuals is represented in Figure 1.7.

**Figure 1.7  Orienting individual trajectories towards organisational purpose**

Learning to Elearn Principle 4

*There is a direct and proven correlation between the variables limiting the optimisation of individual and collaborative elearning outcomes and the variables affecting organisational learning, agility and competent performance.*

Just as individuals enter learning processes with pre-existing conditions that influence outcomes, so do past elearning experiences shape future learning processes. Completing an elearning process affects more than just learning and performance outcomes. Addressing barriers to individual learning prior to the learning transaction can alleviate anxiety and increase motivation, confidence and commitment. Research demonstrates that addressing these issues and raising elearning effectiveness directly translates into a person’s capacity to learn, future performance and the ability to adapt and effect change. Such research is consistently presented from diverse research fields (psychology, management, training, etc.), in different locations and cultures, and using a variety of methodologies.
Learning to Elearn Principle 5

*Elearning is a strategic activity that integrates business processes and technologies. Therefore efficiency and effectiveness should be measured in terms of not just performance and learning outcomes, but also overall contribution to an organisation’s potential productive capacity and agility. If this thesis is accepted then the need for new elearning metrics logically follows.*

Elearning metrics must fully account for elearning’s contribution to the construction of human capital and overall intellectual or knowledge capital within an organisation. Opinions of many early adopters in the U.S. corporate sector, investors and venture capitalists, and vendors reinforce the perspective that there is parity of efficiency and effectiveness between elearning and existing classroom-based training and education. This perspective assumes that elearning augments and builds on a solid platform and merely requires adapting existing practices rather than transforming them. Adopting this belief would mean the main advantages of new technologies may be missed, ignored or forgotten. Elearning should not be viewed as an extension of what is known and has already been done. Imposing these limitations would restrict possible outcomes and seriously warp investment decisions, especially with regard to elearning technologies, infrastructure and the calculation of expected ROI.

As a natural extension of the evolution of related technologies and processes, organisations seek greater integration of elearning and business processes. Integration of elearning with other business processes has resulted in contemporary approaches emphasising the metrics of human capital value. A human capital emphasis links elearning with technologies, processes and practices supporting the drive to expand the overall capital value of the human resources within the organisation. This is often being represented using the formula:

**Learning + Performance + Knowledge Management + Human Resources = Human Capital Management.**

Elearning cuts across all components in this formula. Fortunately, elearning can usefully contribute as a strategy for reporting or stimulating outcomes across all dimensions of the human capital management equation. Reporting metrics have to identify not only an individual’s precise learning requirements, but also outcomes in
terms of organisational learning, knowledge, performance, and HR issues such as human capital and overall knowledge capital gains. Where consistent metrics exist, elearning can target outcomes and be evaluated to determine its direct contribution to an organisation’s potential productive capacity and agility.

The research report provides a basis for determining a consistent capability framework for reporting and analysing the contribution of elearning to outcomes such as human capital.

Evaluation of elearning both in terms of its learning and performance contribution is limited. The majority of literature on evaluating elearning centres on measuring ROI. However, it is becoming increasingly apparent that such an approach is incomplete and, seemingly, inappropriate for organisations seeking effective integration of elearning outcomes and business results. It is for this reason that the assumptions, issues and dynamics surrounding elearning evaluation have had to be considered in this report. In effect, evaluation against the outcomes and strategies accepted by decision-makers either gives false confidence or fails to appreciate (i.e. lacks the cognitive complexity) the maximum potential benefits of elearning.

As a result, training staff are vying with HR and IT departments to gain the organisation’s attention and investment for an elearning initiative based more on existing organisational processes and understandings than on the nature and inherent benefits of elearning.

**Learning to ELearn Principle 6**

*Electronic learning (elearning) can be defined as a learning experience involving the acquisition, generation and/or transfer of knowledge delivered or transacted by electronic means.*

This broad definition suggests awareness that just as web-based training has superseded CD-ROMs and computer-based training, so the web-based approaches to online learning will be eclipsed in the future. The functions and parameters of elearning will continue to evolve as elearning is deployed to support organisational and societal change and as elearning technologies themselves evolve.

**Figure 1.9 Transformation enabled by generative elearning**
Elearning can support an organisation’s transformation. Elearning has the capacity to accelerate how organisations deploy learning to accelerate the transfer of capabilities in a controlled, just-in-time, on-time manner. Systematic approaches to elearning can advance not only performance outcomes, but also the knowledge required to learn on demand, rather than only after skill gaps have been identified. This ability enables the organisation to embed the capacity to learn in a generative manner and be more agile in its own change processes.

Elearning causes transformation and at the same time is subject to the forces impacting the evolution of technologies and major changes. As more businesses deploy elearning effectively, the ‘bandwagon’ effect — doing it because competitors or other major companies are doing it — is replaced by adoption and deployment based on enlightened use and real understanding of the available options. More enlightened adoption usually occurs as the technologies mature. Elearning implementation is only just beginning to progress around the globe to a level marked by rapid deployment and a mature approach to its support for business processes and learning practices (a so-called second wave).

**Figure 1.10 S-curve of elearning transition**

Learning to Elearn Principle 7

*Elearning is an activity that inherently involves service exchanges between humans moderated by technology in an electronic context.*

The study of elearning needs to encompass not only how it is completed but also an understanding that it is resident in all forms of electronic transactions. This acknowledges elearning as an activity that inherently involves service exchanges between humans moderated by technology in an electronic context. It is an eservice.

The principles of effective and efficient elearning promote an understanding of service within an electronic environment. The principles of how individuals learn in this environment apply both to internal service transactions and external customers accessing an organisation.

The service exchange is an opportunity for the organisation to learn. Equally, how individual employees complete the service transaction can be framed to reinforce not just the skills and knowledge for competent performance, but also the behaviours and
identity attributes that are unique to that organisation and their eservice transactions. There is significant mutuality in the elearning field of study and research on eservice transactions. Elearning reinforces how every eservice transaction involves a two-way learning process. Eservice confirms the principles of service exchanges involved in every elearning transaction. When combined, the needs and preferences of the individuals involved (including not only customers, service providers and those managing and designing the exchange) become a central focal point — a focal point with outcomes that must be accommodated within the technology and business processes being developed.

**Figure 1.11 Embedding elearning to enhance eservice transactions**

**Learning to Elearn Principle 8**

_Elearning systems and architecture must support both the content delivery and the design, learning, evaluation and reporting processes for elearning._

Elearning systems are far more than content and learning management systems. Elearning is neither a replacement for workplace training nor an accelerated mechanism to transfer codified knowledge. Evidence suggests that the best elearning solutions assist the transfer of both codified and tacit knowledge. The solutions also have to be open architecture or at the very least interoperable within the overall context of the organisation’s existing information systems. Evaluation of the effectiveness and efficiency of elearning must not be limited to learning outcomes or the ability to manage learning and content. Measuring elearning must interface with the systems analysing and reporting performance, knowledge management and the human resource capital or overall knowledge capital gains. It also has to use

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consistent and comparable metrics when evaluating outcomes across these business systems. Elearning investment accountability must be placed on the same strategic scale as any other effort to improve business results.

Knowledge for information transfer may move down the elearning ‘supply chain’. By enabling elearning, organisations need to recognise that they are investing in improved conduits that can be used for communication of knowledge. However, learning and knowledge have distinct dynamics and should not be seen as being managed using standard elearning technologies and systems. For instance, elearning may involve creation of environments, content and tools that enable collaborative exchanges to encourage flow of explicit knowledge within an organisational context. Meta-tagging and content repositories and many of the technologies that comply with international standards reinforce the need for learning management systems (LMS), learning content management systems (LCMS) and elearning tools. These are required to enhance how content can contribute to user outcomes, particularly businesses requirements, by mapping and managing the flow of knowledge assets across platforms and therefore business functions.

However, this approach aligns poorly with the movement and reporting of tacit knowledge. Elearning can accommodate strategies that foster cognitive skills, behaviours or identity creation within a learning context; for instance, experiential learning, simulations, project teams or games may be used. The same solutions may be utilised to accelerate information transfer within an applied situation; for example, collaborative environments, document exchanges or advanced ways of packaging learning objects to facilitate transfer to individuals with certain learning styles, intelligences and levels of self-efficacy. Research suggests some tacit knowledge or content will not be able to be captured and moved. No amount of meta-tagging can incorporate this form of knowledge into existing approaches to content, or learning management systems to satisfy the management of tacit knowledge outcomes. All that would be accomplished by structuring the knowledge would be to immediately remove its tacit nature and render it codified and more mobile. This transformation may destroy its inherent value.

Figure 1.12 depicts a content management approach that separates information objects and learning objects. Knowledge assets may reside in either, or move interchangeably between the two. Research illustrates that the type of knowledge may dictate that once some knowledge assets are repurposed from learning to information transfer they may lose their link to assessed learning outcomes. This does not necessarily diminish their knowledge value.

If the observations uncovered in this research report are applied, elearning can provide environments, processes and contextual tools within which tacit knowledge can be shared. Figures 1.12 and 1.13 demonstrate how elearning solutions may be designed and implemented to provide a framework for delivery and evaluation that can be spliced into the transfer of knowledge as information objects that do not necessarily involve structured learning. This principle suggests that two models need to be advanced to re-orient how elearning technologies are currently constructed:

1. Revisit the concept of content management as both a learning and knowledge process (Figure 1.12); and
2. Create a capability-based HR interface to overlay existing elearning technologies and provide the functions that analyse and report learning, knowledge and performance, as well as the HR aspects either to human capital or the organisation’s knowledge capital outcomes (Figure 1.13).
Figure 1.2  Refocusing content management into structured and unstructured learning and knowledge exchanges
Figure 1.13  An integrated capability-based HR approach to elearning management, evaluation and reporting
1.1.6 **Building solutions — proposed tools**

The Investigative Research Report was also chartered with recommending new tools and applications to advance current elearning practices. Chapter 12 proposes four tools and an integrated HR reporting and analysis application. These are:

**Tools**

- Organisational elearning capability benchmark index — including data capture and reporting mechanism;
- Individual elearning capability benchmark index — including knowledge passport tool;
- Collaborative elearning capability benchmark index and decision-making tool;
- Elearning investment calculator benchmarking tool — including human capital and cost benefit analysis options.

**HR application**

- Capability-based human resource system for mapping, tracking, analysing and reporting elearning outcomes — including integrated data capture, compliance reporting, knowledge and assessment repository, and capability database.
1.2 References


## 2 Methodology

### Chapter Overview

Abstract

The research authors have designed and conducted a grounded theory research process to address the hypothesis that elearning is not achieving desired levels of performance and agility within businesses. The systematic research processes involved were considered the most suitable to achieve the project's goals. As an initial investigation of literature, the report found multiple approaches evolving, with different rationales and definitional foundations.

The authors engaged, as stated by Strauss and Corbin, in 'a discovery of theory through a continuous interplay between analysis and data collection'. Grounded theory is a qualitative analytical approach to the identification of phenomena as the basis for formulating a structured explanation of the observations and a set of propositions as a working theoretical model — a mosaic of commonsense.

The researchers will seek to demonstrate plausible support for the findings subsequent to the main Investigative Research Report by applying action research procedures for validation of the theory. Case studies and field interviews will be conducted.

It is expected to deliver from the research and validation processes a number of observations on the variables impacting the efficient and effective delivery of elearning, suggestions or designs for building prototype elearning tools or technologies, and commercial publications and products that will embody the intellectual property created by the processes.
Chapter Proposition

Proposition 2.1
The methodology employed must enable investigative research into the broad aspects of elearning and a consolidated view on how efficiency and effectiveness are influenced by variables impacting individuals, individuals collaborating in groups and communities, and organisations.

Key Themes
Grounded theory research, project methodology, project design specifications, action research and elearning models.
Graphic Overview of Chapter

An Overview of Grounded Theory

Grounded Theory: An Ecology

- Evaluating grounded theory, research involves using an adjustable telescope to view phenomena.
- Imposing meaning and making sense of the phenomenon is the primary focus.
- Through the telescope, the researcher observes a large range of features and dynamics in the phenomenon, a resident dataset that seems to relate to the problem or phenomenon.
- In these useful field observations, the researcher identifies a range of patterns and repetitions, and notes these as concepts for consideration (coding).

The researcher looks to systematically investigate these concepts by using and adjusting the telescope to examine the concepts and then re-interpret the more closely (data coding).

The process of acquiring concepts and concept relationships leads to some being rejected or clarified to the research purpose specification. The telescope is then re-configured focusing these concepts and relationships more precisely focused, and then evaluated and refined as emerging themes (coding).

The researcher is sensitive to the process, spokens and insights gained and uses all of this activity to develop a draft and systematically interpret the phenomenon or data set.

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2.1 Introduction

This chapter presents an overview of the methodology and research framework within which study for this Investigative Research Report into Learning to Elearn has been conducted. The framework includes the presentation of a proposition at the beginning of each chapter that is the focus of investigation. At the conclusion of each chapter, ‘observations’ present findings based on the initial observations drawn from the research and literature reviewed. The observations form the basis of the research findings that will subsequently be tested and validated through case studies and a direct interview process with some 600 Australian businesses.

The Investigative Research Report is the first phase in a lengthier project. When it is presented and validated all findings are intended to support a pilot to build an elearning process, tool and/or application able to address key inhibitors to knowledge transfer for individuals, groups and organisations designing, selecting, evaluating, providing or engaging in electronic learning (elearning).

Over all Project Plan: Learning to Elearn (L2eL)
Pre-Project: Project Design Specification (September 2002)
Phase 1: Investigative Research Report

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Use grounded theory to develop a meta-model or understanding of the foundations and parameters for research on elearning and then investigate, explore data across core parameters, and subsequently validate (October to March 2003)</th>
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<tbody>
<tr>
<td>Stage 2</td>
<td>Conduct case studies (May 2003)</td>
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<td>Stage 3</td>
<td>Complete interviews (June to July 2003)</td>
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<td>Variables analyses and final updated Investigative Research Reports (July 2003)</td>
</tr>
</tbody>
</table>

Phase 2: Application Build and Prototype

- Various applications, programs (1 July 2003 to 1 February 2004)
- Trialling (November 2003)

Phase 3: Publish and Promote Findings

- Public publication of findings, ‘How-to manual’, and internal reports (June 2003+)

Phase 4: Commercialisation and Implement Products

- Commercial presentations and revenue from publications (2004+)
- Roll-out of tool(s) and applications(s) (2004+)

2.1.1 Research focus

The University of Tasmania’s commercial consultancy arm, UNITAS Company Limited Knowledge Centre (UNITAS), in collaboration with the Commonwealth Bank of Australia (CBA) and the State Government of Tasmania is undertaking an extensive project related to elearning. Titled the Learning to Elearn (L2eL) project, the research phase is the first part of a more extensive two-year project.

All data, reports and published findings from the research phase will be owned by UNITAS and administered for the CBA and the community of Tasmania through a project steering committee. Release of these materials will be based on UNITAS’s commercial processes.
UNITAS and partners acknowledge that electronic learning (for the sake of consistency simply referred to as ‘elearning’ in this research report) is an important topic for individuals, companies and societies seeking to accelerate knowledge transfer in and transformation of the global Information Economy, or the so-called New Economy. The promise of elearning has been for more flexible, cost-effective, responsive and individually controlled learning when and where learners want. Yet the global debate as at the time of writing (during the turn of the 2002 to 2003 calendar year) has been quite indeterminate as to what constitutes effective and efficient elearning.

The brief for this research report was to investigate elearning and relearn the fundamentals that must be addressed to successfully implement efficient and effective elearning within the corporate context.

Elearning involves and has caused complex interactions between people, learning and technology. As such, the research project has had to investigate a very complex field of human endeavour. The methodology deployed has had to recognise that multiple variables may impact the implementation of effective and efficient elearning. The methodology also has had to accommodate the fact that even fundamental agreement on the meaning of “elearning” and what it constitutes is absent.

### 2.1.2 Commonwealth Bank of Australia deliverables

The L2eL project is designed to provide an expansive and rigorous base for CBA to build unique competitive advantage. The research and deliverables are guided by independent analysis and reporting. In essence, the project is reinvestigating why so many organisations are failing to secure an effective return on investment (ROI) from their elearning investment and how this new knowledge can be used to build effective electronic knowledge exchanges — in this case, to improve the effectiveness of service and learning transactions.

While this is a very broad brief, this global research and validation through surveys and case studies can be repurposed by the project sponsors in a myriad of ways that can offer unique business benefits. The original Project Design Specification sought profound and immediate benefits, such as to:

1. Establish how different learning and knowledge transfer variables impact individual, group and organisational change;
2. Accelerate and enable better transformation of existing learning strategies and individual behaviours to more effectively use elearning approaches;
3. Improve customer acquisition and retention by more effective consideration of how needs and preferences of external customers can be met through electronic transactions;
4. Confirm how elearning can impact external customers and especially the impact on internal human capital value and capacity as it directly relates to provision of brand promise and service excellence;
5. Accelerate effective compliance training;
6. More rigorously classify and maximise relationships between competencies, capabilities, behaviours, culture, values and the like;
7. Provide invaluable insights into how technology, standards and systems design can individually and collectively impact an elearning design, delivery, assessment and record-keeping solution; and
8. Provide a filter to sort complex and hard-to-understand issues or move elearning research into actionable knowledge (i.e. synthesised and summarised abstracts, action-oriented observations and diagrams).

2.1.3 Research context and purpose

The research report is the first part of the project signed off by the UNITAS Board and the Joint UNITAS-CBA Steering Committee. The key research hypothesis presented to the research team by the project sponsors was:

*The efficiency and effectiveness of elearning is not well understood and as a result implementation has failed to deliver desired levels of performance improvement and agility within organisations and societies.*

The hypothesis is framed to maximise investigation and deployment of multi-method research. Stated limitations include attainment of two critical outcomes:

1. Reinvestigation and development of an elearning methodology and process;
2. Translation of research findings into a commercial learning process or platform able to support elearning — with special regard to the needs of the community of Tasmania and the Commonwealth Bank of Australia.

The research is not bank specific but is intended to inform bank-specific deliverables. It must also inform action within the University of Tasmania and Tasmanian community context. The overall Learning to Elearn project is chartered to highlight knowledge exchange in an electronic environment in two contexts (internal and external to an organisation):

1. Learning — where transactions occur to stimulate performance or meaningful exchanges;
2. Service — where transactions focus on purpose-driven exchanges.

This research component, Phase 1 of the overall project, has to identify, isolate and examine variables impacting elearning contexts on a national and global level across individuals, groups or communities, and organisations. The key parameters for ‘re-learning’ elearning practice that had to be investigated include how its efficiency and effectiveness are affected in light of:

- The relationship between learning and knowledge management;
- Comparing, measuring and reporting performance, learning and behavioural outcomes;
- Organisational transformation and the need to respond to change; and
- Electronic transactions, and specifically the relationship between elearning and eservice transactions.
The purpose of the research report is therefore to undertake multidisciplinary and global research that will advance current practices by applying elearning to:

♦ Accelerate levels of knowledge capture, generation and transfer;
♦ Equip and up-skill individuals to better engage in elearning and eservice relationships.

To satisfy the research brief a grounded theory approach has been employed to complete the initial research phase.
2.2 Grounded Theory — An Overview

*Research is a means of organising our thoughts to reach understanding.*  
*(Wolcott, 1994:37)*

This Investigative Research Report employs the grounded theory analytical approach (Glaser & Strauss, 1967; Strauss, 1987; Strauss & Corbin, 1990). Strauss (1987:34) explains:

*The goal of grounded theory is to generate a theory that accounts for a pattern of behaviour which is relevant and problematic for those involved.*

Grounded theory has been applied across a range of scientific disciplines including sociology, education, information systems, political science and management, and has been described as ‘*currently the most comprehensive qualitative research methodology available*’ (Haig, 1995).

In essence, grounded theory is a qualitative analytical approach that is concerned with the ‘discovery of theory’, specifically involving ‘grounding theory in social research itself — for generating it from the data’ (Glaser & Strauss, 1967:viii). As Woods (1992:381) explains, grounded theory arose from Glaser and Strauss’s criticism that, at that time, much of the research (apparently) verifying existing theories was flawed because:

. . . many of the theories that were being tested were not ‘grounded’ in the empirical world and were unsound in the first place. They were poorly generated in the social activity they sought to explain. They would, thus, have poor predictive value and be of little use in practical applications.

To address these shortcomings, grounded theory focuses on conducting an analysis ‘*without any particular commitment to specific kinds of data, lines of research, or theoretical interests*’ (Strauss, 1987:5), and the aforementioned ‘discovery of theory’ occurs ‘through continuous interplay between analysis and data collection’ (Strauss & Corbin, 1994:273). This continuous interplay underpins an iterative analytical approach to theory development. In a methodological sense:

*One does not begin with a theory, then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge.*  
*(Strauss & Corbin, 1990:23)*

Grounded theory is about generating useful theoretical explanations of phenomena, and so represents a quite different scientific activity to the positivist-based quantitative hypothesis testing (or ‘hypothetico-deductive’ approach) traditionally associated with the pure sciences. It has, however, been more recently advanced as a means for translating complex management theories or fields of overlapping inductive, organisational-focused theories into more cogent, understandable frameworks for actioning by contemporary managers (Locke, 2001; Morlacchi, 2001).
2.3 The Nature of Theory

Prior to further exploring procedural elements of a grounded theory approach, it is useful to examine ‘theory’, levels of theory and the relationship between data and theory.

A theory can be described as ‘a system of interconnected abstractions or ideas that condenses and organises knowledge about the social world’ (Neuman, 1994:35), or ‘a ‘story’ about how and why events in the universe occur’ (Turner, 1991:1). Neuman (1994:35–41) deconstructs theory into three parts: concepts, relationships and scope. Briefly, these elements can be identified as follows.

- **Concepts** — ‘concepts denote phenomena . . . they isolate features of the world that are considered . . . important’ (Turner, 1991:5) and ‘concepts have two parts: a symbol (word or term) and a definition’ (Neuman, 1994:36).

- **Relationships** — ‘theories specify how concepts relate to one another. Theories tell us whether or not concepts are related and, if they are, how they relate to each other. In addition, theories state why the relationship does or does not exist’ (Neuman, 1994:40).

- **Scope** — this refers to the level of abstraction of theoretical concepts and the breadth of phenomena to which they apply (Turner, 1991:21).

The final element, scope, relates to the way that theories can be perceived as generalisations of observations of the world. Some theories may represent simple generalisations from immediate observations of the world; for example, a simple theory might be that ‘it always rains when I don’t have my umbrella’, whereas at the opposite end of the spectrum other theories are highly generalised and abstract, perhaps considering these same observations in terms of the nature of objects, perceptions and experience. Between the concrete and abstract extremes it is possible to categorise a series of levels of theoretical generalisation (Turner, 1991:26); these are presented and associated with the following conceptual examples (Wilson, 1996:12).

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<th>A Conceptual Example</th>
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<td>Meta-theory</td>
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<td>Naturalistic Analytic Schemes</td>
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<td>Sensitising Analytic Schemes</td>
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<td>‘Here is a thing. Let’s check what colour it is.’</td>
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<td>Formal Propositions</td>
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<td>‘Thing colour is determined by surface curvature.’</td>
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<th>Turner’s ‘Ideal’ Relationship</th>
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<td>Analytical Models</td>
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<td>Middle-Range Propositions</td>
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<td>Causal Models</td>
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<td>Empirical Generalisations</td>
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<td>‘All the round things are blue.’</td>
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<tr>
<td>Empirical Observations</td>
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Turner’s (1991) work is primarily concerned with examining widespread and influential theoretical perspectives in sociology. He explains that within the sociology research community there is a range of views regarding what theoretical development formats are useful or appropriate, and how they might be applied. Beyond these issues, Turner’s categorisations and hierarchical arrangement according to abstractness provide a very useful framework for conceptualising the activity of research analysis and components of a research process. It is significant that within qualitative research, the researcher’s selection of observations effectively represents low-level theories in themselves, as is represented in Turner’s continuum of theoretical formats.

In a practical and grounded theory-oriented sense, a theory is a structured explanation of observations. Strauss and Corbin (1994:279) state that ‘theories are interpretations made from given perspectives as adopted or researched by researchers’, and further, ‘theory consists of plausible relationships proposed among concepts and sets of concepts’. Researchers adopting a grounded theory approach have tended to focus on the lower end of Turner’s (1991:26) continuum of theoretical formats. In this way the immediacy between the data and the emergence of a grounded theory is clear. However, applying grounded theory toward the development of more abstract (higher-order) theory is also valid.

Layder’s (1993) analysis concludes by proposing some new rules for grounded theory. These are concerned with the use of a grounded theory approach to higher-order theories, and the role that higher-order theories can play in enriching grounded theory analysis:
The definition of grounded theory must include theories which are guided by, rather than simply limited by, empirical data. Such theories attempt to depict structural features of social life which may be difficult to observe in an immediate way. In this sense such theories cannot be expected to directly ‘mirror’ or describe behaviour and activity. Rather, these theories depict explanatory models of the settings and contexts in which activity takes place.

The same applies to ‘general theory’ and so called ‘metatheory’. Field researchers must not assume that such theories are simply ‘speculative’ and unconnected with the empirical world. Rather, they must be viewed as possessing a different relation to empirical evidence than that presupposed by grounded theory. Some aspects of such theories (a concept, or several, or a segment of the whole theory) may be very useful in ordering fieldwork data, or in stimulating ideas or lines of thought about new concepts or theoretical insights. (Layder, 1993:70)

Thus, despite its focus on generating theory from data, a grounded theory approach does not preclude abstract theory development or existing theory from analytical consideration. This point is supported by Strauss and Corbin (1994:282) who, in discussing the development of higher-order grounded theories, explain that:

The danger of such theorising is not that it is abstract — for that can be of great advantage — but that it can be remote from the phenomena it purports to explain. Grounded theory methodology insists that no matter how general — how broad in scope or abstract — the theory, it should be developed in that back-and-forth interplay with data that is so central to this methodology.

This discussion of theory has helped to provide a basis for explaining some characteristics of grounded theory. Firstly, at a basic level, grounded theory is about ‘developing theoretical ideas at a higher level of abstraction than the initial data descriptions’ (Haig, 1995). Secondly, the grounded theory approach is not confined to a particular level or type of theoretical development within the context of Turner’s (1991:26) continuum of theoretical formats (Layder, 1993:63, Strauss & Corbin, 1994:281). Finally, it is useful to understand that there are no absolutes: that theory pervades human perceptions and reasoning — from simple observations to abstract philosophies. This is an empowering understanding for conducting grounded theory research because it opens up all aspects of data, methodology, analysis and pre-existing theory for analytical evaluation by the researcher.

In undertaking research activity, two broad categories of theory come into play. The first of these, which could be termed the research context, encompasses the accepted theories, assumptions and research methodologies that frame a piece of research. The second theoretical category, which could be termed the research substance, deals with the translation and expression of contextual theory into a specific set of activities for undertaking, analysing and concluding the research. This categorisation is depicted in the following diagram.
Phillips (1971:3) comments that ‘... every description of research methods, whether of a very specific technique or a very general orientation to the scientific method, carries with it a theoretical approach to science and society’. It is this encompassing theoretical approach that is represented by the ‘research context’ detailed in Figure 1.

Within this scheme, grounded theory represents an element of the ‘research context’ that provides a rationale and method for organising the ‘research substance’. Figure 2.1 outlines elements of the research substance that flow from adopting a grounded theory approach.

As explained, the grounded theory is appropriate for this Investigative Research Report. Much of the research context for elearning is considered by academics to be ‘well-trod’ turf. However, even an initial investigation of literature illustrates that some of the rationales or definitional foundations differ. It is from these rationales and foundations that multiple approaches have evolved. Often foundations built from different understandings and theory are merged to form an approach. Or different foundations are compared and contrasted when they are actually constructed without comparable parameters. The applied outcomes or research that result succeed or fail for reasons that are hard to classify.

In the case of this report, the research substance was accumulated in a systematic manner. In its collection, valid comparisons and observations were made that hold true across all the contexts of elearning.
2.4 Conducting Grounded Theory Research

[Grounded theory] is not really a specific method or technique. Rather, it is a style of doing qualitative analysis that includes a number of distinct features, such as theoretical sampling, and certain methodological guidelines, such as the making of constant comparisons and the use of a coding paradigm, to ensure conceptual development and density. (Strauss, 1987:5)

A grounded theory approach consists of ‘guidelines and rules of thumb, not rules’ (Strauss, 1987:7). As previously explained, a grounded theory approach focuses on the discovery of theory. The methodology for achieving this discovery centres upon the analysis and categorisation of data in order to ultimately identify ‘core concepts’ around which a theory can be developed.

The methods for achieving this discovery involve stages of ‘open coding’, ‘axial coding’ and ‘selective coding’ during which the researcher progressively develops categories of concepts that qualitatively have some significance in the data. In the analysis these categories are represented by shorthand ‘codes’. Strauss and Corbin (1990:57) explain that ‘coding represents the operations by which data are broken down, conceptualized, and put back together in new ways’. The coding stages can be briefly described as follows:

♦ **Open coding** — involves the close analysis of data to identify a broad range of recurring concepts that may assist in the development of a theory. Occurrences of these concepts are associated with the data using codes. The emphasis is on analysing the data minutely to avoid the risk of overlooking potential conceptual perspectives (categories) in the data (Strauss, 1987:31).

♦ **Axial coding** — ‘consists of intense analysis done around one category at a time . . . [and] results in cumulative knowledge about relationships between the category and other categories and sub-categories’ (Strauss, 1987:32).

♦ **Selective coding** — this proceeds when the research has developed theoretical ideas to a point where the emphasis can be placed upon ‘core categories’, which appear to form the foundation for a theory. Iterative refinement of conceptual categories and relationships identified between those categories provides the foundations for a grounded theory (Strauss, 1987:33).

Throughout the coding work, the researcher develops analytical notes (or ‘memos’) that capture insights and speculate upon possible relationships between the conceptual categories that are identified in the data. Ultimately, by drawing together the categories and relationships evident in the data, the researcher develops a theory to explain aspects of the research data.

Progress through the open, axial and selective coding stages is achieved as the researcher develops and refines their analytical insights into the phenomena under study. Within and across all of these stages, gaining insights into the research phenomena tends to involve data collection, coding and memoing in order to explore, evaluate and extend their emerging theory; Strauss and Corbin (1990:23) explain that there are reciprocal relationships between data collection, analysis and theory. These
relationships are illustrated in the following diagram. The iteration between research activities reflects efforts towards the discovery of theory, and involves induction, deduction and verification (Strauss, 1987:11–12).

**Figure 2.2  Iteration between research activities**

An implication of this process is that ‘data collection never entirely ceases because coding and memoing continue to raise fresh questions that can only be addressed by the gathering of new data or the examining of previous data’ (Strauss, 1987:27).

That is, coding can be noted into observations or conclusions that are discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis and theory stand in reciprocal relationship to each other (Strauss & Corbin, 1990:23).

Glaser and Strauss (1967:32) note that theory is a process, an ‘ever developing entity, not a perfected product’. Consequently, the analysis processes continue until the researcher(s) have established a grounded theory that adequately captures a theoretical understanding of the phenomena expressed in the data. Significantly, Taylor and Bodgan (1984:126) note that ‘in generating grounded theory researchers do not seek to prove their theories, but merely to demonstrate plausible support for them’.
2.5 Limitations of the Study

This Investigative Research Report can in many cases be only as insightful as the sources used. In some cases it has not been possible to source data or representational views on certain aspects of elearning. This is evidenced in sections dealing with market data on user needs and preferences or trends in elearning technologies (for instance, adoption and deployment of satellite-based elearning over computer-based instruction) in Australia.

Many of the resulting findings or observations should forge a mosaic of ‘commonsense’. The observations provide substance in areas where understanding may already have been forged. By applying these understandings to many contexts it is likely that codified results will prove a much more consolidated foundation for more detailed understandings to be developed on elearning. In completing this task some insights can cover critical gaps in available research that are shown to affect specific aspects of our study.

It is also noted that while grounded theory can generate concepts and substantial findings it has had criticisms associated with the question of prediction and verification (Egan, 2002:289). The slightly modified approach to this reporting process will address these concerns by undertaking follow-up applied validation and investigation of the findings. Two concluding actions will be undertaken. The first will be to undertake case studies and examine whether the conclusions hold true in different operational settings. A subsequent and further step, to undertake 600 direct interviews in companies, will aim to ground the findings even further into applied practices. Both steps would reinforce the overall iterative approach that grounded theory research can adopt (Orton, 1997).

Follow-up validation will have the additional benefit of building on grounded theory’s ability to link observations into applied practice and so make a ‘theory’ actionable by managers within an organisational context (Locke, 2001:18).

While the researchers have completed original research and extrapolate information from existing sources in many cases the ‘gaps’ in research may represent major research projects in their own right. Although the researchers highlight such deficiencies, they cannot move into the realms of speculation or extrapolation where it falls outside the constraints of resources or time placed on this research phase.
2.6 Structure of the Research Report

The Project Design Specification for the overall project proposed four phases:

**Phase 1: Research (10 October 2002 to 21 July 2003)**

Pursuing an applied research methodology, this phase will underpin the development of a unique knowledge, inform software design and result in an internal research report and a published text. While subject to the initial *Project Design Specification* the methodology employed has to conform to principles of action research. The aim is not to produce a new theory, but to generate a unique set of rules that can inform effective practices. Such research will collect data from known publications, case studies and experts to test the initial hypothesis. Such an approach is outlined in Figure 2.3.

**Figure 2.3 Research process**

1. Initiating literature search and current research
2. Examination of data across defined parameters (including but not limited to users, technology, services, markets and performance)
3. Case studies
4. Showcase/projects/interviews
5. Variables analysis and reports
6. Variables analysis and reports
7. Research Phase I Report
8. Publication
9. CBA internal report and manual

**Phase 2: Application Build — Develop a Prototype Self-Paced Learning Tool or Application (1 July 2003 to 1 February 2004)**

Using the research, an application or self-paced program will be produced, developed, trialled and validated. The application build phase will cover three main aspects:

- The design for learning in a digital or electronic context that can promote transfer of critical knowledge to businesses, especially small businesses (i.e. CBA customers and others)
Chapter 2  Research Methodology

♦ A Learning to Elearn (L2eL) application that will assist non-CBA users
♦ A Learning to Elearn (L2eL) application that will assist CBA users

The major deliverables from this phase will include:

♦ International standards, specifications and compliance requirements (N.B.: interoperability is essential)
♦ System design specification
♦ Design specification and project plan
♦ Pilot and testing plan
♦ Design guidelines.


A published report will be produced that is based on Phase 1 and promotes the initial product developed in Phase 2. The report will be published by an agreed publisher. All rights to the book will reside with UNITAS and the text must promote both UNITAS Knowledge Centre and CBA. The Investigative Research Report team leader will complete the book and through UNITAS be available to promote the text, applied lessons and related products to industry, professionals, government and interested users. While the text will promote CBA and Tasmania’s activities and expertise in this area to practitioners, academics and users across Australia and around the globe, it is intended to promote a professional ‘high ground’ and unique selling points (USPs) that CBA can own and advance.

Phase 4: Commercialise and Implement Products (from 2004)

This phase will seek commercial return for intellectual property that the products embody and revenue from commercial sales. The build should maximise commercial advantage and benefits able to be used by UNITAS, CBA and perhaps the Tasmanian community through early adoption and implementation of project outcomes.

Research and the elearning software and other products will deliver unique competitive advantages to CBA by providing:

- An introduction program to acquiring knowledge within an electronic environment;
- A solution whereby individuals can engage in a process inherently meaningful to them that also provides the requisite competencies to use electronic tools for learning and knowledge acquisition;
- A means to profile individuals’ (staff or others’) needs and preferences;
- A generic tool enabling organisations to more effectively profile human capital — skills and knowledge (competencies), attitudes, behaviours, values, ‘identity’ resources and the like
(this in turn provides streamlined means to recognise current competence or prior learning, or profile critical customer data for service relationship management); and

- A means to map individual, group and organisational learning needs not just against the required competencies or other attributes, but also against the suitability of the program to the given context of work, learning and assessment (environmental conditions).

### 2.6.1 Developing a report structure to support grounded theory

Grounded theory can be structured into three levels of activity.

**Level 1: Grounded Theory**

The objective of this level is to develop a general model of human collaboration for the purposes of defining and theorising elearning.

Data for this phase is represented by any research, writings or observed behaviours deemed to pertain to:

- The relationship between learning and knowledge management;
- Comparing, measuring and reporting performance, learning and behavioural outcomes;
- Organisational transformation and the need to respond to change; and
- Electronic transactions and specifically the relationship between elearning and eservice transactions.

**Level 2: Grounded Theory**

It is logically asserted that learning in an electronic environment is a subset of individual, group, organisation and community interactions.

The objective of this level is to identify, explore and refine a subset of the Level 1 definitions and insights to develop:

- A set of classifications and criteria for selecting the types of learning and service focused collaboration that can (and cannot) be usefully supported by electronic technology and environments; and
- A set of approaches that harness the capabilities of electronic technology and environments to enable the purposes and activities defined by the general model of elearning and collaboration (Level 1).

**Level 3: Action/Validation Research**

The objective of this level is to validate, refine and demonstrate approaches to learning and transactions using electronic technologies and environments. It will cover topics raised in the previous two stages, but principally focuses on the second, which reflects the core research outcomes. This objective will be achieved via case studies and action research.
The following chart depicts the structure for the Investigative Research Report. This simple diagram also serves as a mnemonic that appears at the beginning of each chapter to assist the reader — whether using digital or hard copy — to map their progress through the report.

**Figure 2.4 Overall investigative research report chapter structure**

A comparison of the grounded theory approach and the structure of this Investigative Research Report are depicted as follows.

**Figure 2.5 Comparative grounded theory and reporting process**

Drawing together the methodology and the proposed structure for the Phase I Investigative Research Report component of the Learn to Elearn Project has to be consistent with the methodology chosen. The report structure and activities can be subcategorised into levels consistent with the grounded theory approach. As depicted in Figure 2.5 these levels align to deliver outcomes as follows:
Chapter 2  Research Methodology

- **Chapters 1 to 3 (Level 1A of Grounded Theory)** — developing a meta-model or understanding of the foundations and parameters for research on elearning (Theory and Foundation of Understanding on Elearning);

- **Chapters 4 to 7 (Level 1B of Grounded Theory)** — building from understandings developed in Level 1A, developing detail on key elements within processes, protocols, measures and strategies for enabling and advancing the efficiency and effectiveness of elearning (Re-examination of the Key Issues and Dimensions);

- **Chapters 8 to 11 (Level 2 of Grounded Theory)** — identifying, exploring and refining a subset model of the above (1A and 1B), which relates to elearning and individual collaboration (Isolation of the Variables and Insights into Elearning);

- **Chapter 12 (Level 3 of Grounded Theory)** — refining a subset model for implementing efficient and effective elearning based on previous actions (Implications and Findings); and

- **Chapters 13 and 14 (Level 3 Action/Validation)** — conducting case studies and field interviews to validate, refine and demonstrate approaches to elearning and eservice transactions (this stage will follow on completion of the Investigative Research Report).

**Outcomes**

It is envisaged that the activities at all levels will deliver:

- A model for evaluating which elearning activities are most suitable for electronic contexts;
- A model for understanding and improving learning using electronic technologies and environments, encompassing concepts of:
  - Learning
  - Service transactions
  - Performance measurement and improvement strategies
  - Capability investment/ROI decisions
  - Individual and group/organisational/community perspectives on learning transactions;
- A model that explains design characteristics and values of a technology platform to support more efficient and effective elearning; and
- Evidence, validity, case studies and individual/business-focused insights that suggest the potential value, utility and strength of different approaches to elearning.
2.7 Summary

Each chapter of the Investigative Research Report concludes with both a summary of the study and observations derived from the research and literature reviewed.

At the beginning of each chapter of the report a proposition will establish a broad orientation to the data that will be collected, analysed and reported. Each chapter will also include an abstract and an indication of key themes. These summarise the chapter and the area of focus. While the chapters present an investigation of the research and literature relevant to the given topic, they conclude with observations. These concluding observations provide a counterpoint to the original proposition presented at the beginning of each chapter and translate the research data into actionable items.

Many of the fields of review are so large the reader may scan the chapters and miss some of the potential implications of the investigations. By reviewing the Chapter Overview and the concluding Summary the reader may quickly identify the core areas under investigation and the main observations established for each chapter.

Key observations resulting from this chapter

**Observation 2.1**
The research for this report uses a modified grounded theory approach to produce observations based on new and existing research; these are expected to generate substantive findings relevant to implementing efficient and effective elearning. While particularly chartered to examine the corporate context, observations also provide insights relevant to the wider community or educational context.
2.8 References


3 Foundations of Elearning

Chapter Overview

Abstract
This chapter investigates both academic and professional market researchers and identifies that no adequate elearning definition exists. Elearning encompasses a huge array of academic perspectives and a complex set of interactions across training and education, learning and knowledge, technology and users. A broad definitional basis is evident and evolving but it will be necessary to unravel the separate elearning fields of thought based on information technology, human resource and training and education to develop a synthesised conceptual framework.

Because of a lack of rigour in the derivation of definitional terms there is a corresponding lack of a cogent, valid or consistent definitional basis to separate rhetoric from well-researched studies on elearning.

The research suggests narrow definitional parameters for elearning need to be avoided because they fail to encompass emerging technologies including mobile and wireless. A review of how individuals learn best identifies the advantages different elearning technologies and approaches contribute to learning retention.

The major factors influencing the adoption of elearning training and education have a hard commercial aspect. Businesses engaging in elearning expect immediate outcomes and tangible benefits from the investment.

Other factors influencing the expectations, adoption and use of elearning are established to better understand the factors influencing the design of efficient and effective elearning initiatives. Barriers to elearning efficiency and effectiveness are explored to again make observations on how best to shape the environmental, contextual and technological factors into a coherent system.
The education and knowledge markets are examined to determine a macro view of the size, scope and trends for elearning products.

Since elearning is a new or emerging industry it is difficult to source data applicable across the industry and users. The field of study is sufficiently new for many of the lessons about what will work to be ‘works in progress’. To derive a foundation definition a set of logical statements are presented on elearning. The following broad definition is one advanced for the purpose of further research:

**Electronic learning (elearning)** can be defined as a learning experience involving the acquisition or transfer of knowledge delivered or transacted through electronic means.

A better appreciation is needed of the effect and role of elearning, particularly in relation to knowledge and learning, competent performance, organisational transformation, and service transactions between individuals.

**Chapter Proposition**

**Proposition 3.1**

Despite the Internet emerging as a global network in 1992 there still seems to be a complete lack of rigour about the definitional base for elearning. This absence seems in a large part attributable to the desire to trivialise the complexity of elearning in order to accelerate its adoption.

**Key Themes**

The definitional basis of elearning from different fields of study; elearning — the promise and hype; characteristics of elearning; elearning, the 'second wave'; emerging technologies; cognition and effective learning and knowledge transfer; synchronous and asynchronous elearning methods; the New Economy — education and knowledge markets; network architecture; and elearning market trends.
3.1 Introduction

The term electronic learning (also elearning or e-learning) is now a widely accepted and entrenched part of modern management and educational vocabulary. Is elearning, however, just another fad with a term that has become ‘fat’ on the basis of being overused and under-defined?

The term elearning has become popular since the mid-1990s; as Internet use expanded, online learning became even more popular. After the events of 11 September 2001 (and in light of the political turbulence and outbreaks of infectious disease at the beginning of the century), elearning has come to mean the ability to learn with diminished personal risk. Yet in the same period the ‘dot.com’ crash also cast severe limitations on the growth of elearning. The crash prompted questions such as Is elearning also an empty promise, built more on hype than substance? Is it a supply-driven solution without real market demand?

The understanding of elearning as presented in this report has been constructed based on a mosaic of definitions and perspectives, drawing on disciplines such as education, management, information systems, multimedia design, philosophy and sociology. This chapter examines a range of views presented by writers and researchers on the fundamental pillars of elearning. This examination provides a qualitative determination of the key understandings, definitions, data, ideas and inspirations that guide these authors.

Unfortunately what is quickly uncovered is the lack of consensus on what elearning represents. This absence extends beyond simple definitional inconsistencies based on semantics. It extends to the very foundations of what elearning encompasses, including the technologies and applications deployed. In effect the field of study is a work in progress.

A research report on elearning needs firm parameters before it can commence analysis and examination. Writing this chapter involved analysing reasons for differences between authors and why so few authors bridged anecdotal, less well-researched works on what elearning is ‘believed’ to be and works based on analytical research. In addressing these questions, this chapter revisits authors who at the turn of the century had seemingly recognised the need for more analytical understanding of elearning. This review primarily produced research on elearning representing the perspectives of investment capital companies, banks and financial security companies. This report has had to weigh rhetorical claims about what elearning is and can achieve against global market realities.

This examination of elearning represents two distinct perspectives. The first perspective from academics and professional practitioners analyses elearning in terms of its use and thence derives a definition of what it encompasses. The second perspective is from the literature and research by market analysts and forecasters. Rather than limiting the second perspective to marketers who focus on sales of products and services, this perspective is represented by researchers who present market analysis and trends within well grounded analytical approaches.

The reader should not expect this chapter to develop profound insights about inconsistencies that exist between the different authors’ views on what constitute the
fundamental components to deliver effective and efficient elearning. This report requires a survey of literature but is not a comparative literature review. It intends as a starting point to isolate and compare different ‘fundamental’ components. Once isolated, these fundamental components can be used to establish boundaries that define elearning processes, technologies, products, services and practices. The components can also be tied to specific cultural and geographic contexts. No matter how difficult it may be to study these components one by one, it is much more complex to compare and contrast them without a common foundation. The foundation to elearning that is required before progressing to the rest of the research report emerges during the study of the interaction between different components, as suggested by different authors. The aim is not to compare and contrast each author, but rather to end up with a definition of elearning, synthesising insights presented by different authors and reports.

What this chapter depicts is a field of study shaped by works undertaking both high-level, rigorous academic investigation and broader, sweeping ‘consumer-driven’ treatises. Unfortunately many of the general perceptions on elearning can be traced to efforts by advocates to make elearning ‘palatable’ to corporate managers after the ‘dot.com’ era of the 1990s. Ironically the dot-com crash made managers and investors cynical about information and communications technology (ICT) companies and suppliers, at the same time that it increased their need to improve profit margins through deployment of electronically enabled functions (ecommerce, ebusiness, elearning, etc.). Many of the most pervasive understandings of and current thinking on elearning have been framed from writings presented in the 1999–2001 period. As will be shown, the majority of these foundations seem to be flawed. Many are framed in an effort to trivialise certain complex issues or in some way simply ignore insights provided by select authors that may slow elearning adoption. Some of the more typical understandings promote the belief that:

♦ Elearning is a low-risk option that has a high return on initial investment;
♦ People learning by doing over the Internet have much higher learning retention rates than through lecture, reading or computer-based training;
♦ Once implemented, elearning translates very rapidly into performance improvement in both people and the total organisation;
♦ Elearning is a natural extension of distance and flexible learning;
♦ Elearning is a natural convergence of learning with the Internet and its inherent accessibility and real-time interactive capacity;
♦ Elearning requires incremental advancements from existing technologies to new technologies in order to provide continuity between how content is designed and delivered (i.e. from CD-ROM to online);
♦ Elearning can be implemented with easy-to-establish and -maintain hardware and communications solutions;
♦ Elearning reduces personnel (i.e. teacher contact time) and fixed costs normally associated with facilitated learning;
♦ Elearning can easily be blended with facilitated and more traditional education delivery and assessment options;
♦ Elearning accelerates the translation of learning into organisational competitiveness (accelerated learning organisation enablement);
♦ Elearning stimulates virtual networks allowing people to engage in more effective learning communities.

This chapter revisits the foundations of elearning to separate the ‘promise’ of elearning from the hype.
3.2 What Is Electronic Learning?

Elearning is still an enigma. At the time this report was prepared — between late 2002 and early 2003 — 12 years have elapsed since the Internet and the World Wide Web launched its global, public roll-out. In those early years electronic learning was hailed as one of the most profound technology improvement and triggers for change within communities, organisations and markets. As a starting point for any major research review of this topic, then, it would seem reasonable to expect this concept to be well defined, perhaps with some blurred edges, but certainly easy to differentiate and delineate from other forms of learning.

3.2.1 Setting the parameters for a study of elearning

Literature and materials abound about elearning. But it is significant that the debate about what constitutes elearning has neither been refined nor evolved substantively since the wealth of literature on the elearning markets and corporate activity was written in the late 1990s (Schank, 1997; Masie, 1997; Carpenter-Smith, 1999; HRD Canada, 1999; Block & Dobell [Banc of America Securities], 1999; Peterson, Marostica & Callahan [U.S. Bancorp Piper Jaffray], 1999; Urdan & Weggen [W. R. Hambrecht & Co], 2000; Wentling, Waight, Gallaher, La Fleur, Wang & Kanfer, 2000a; Wentling, Waight, Strazzo, File, La Fleur & Kanfer, 2000b; McRea, Gay & Bacon [Thomas Weisel Partners], 2000b; Ruttenbur, Spickler & Lurie [Morgan Keegan], 2000; Learnframe, 2000; Close, Humphrey & Ruttenbur [SunTrust], 2000; Goldman Sachs, 2000).

Just as the study of elearning seems to have many dimensions, so too do the definitions. For example:

- *e-Learning is the convergence of learning and the Internet.* (Banc of America Securities, Block & Dobell, 1999)

- *e-Learning is the use of network technology to design, deliver, select, administer, and extend learning.* (Elliott Masie, The Masie Center, 1997)

- *We define e-Learning companies as those that leverage various Internet and Web technologies to create, enable, deliver, and/or facilitate lifelong learning.* (Robert Peterson, 1999)

As early as the late 1980s elearning was considered to encompass any learning delivered using electronic means, especially computers. This definitional basis still pervades existing literature. For instance, the Report of the Commission on Technology and Adult Learning, *A Vision of E-Learning for America’s Workforce* (2001:4), states:

- *E-learning can be defined as instructional content or learning experiences delivered or enabled by electronic technology."

A review of more recent literature reveals an effort to refine the definition of elearning. In many cases these definitions have been developed to define elearning’s relationship to knowledge management and the knowledge economy. This definition centres on the use of Internet technologies to deliver information that can be deployed to achieve effective and efficient productive outcomes. There was even an effort to encompass all the intersections between learning and technology as an ‘e-knowledge’
industry (Wit Capital Corporation, 1999). The term elearning, however, came to encompass both the learning transaction and the technology used for the production and transmission of knowledge. The use of elearning to support knowledge management is reflected in many approaches. One definition suggests:

... eLearning solutions facilitate the delivery of the right information and skills to the right people at the right time. (Ruttenbur et al., 2000:5)

In contrast, Marc Rosenberg defines elearning as:

_The use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance._ (Rosenberg, 2001:28)

Rosenberg (2001:28-29) argues that, to be categorised as elearning, three fundamental criteria must be present:

- It is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction and information;
- It is delivered to the end user via a computer using standard Internet technology;
- It focuses on the broadest view of learning — learning that goes beyond traditional paradigms of training.

Rosenberg (2001:11, 34), however, strongly advocates expanding this definition of elearning beyond just a means to promote learning for skilled performance through online training. Its value to the organisation resides in its ability to encompass information transfer for performance, or so-called knowledge management applications.

Flexible and distance learning can be differentiated from elearning. Distance education may be defined simply as the process or instructional model where the learners and/or instructors and resources are physically removed by time or space. A wide range of technologies may be deployed to reach learners or share resources at a distance. In Australia the Flexible Delivery Working Party (1992:2) proposed a definition of flexible delivery as an approach that:

... allows for the adoption of a range of learning strategies in a variety of learning environments to cater for differences in learning styles, learning interests and needs, and variations in learning opportunities.

This definition tends to focus on the method and process, rather than on the learner needs or circumstances. Burns, Williams and Barnett (1997:16) add the following features in their definition:

_Flexibility in terms of entry, course components, modes of learning and points of exit [offer the] learner control and choice regarding the content, sequence, time, place and method of learning appropriate learner support systems_  
- the application of learning technologies where appropriate  
- access to information on courses and services
• access to appropriate learning resources
• flexible assessment processes.

Given all of these definitions, elearning may be encompassed under flexible and distance learning, but not all flexible and distance learning necessarily involves elearning (Rosenberg, 2001:29). This definitional basis is depicted later in this section in Figure 3 where some conclusions are made with regard to the relationship between all these approaches to learning.

Elearning has also been defined in order to reinforce its role in a social context. The Canadian Conference Group on lifelong learning took a ‘whole-of-nation’ view on the role of elearning, suggesting that ‘E-learning uses information and communications technologies (ICTs) to deliver content (learning, knowledge and skills) on a one-way or two-way basis’. (Education Lifelong Learning Group, 2001:3). When charting a new frontier for Canada using elearning, Doug Hum and Anne Ladouceur (2001:2) defined elearning very broadly, suggesting it was simply ‘using technology to support learning’.

This ubiquitous, broad definition is refined by acknowledging that elearning is:

... a method with which knowledge can be obtained quickly, efficiently and at anytime and just in time, by anyone who needs it, is ready and willing to learn.

... is using an electronic means to access information and learn about a topic, be it for personal interest, job at hand or career advancement. (Hum & Ladouceur, 2001:ii)

Ultimately, Hum and Ladouceur (2001:3) distilled elearning to ‘training that takes place over a network, the Internet or an Intranet’.

The broad definition moved through iterations of contextual explanation that once again could not avoid the ‘baggage’ associated with self-limiting words such as training, network and Internet. This definitional approach does promote a focus on the characteristics and use of elearning that acknowledges it is not a panacea for all forms of learning, and must meet the situation, times and learning style of the individual.

A subtle but important distinction is made by other authors who take particular care to distinguish ‘e’ learning from web-learning (Beer, 2000), or web-based training (Horton, 2000). This nuance is made either for reasons of differentiation of their research focus, or simply to avoid the uncertainties surrounding the elearning debate. These authors present the World Wide Web as an educational medium. This medium can be used to transfer information and knowledge with great speed without restriction of time or location. The Web also provides a new environment for learning that can be less expensive than alternative educational media or environments (Beer, 2000:4-5).
The World Wide Web is simply:

\[ a \] collection of internet sites that offer text and graphics and sound and animation resources through the hypertext transfer protocol. (dictionary.com, the American Heritage® Dictionary of the English Language, 4th ed., copyright © 2000)

Until the 1990s the Internet had been used mostly by a few universities, the U.S. Department of Defence, security institutions, and corporate research departments. The advent of the World Wide Web (WWW, or the Web) in 1992 permitted data, documents, menus and indices to be represented to the user as hypertext objects (a computer-based text retrieval system that enables a user to access particular locations in web pages or other electronic documents by clicking on links within them), in HTML format (a mark-up language used to structure text and multimedia documents and to set up hypertext links between documents). In this sense the Web is a:

\[ a \] worldwide network of computer networks that use the TCP/IP network protocols to facilitate data transmission and exchange (dictionary.com WordNet 1.6, © 1997, Princeton University)

With the emergence of the Web, the Internet became a public, global network accessible to anyone with access to an Internet connection and the capability to browse the Web. In crude terms, the Internet is the network that forms the basis for ‘global’ connectivity while the Web is the graphical, easy-to-access information system based on HTML, which is backbone of the content on the Internet and easier-to-use interfaces.

Authors who write about web-learning or -training and avoid the use of the term elearning are focusing on the Internet as a means and the Web as the public access enabler through the use of appropriate technologies and browsers. For William Horton (2000:2), the concept of web-based training (WBT) is specifically:

Any purposeful, considered application of Web technologies to the task of educating a fellow human being.

Typical web-based training activities differ from classroom training and non-Internet forms of elearning. There are also at least four types of web-based training.
### Table 3.1 Core web-based training typologies

<table>
<thead>
<tr>
<th>Type</th>
<th>Application/Use</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text and graphics</td>
<td>• Information transfer</td>
<td>HTML</td>
</tr>
<tr>
<td></td>
<td>• Reference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Static learning pages/sites</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Web browsing and links</td>
<td></td>
</tr>
<tr>
<td>Text and graphics with interactions</td>
<td>• Structured training</td>
<td>HTML; scripting (PHP); ActiveX; Javascript; Java (applets and servlets); CGI (Common Gateway Interface); Flash</td>
</tr>
<tr>
<td></td>
<td>• Edutainment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Compliance training</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assessment</td>
<td></td>
</tr>
<tr>
<td>Multimedia presentation</td>
<td>• Reference</td>
<td>HTML – page links, plug-ins/players</td>
</tr>
<tr>
<td></td>
<td>• Marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Broadcasts/entertainment</td>
<td></td>
</tr>
<tr>
<td>Interactive multimedia</td>
<td>• Structured training</td>
<td>HTML, plug-ins/players</td>
</tr>
<tr>
<td></td>
<td>• Interactive learning</td>
<td>Javascript, ActiveX, Java, streaming media, VRML</td>
</tr>
<tr>
<td></td>
<td>• Problem-based and discovery training (i.e. simulations)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Edutainment</td>
<td></td>
</tr>
</tbody>
</table>

**N.B.: XML can underpin all the above but may not actually enable interactivity.**

While elearning may be argued to encompass web-based training or learning, advocates in those fields of endeavour seem to feel the relationship in no way needs to be reciprocal. Many authors who promote web-based learning and/or training seem to delineate their focus in an effort to not be associated with ‘e’ learning. The language being employed can often be confused with the idea that web-based training encompasses all contemporary elearning activity.

While the lines between the two camps are sometimes blurred, those using the web-training or -learning approach deliberately differentiate themselves from those using elearning; they do this by highlighting how web technologies can enhance learning for those accessing the Internet (online). Often these proponents are focused on how to design or deliver learning on the Web and the applied outcomes (Khan, 1997; Beer, 2000; Horton, 2000). This enables these practitioners to benefit from a greater ability to distinguish what is or is not within their field of study. Web-based learning becomes distinguishable from the technologies deployed and the need to access the Web. CD-ROMs and stand-alone applications conveyed by computers such as those typically associated with computer-based training (CBT), computer-aided instruction (CAI) or computer-based instruction (CBI) are not web-based. They are excluded quite readily because they are ‘platform’ based; i.e. tied to the hardware in a time and location that do not necessitate use of web technologies. Horton (2000:2), for instance, stresses that WBT is an evolution that has progressed well beyond previous approaches.

**WBT is the confluence of three social and technical developments: distance learning, computer-conveyed education, and Internet technologies.**

Typically elearning is characterised as involving:

- ICT technologies;
♦ A network, including use of the Internet;
♦ The World Wide Web;
♦ Delivery on time, anytime;
♦ An electronic exchange of information for the purposes of learning.

What falls into the spectrum of elearning is less easily distinguished. Imagine two different forms of electronic information and knowledge exchange for the purposes of learning. At the bottom end of the spectrum is a CD-ROM and at the top is satellite-transmitted learning. Is either of these a form of elearning?

The distinction between and the ‘evolution’ of elearning technologies is illustrated graphically in Figure 3.1.

For many organisations, a CD-ROM and applications loaded on single computers for CBT or CBI form their sole basis for elearning. More importantly many organisations consider elearning to encompass such ‘platform-specific’ learning applications. These organisations do not necessarily need to use connections to Local Area Networks (LANs), Wide Area Networks (WANs) or the Internet or use web-based applications.

Figure 3.1 Advancing network capacity and learning interactivity

Like the web-learning practitioners, many elearning practitioners and theorists advance the argument that CD-ROMs or CBT, since they do not involve online connectivity, are not forms of elearning. Rather they are another form of transferring electronic content or completing distance and flexible learning. Without network capabilities; data storage, capture and retrieval; and open access across geographic locations, CD-ROMs and CBT/CBI approaches represent an evolution of self-paced and distance learning associated with classroom instruction.
3.3 Setting the Parameters that Encompass Emerging Technologies

Setting narrow definitional parameters for elearning based on the technology alone seems self-defeating. Even the emergence of new technologies such as in the mobile, wireless and satellite field is impacting elearning, in many cases in ways that make existing definitions of web-based training obsolete. A definitional basis and the parameters for a global study of elearning must accommodate past, present and future technologies. Stating the obvious, some countries will have ‘emerging’ technologies that other countries consider ‘old’. For some of these slow adopters, the current technologies will be ‘leapfrogged’ as the countries adopt more recent developments.

In the broader vision, which accepts that learning need not be dependent on fixed or Internet networks or solely online environments, CD-ROMs are included as elearning because they are a means to accomplish electronic learning (HRD Canada, 1999; Colvin, Lyons & Lyons, 1999; Peterson, Marostica & Callahan, 1999; Urdan & Weggen, 2000; Wentling et al., 2000b).

Even in some of these foundation reports, elearning was acknowledged to involve not just existing electronic means of learning such as CD-ROMs, but also emerging technologies (Wentling, et al., 2002a; 2000b). The appearance of non-browser-based Internet technologies to support small-screen mobile and wireless devices illustrates that definitions of the Web as the means for Internet-based elearning may not encompass innovations in a field marked by such rapid evolution. The Knowledge and Learning Systems Group (University of Illinois) report on The Future of e-Learning in September 2000 (Wentling et al., 2000b:4–5) argues for a broad definition for elearning because of the likelihood of rapid technology change. It suggests elearning be defined as:

... the acquisition and use of knowledge distributed and facilitated by electronic means. This form of learning currently depends on networks and computers but will likely evolve into systems consisting of a variety of channels (e.g., wireless, satellite), and technologies (e.g., cellular phones, PDA’s) as they are developed and adopted.

This definition introduces the other end of the elearning spectrum, where emerging technologies are altering how both the Web and the Internet are viewed as mediums for transferring information and knowledge. The growth of satellite and mobile applications and other technology has had a profound impact on characterisations of elearning.

Satellites and mobile wireless devices can use TCP/IP (Transmission Control Protocol and Internet Protocol) communication language, which computers with different operating systems have traditionally used to communicate on the Internet. If the definition of elearning is restricted to a desktop computer and associated fixed or Internet network connections, then the definition of ‘electronic’ forms of learning is even more restricted. Technologies such as telephones (mobile and fixed terrestrial lines), television, Internet and computing devices are increasingly converging. Given both the anticipated speed of this convergence and the increase in the number of users, even the most conservative forecaster must anticipate the incredible business, social and economic changes that this evolution will produce.
Looking back only a few years allows one to envisage future technology change and its impact on elearning. It took a century (from 1900 to 2000) to connect the 850 or so million fixed (terrestrial) line telephone users globally. It is expected that at least an equal number of connections will be required by 2015. In distinction to the infrastructure and connection limitations of terrestrial 'phone connections to the Internet, mobile and wireless networks offer rapid connectivity and accelerated access for users. Across the world in 2002 there were estimated to be more than 560 million connections to mobile cellular networks and some 700 million wireless subscribers (Sabnani, 2002:3).

Contrast these figures with the fact that more than 600 million users around the globe are believed to have Internet connections (NUA, 2003; UNCTAD, 2002). Based on growth trends it seems that more than 60 per cent of these have connected in the eighteen months leading to January 2003. In 2002, an average of 5 billion emails was being sent by 100 million people who regularly browse the Web each day.

The next evolution, to mobile and wireless, is occurring even faster.

The advent of mobile and wireless connections has fostered a shift in how people and businesses can communicate and learn. Access to the Internet had been dominated in the decade leading up to the twenty-first century by those using ‘fixed’ terrestrial ‘phone connections. Now some 30 per cent of global users access the Internet by cable, satellite, wireless or mobile devices. The access to the Internet via new technologies, including mobile and wireless, has seen worldwide Internet traffic (actual use of the Internet by users) double between 1998 and 2002, as the following figure depicts.

**Figure 3.2  World subscriber forecasts and impact of mobile communications**

According to both aggressive and conservative forecasts of business opportunities, learning is expected to be a major ‘product and service’ across these networks. The impact of mobile and wireless on all forms of ‘e’ learning cannot be ignored.
As shown by Figure 3.2, wireless and mobile devices not only are outstripping forecasted growth in worldwide subscribers, but also are expected to outstrip growth in more traditional technologies (Accenture, 2001; Durlacher, 2000; Sabnani, 2002). As subscribers migrate from fixed terrestrial "phone connections to mobile and wireless, connections are expected to further exceed forecasts, and mobile and wireless will stimulate mutual growth (Jagannathan et al., 2002:3). In effect, as subscriptions grow in newer technologies they grow exponentially while traditional fixed connections grow at increasingly slower levels.

To restrict the definition of elearning to Internet connections to networked computers is to ignore mobile devices and emerging forms of wireless technologies and networks. This restriction is untenable if the outcome sought is to have any long-term relevance to learning transactions within an electronic context. As depicted in Figure 3.2, elearning can be both a distinct area of study and part of the wider mosaic of learning, knowledge management and information exchange within an electronic environment.

Even late in the 1990s the technology to connect and carry 30 per cent of today’s Internet connections had not even been envisaged. The types of applications and hardware advances and even new waves of network technology innovations are in a constant state of flux. Yet elearning will certainly be one of the main forms of content across these devices, applications and networks.

In conceptualising elearning in relation to other forms of learning the following figure seems the most logical representation.

**Figure 3.3  Learning technologies, modes and relationships**

(Based on Urdan & Weggen, 2000:9)
3.4 Defining Elearning Through Study of Its Use

Adequate definitions of elearning simply do not yet exist. In the first sections of this chapter it has been assumed that a ‘field’ of practitioners and theorists can be compared with and differentiated from others; for instance, web-based training practitioners with those adopting a wider definitional basis, including, for instance, CD-ROMs and computer-based training (CBT).

The absence of any authoritative definition could be attributed to a largely dynamic field of study or the rapid change in technology and markets. Nevertheless, the gap has a profound impact. On what basis has this research report selected literature and research for inclusion or exclusion? How does it compare ‘apples with apples’ and ‘oranges with apples’?

This research project is tasked with investigating elearning. The aim is to uncover some of the inherent barriers to its efficient and effective implementation. The paradox is that the task and topic intersect. Some parameters needed to be set before the literature and research relevant to the topic could be selected. The lack of a cogent definitional basis means that no proven, coherent, valid and reliable theory exists to separate rhetoric from well-researched studies on elearning (Brennan, McFadden, & Law, 2001:64).

Similarly, this Investigative Research Report could not just complete a review of literature and expect to see key issues and observation emerge on how elearning is defined and being deployed. Significant and indicative review has been undertaken on elearning literature in the past (see Wentling et al., 2000b; NCVER, 2001). Examination of the literature and initial research for this project indicate that comparative examination of authors would not lead to any significant insights on the overall status of elearning. This investigation has to analyse literature to uncover and separate rhetoric from grounded observations based on rigorous research.

Only through analysis of may other authors’ can observations be synthesised and insights gleaned about elearning and the variables that may affect its implementation.

Figure 3.4 depicts the fields of research materials available on elearning. Initial research on this project suggest that much of what has been written on elearning falls into quadrants A, C, B, and D in that order. The extensive initial sweep of literature did not uncover more than a few items that could be classified in quadrant D, where applied knowledge and theoretical understanding have mutually been advanced.
The research team had to devise a preliminary basis for analysing the available literature associated with applied outcomes. This was done by simply reviewing how elearning is being used, both by educators and those examining its market impact.

The report has therefore set initial parameters for defining what elearning is and how it is used by firstly examining the following:

- Does elearning have advantages over previous approaches?
- What benefits do people expect from elearning?
- How do people engage in or complete elearning?

These parameters for this research on elearning lead to an overview of the current market; this overview includes an examination of the trends in both use and economic growth and competitor activities within elearning.

### 3.4.1 Does elearning have advantages over previous approaches?

The advantages of elearning over previous technologies began to become apparent in the late 1990s and early 2000s. The growth of investment in electronic commerce and information technology businesses placed elearning at the forefront of many finance, banking, investment and technology company considerations. The following table reinforces some of the advantages that elearning is believed to promise.

#### Table 3.2 Comparison of learning delivery methods

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Elearning</th>
<th>ILT*</th>
<th>CD-ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware and software requirements</td>
<td>◔</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Access to courses</td>
<td>●</td>
<td>○</td>
<td>◔</td>
</tr>
<tr>
<td>Instructor interaction</td>
<td>◔</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Cost</td>
<td>●</td>
<td>○</td>
<td>◔</td>
</tr>
<tr>
<td>Dynamic and fresh content (version control)</td>
<td>●</td>
<td>○</td>
<td>◔</td>
</tr>
</tbody>
</table>
The above chart provides an indication of why early investors were excited about the prospect of ‘elearning’ over both instructor-led training and CD-ROM. It also offers the contemporary reader an insight into some of the definitional traps being laid for subsequent studies. It is not clear from the table whether elearning can include CD-ROMs and ILT. If it can, then how are comparative delivery methods distinguished? The confusion of terms can be traced to the lack of rigour in how definitions were first derived and then perpetuated. The following table lists the definitions used by W. R. Hambrecht in March 2000 (Urdan & Weggen, 2000) with ‘refinements’ added in italics from the subsequent Learnframe Report (August 2000). These definitions consolidated terms used by earlier reports (Peterson et al., 1999; Block & Dobell, 1999).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Elearning</th>
<th>ILT*</th>
<th>CD-ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalability</td>
<td>●</td>
<td>○</td>
<td>◐</td>
</tr>
<tr>
<td>Interactivity with other learners</td>
<td>▣</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Immediate access to course updates</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Performance/results tracking</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Consistency (instructor and formats)</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Retention</td>
<td>●</td>
<td>○</td>
<td>▣</td>
</tr>
<tr>
<td>Flexibility to learner (time, etc.)</td>
<td>●</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Quality of content</td>
<td>○</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Personalisation</td>
<td>▣</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

● = Optimal
* Instructor-Led Training
(Peterson et al. [U.S. Bancorp Piper Jaffray], 1999:17)

The usefulness of these distinctions is embedded in not just what they are purporting to cover but also the wider discussion on what constitutes elearning. This debate mirrors issues already covered previously in this section. It is important to realise, however, that the definitional basis influenced data collection about markets and raised early expectations about what elearning promised. The definitions also seem to be an attempt to use elearning to encompass education and training. By distinguishing etraining and web-based or online learning, whole fields of academic and theoretical endeavour on adult learning, workplace or vocational training, and education were arbitrarily re-oriented.
Prior to 1999 or contemporary with the main investor- and technology vendor-generated reports on elearning, educational practitioners had issued strong signals about barriers to moving education and training online. Educators warned of not fully appreciating the extent to which online learning did not ‘resolve’ all the problems associated with distance education. Educators stressed that what was required were not just reforms to how corporates, universities and schools delivered learning using technology, but more radical reforms to how students learn and teachers interact with students (Hara & King, 2000). Technology and market distinctions served only to cloud the critical strategic issues that were being stated in the educational literature. These issues included:

- How students engage in meaningful education and training in an online environment;
- The student’s perspective on the reforms;
- Challenges facing education in creating meaningful content and learning environments via the Internet;
- Different facilities and technologies required to support online learning;
- Relevance of both content and teaching methodologies to online learning;
- Capacity to provide teacher support to a student as required, when required;
- Impact of synchronous over asynchronous learning opportunities;
- Overall learner and instructor satisfaction with the online environment, course administration and technologies.

(Bonk & Cummings, 1998; Johnson, Aragon, Palma-Riva, Shaik & Bilsbury, 1999; Hill, 1997; Hara & Kling, 2000:2; McKey, 2000; Simmons, 2000).

From a cognitive perspective alone, educators began to question the distinction between elearning and classroom-based learning based only on the criteria presented in Table 3.2. More important was how the technology enabled improved learning. The following figure highlights how individuals learn best and retain learning.
Different elearning technologies and approaches contribute differently to learning retention. Table 3.3 presents the learning perspective from a hypothetic-deductive approach on how technologies associated with elearning contribute differently to learning and cognition. Later chapters in the report reinforce the points made in Table 3.3, but the points are presented here as strictly hypothetical. The ability to ask questions and receive answers has been added as a means for students to confirm what is seen and heard or to clarify understanding.

Table 3.3 Learning retention and forms of delivering learning electronically

<table>
<thead>
<tr>
<th>Elearning Method Study Attribute</th>
<th>Web-based Intranet/Internet (Asynchronous)</th>
<th>Web-Based Intranet/Internet (Synchronous)</th>
<th>ILT (Classroom Only)</th>
<th>Single-Platform Computer (CD-ROM, CBT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>◔</td>
<td>◔</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Seeing</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>◔</td>
</tr>
<tr>
<td>Hearing</td>
<td>◔</td>
<td>◔</td>
<td>●</td>
<td>◔</td>
</tr>
<tr>
<td>Seeing and hearing</td>
<td>◔</td>
<td>◔</td>
<td>●</td>
<td>◔</td>
</tr>
<tr>
<td>Request and receive feedback (in real time)</td>
<td>◔</td>
<td>◔</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Collaboration</td>
<td>◔</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Doing</td>
<td>●</td>
<td>◔</td>
<td>●</td>
<td>◔</td>
</tr>
</tbody>
</table>

3.4.2 Why do people engage in or complete elearning?

In the Information or Knowledge Age learning is a direct contributor to the construction of assets that hold value, whether they are individual, corporate or societal. Under such conditions:

- Knowledge and information are sources of competitive advantage;
- There is value in acquiring, expanding and rapidly deploying knowledge assets that can improve performance;
Learning must be targeted and more cost effective in delivering knowledge that holds value.

Perceived benefits from elearning emerge throughout the course of the research and analysis in every chapter in this report. However, an initial list of overall benefits derived from elearning, sourced from available literature, are presented as the following table.

**Table 3.4 Perceived benefits of elearning**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantages/Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal control</td>
<td>The learner does not have to be a passive participant but can choose to be proactive and take responsibility for learning, knowledge transfer and accessing information. Electronic forms of learning can accommodate an individual’s learning style, whether instructor-led, self-paced, asynchronous or synchronous collaborative.</td>
</tr>
<tr>
<td>Anywhere — anytime</td>
<td>Learning is vital to individuals and organisations seeking to keep pace with a changing world and shorter product cycles. The individual can access learning as required, independent of a location or a single physical context for the ‘learning’ exchange.</td>
</tr>
<tr>
<td>Individualised or personalised learning program/pathways</td>
<td>Personal needs and preferences can better shape learning processes and outcomes. Individual education programs (IEPs) can be generated from a combination of the historical record of the student’s prior learning (from monitored usage) and the vast database stored on the server. As students progress, information is delivered based on what they’ve learned and how they’ve performed. For example, a student would log onto the learning server and a customised course would be generated from the content database that tracks which courses the learner completed, how well she did, what her job description is, what problem is most pressing. While not necessarily something to always be encouraged this dimension does serve to focus curriculum on skill gaps, saving organisations both time and money.</td>
</tr>
<tr>
<td>Interactive and dynamic</td>
<td>Technology that can encourage individuals to interact with content and environment while also encouraging collaborative learning. Using hyperlearning, as contrasted with static text, elearning has the capacity to link with other resources (simulations, other content, study groups, etc.) that can enhance the learning experience and avoid the linear learning dictated by textbooks. Media can feature rich content and design. Content and learning design can make use of audio, video, interactive chat, text, etc.</td>
</tr>
<tr>
<td>Just in time</td>
<td>Archiving of key resources and information for use by, or generated by, learners.</td>
</tr>
<tr>
<td>Improve content and learning resource management</td>
<td>Greater storage capacity: The Internet host has much greater capacity than most physical locations or a user’s hard drive. This allows learners access to more products and lets the advisor mix and match courseware activities to fit specific needs. Learners can preview presentations of different courses prior to selecting one, or they can access a specific slide from thousands.</td>
</tr>
</tbody>
</table>
### Feature | Advantages/Benefits
--- | ---
Learn by doing | Instant messaging, chat rooms, discussion boards, electronic blackboards and emails. Application sharing and multiple participating in tasks completion or information retrieval and review.
Improved information and data capture, management and retrieval | The rapid rate at which new learning products are introduced and older products become obsolete creates a challenge for individuals charged with updating libraries. However, if a single version of each product is kept on a host, users get instantaneous access to updated components.
Lowers fixed costs and improved revenue model for providers | Revenue enhancement is accommodated and elearning provides a way for campuses to expand classroom enrolments without using bricks and mortar.
Improved privacy, anonymity and/or security | Some learners who are inhibited in a classroom setting may increase engagement online.
Dynamic course building and modularised completion | The content’s architecture is modular, which facilitates different construction of learning events, both in design and length.
Certification, testing and evaluation | New means exist to test, assess and record results that can lead to formal qualifications or certification by third parties (i.e. IT vendors). Such data can be stored, reported and analysed. Individuals can also choose to maintain a ‘skills’ passport that can be securely distributed to employers, learning providers or others.
Real-time program evaluation and data capture | Elearning software empowers administrators to track performance and measure ROI. In addition, monitoring usage by learners is simpler; i.e., the number of downloads per user can be measured. This helps training managers evaluate cost-effectiveness and provides assistance with license negotiations based on estimated usage. The electronic infrastructure supports managed (and measurable) interaction between advisors and learners.

(Block & Dobell, 1999:8, 44; Close et al., 2000:12; CTAL, 2001:14–15)

The drivers for elearning also vary across major user groups or market segments. These differ from those presented by investors and educators. Key drivers for the online learning market can be defined by core customer groups including the following, reported by Bowles in a *Community of Practice in Flexible and Online Learning* (2002:18–20). These groups were asked whether they rated the following elements as important factors.

**Corporation/company users say:**
- Bandwidth 58%
- Cultural resistance 42%
- Lack of interaction 42%
- Lack of engaging content 34%
- Measuring ROI 33%
- Firewalls 22%
No standards 13%
Browser problems 10%

**Government/military users say:**
- Cultural resistance 71%
- Bandwidth 64%
- Lack of interaction 42%
- Firewalls 20%
- Measuring ROI 16%
- Lack of engaging content 13%
- Browser problems 13%
- No standards 13%

**Higher education users say:**
- Cultural resistance 63%
- Bandwidth 44%
- Lack of interaction 30%
- Browser problems 22%
- Lack of engaging content 19%
- Firewalls 19%
- No standards 15%
- Measuring ROI 7% (*User Survey*, 2001)

While the benefits of elearning vary with groups, companies, individuals and educational users it is possible to contrast the four benefits consistently surveyed as critical online learning deliverables against other forms of technology-based learning. See the following table.

<table>
<thead>
<tr>
<th>Type of Learning Technology</th>
<th>Online learning</th>
<th>Computer/CD-ROM</th>
<th>Electronic simulation</th>
<th>Tele-conference</th>
<th>Television broadcast</th>
<th>Video/Television/Radio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Individual learner control</td>
<td>Employee/learner can control access and pace</td>
<td>Good learning retention</td>
<td>Can reach different locations, less employee/learner control</td>
<td>Can reach different locations, less employee/learner control</td>
<td>Easy to implement, less employee/learner control</td>
<td></td>
</tr>
<tr>
<td>2 Wider access anywhere (but need access to Net)</td>
<td>Reliable delivery, irrespective of bandwidth</td>
<td>Consistent delivery</td>
<td>Consistent delivery</td>
<td>Compatible with existing networks and consistent delivery</td>
<td>Compatible with existing networks and consistent delivery</td>
<td></td>
</tr>
</tbody>
</table>
The benefits sought by learners and those involved in the elearning process vary. The following section differentiates some of the different expectations from the perspective of business, individual online students, classroom-based students and teachers.

### 3.4.3 What benefits do people expect from elearning?

It would be very simple to simply summarise the ‘promise’ of elearning and barriers encountered by individuals across the globe. Hum and Ladouceur (2001) cite the e-learninghub ([www.e-learninghub.com/faq.html](http://www.e-learninghub.com/faq.html)) advantages sought by learners using elearning as follows:

- Elearning creates interaction that stimulates understanding and recall of information, when students exchange questions with others;
- Different learning styles are accommodated by fostering variety of activities that apply to different learning styles;
- Allows an individual to set their own pace for learning;
- Convenient access, 24/7 anytime, anywhere;
- Eliminates travel time and travel costs;
- Through the use of hyperlinks, students are encouraged to browse and find relevant information on the topic being studied;
- Flexible in terms of directing the student to material to meet their level of subject knowledge, interest and what they need to know to perform a particular activity more effectively;
- Provides context-sensitive help to computer users and helps them complete tasks on the fly;
- The learner develops knowledge and comfort with the Internet that will help them throughout their career;
- Encourages students to take responsibility for their own development;
- Successful completion builds self-knowledge and self-confidence.

The authors also list the immediate barriers individuals have to overcome as:

- The purchase of new equipment may be required;
Technical difficulties may hamper student and instructors’ progress;
Gaps in computer knowledge may require training in computer basics;
Use of telephone lines and Internet providers may lead to high fees;
The cost of initial course development may be substantial;
Instructors may need to become familiar with electronic textbooks;
Internet-based research material, copyright laws and other elearning-related topics;
Technology limitations, bandwidth and speed may not support desired level of multimedia;
Lack of knowledge and ability to provide support for individuals on location.

The factors influencing specific elearning user groups can be refined even further. The following examines the factors influencing engagement in elearning by business, vocational students, classroom students, and teachers.

3.4.4 Factors influencing business to engage in elearning

Businesses seem to typically want education and training to have an immediate and tangible benefit in profitability and viability. Bowles identified that in terms of the latest elearning initiatives, micros, small and medium-sized businesses Australia were more likely to be engaged in learning when (Bowles, 2002c:26):

- It is completed in the workplace, and preferably supported by face-to-face, one-to-one coaching by an expert resident in the region;
- Online content, tools and resources can be accessed, on demand, as required to augment workplace coaching;
- Individuals complete ‘learning’ that is promoted as performance improvement, not just a pathway to qualifications attainment;
- It is learner led, not facilitator driven;
- Learning sessions are tied to real outcomes and performance improvement (i.e. learning how to develop a marketing plan results in a marketing plan);
- Learning anywhere, at anytime suitable to the learner’s needs (i.e. outside work hours);
- It adds value to the learner’s context and situation (culturally and contextually relevant).

However, multiple surveys and studies in Australia indicate that small business largely has a very unsophisticated basis for determining what represents a ‘value driver’ for adopting learning. This has been reconfirmed in many recent studies of the factors influencing businesses — particularly small businesses — in engaging in training for ecommerce or ebusiness (NCVER, 2001a; SACES, 2001; Bowles, 2002; McNicol Williams, 2001; Mitchell, 2000c; TACITPR, 2001; OETTE, 2001).
Studies about Information and Communication Technology (ICT) and ecommerce training and adoption in Australia have underscored important messages on what motivates business to adopt both electronic business and learning initiatives. The SkillsNet Association Cooperative Limited (SNAC) *e-Barrier, e-Benefits, e-Business Report* (McNicol Williams, 2001:15–18) investigated the benefits and inhibitors for small and medium-sized businesses in Victoria. According to the report, for elearning or ebusiness to be adopted, training has to be available in a mode and means that deliver the following:

- Hard commercial outcomes;
- Identification of costs of implementation — including costs appropriate to the SMEs’ business model, and all hardware, software, service, maintenance and any hidden costs;
- Improved business management — particularly related to improvement in how the business is managed and operated;
- Enhanced marketing — including enhancement of overall marketing effort and ability to position their company more successfully than other businesses;
- Commercial justification — market share, sales, gross profit gains, reduced operating expenses, increased management effectiveness all isolated as critical factors;
- Business planning — initiatives have to add value to the elements and foundations of the overall business plan.

The report also identified the need to value-add to the business infrastructure by addressing the following:

- Self-sufficiency in assessing service providers — managers have to be able to determine what represents value for money and effective services from external providers;
- Professional support;
- Security;
- Cohort effect (clear major suppliers and buyers or ‘showcase examples’ have also adopted);
- Infrastructure problems — poor connectivity, low bandwidth and lack of hardware all of which limit adoption;
- Existing employee and management skills.

Many other national reports have endeavoured to isolate the factors motivating businesses, especially smaller businesses, to engage in online training. In the main recent studies can be analysed to isolate some key lessons (Castleman & Cavill, 2002:43; Doucouliagos & Sgro, 2001; Bowles, 2002a:7–9; Bowles, 2001; Maglen, Hopkins & Burke, 2001; Brennan et al., 2001; SACES, 2001; NCVER, 2001a; Kilpatrick & Bound, 2002; Hall, Buchanan & Considine, 2002):

- Many smaller businesses view any form of learning, especially elearning, as a means to rapidly acquire the skills necessary to remedy
competency gaps and expect a short-term, tangible improvement to overall business systems and practices;

- The transfer of learning is being designed to match small and regional businesses’s time or infrastructure constraints (i.e. bandwidth) but cannot resolve how these same technology and communication barriers frustrate ecommerce implementation and resulting business improvements;

- Business training has to be ‘mass-customised’ since specific enterprise requirements now transcend traditional definitions of learning as defined by occupational disciplines or ‘courses’;

- SMEs able to gain advantage from elearning are not well positioned with hardware and ‘back-end’ data capture systems to measure and report learning as a contributor to the bottom line;

- Businesses lack the competence to engage in technology-enabled learning;

- Initial adoption of online training was hampered by the lack of access to ‘credible’ sources of advice on the commercial and competitive advantages or disadvantages, particularly relating, in priority order, to:
  - Business efficiency
  - Market advantages
  - Improved skill set of staff, especially supervisors
  - Quicker communications
  - Better service to customers
  - Security

- Businesses prefer to work with training providers that understand their specific sector and business imperatives, irrespective of the mode of learning delivery (i.e. ranked in priority order from professional and industry associations, industry or government business advisers located in the region, then sources ranking in relevance from federal, state and finally local government sources, commercial registered training organisations and thence public providers);

- Businesses prefer to use expert coaches or learning mentors, who can assist the individual employee or business, as they are required, at anytime, irrespective of the mode of training delivery.

### 3.4.5 Factors influencing classroom-based vocational students’ use of elearning

Factors that enable students to engage in structured vocational education and training (VET) courses can be extrapolated from various national reports. These factors include:

- Clarity on assessment regimes and expectations;

- Incentive for students to achieve higher levels of proficiency (master not just conscious competence);
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- Pathways from study (especially in school-based learning) to further learning or careers;
- Relationship of VET learning to other qualifications (i.e. dual recognition, recognition in school-leavers certificate, linkages to university recognition);
- Competency of facilitator, supervisor, assessor;
- Industry status and recognition of provider (brand recognition of testimonials — credential);
- Content and processes that recognised the low level of literacy and numeracy of some entrants to the courses; and
- Access to teachers appropriate to self-paced or online learning needs (as required, when required — so called 24/7 availability).

3.4.6  Factors influencing student expectations for elearning

Because elearning and its delivery are multifaceted phenomena, a multifaceted approach is required here, a requirement also highlighted in the literature. For example, Williams (2001) noted that facilitators and students differed markedly in their perception and evaluation of elearning in that advantages trumpeted by academics were often dismissed by students.

In keeping with the multifaceted nature of elearning and its evaluation, it is important to tease out observations about cultural, language and literacy matters per se with some rather more general comments. Five aspects are highlighted.

The first, following the work of Vygotsky (1978) and others, is that it is important to build in opportunities for social interactions in learning situations (Crawford, 2001). In face-to-face learning environments, interactions can be generated easily by teachers and learners, but Crawford (2001: 69) pointed out that:

... virtual learning environments must specifically, meaningfully, include interactive activity into the virtual environment so as to simulate the learning community involvement that is lacking in the virtual environment.

NCVER online (2002) maintained that opportunities to communicate and interact with teachers and other students through elearning is highly valued by students.

The second aspect concerns the nature of pedagogy. Jefferies and Hussain (1998), for example, point to claims by Vygotsky (1978), Bruner (1985) and Johnson and Johnson (1986), among others, which conclude that student-centred environments are preferable to teacher-centred ones. Similarly, learning environments that are constructivist in nature, where learners are actively and collaboratively engaged in their learning, are preferable to those that are conduit-like, non-engaging and individualistic.

The third matter concerns the locus of control that exists in learning environments. McFadzean (2001), for example, claims that virtual classrooms lend themselves to a more humanist approach (as opposed to behaviourist and cognitivist approaches) where learners can take control of their own learning in a hands-on, experiential and collaborative manner.
The fourth aspect relates to flexibility and convenience. According to NCVER online, ‘what learners value particularly about online delivery is its flexibility — the flexibility and freedom it offers; that is, learning that is “just in time, just enough and just for me”’. Stresses and strains associated with living and working in the twenty-first century generate demands by learners to learn, what, when and how they need/want.

Whiteman (2000) claimed that many adults discover, after trying an elearning course, that they like learning in this mode because of its convenience and that the experience is much more personalised and interactive than they had expected it to be. Based on Central Queensland University experiences in distance education, Cooke and Veach (1997) assert that paper-based learning materials can actually limit learning. We know that many (if not most) learners need to be very selective in how they use their time. Cooke and Veach argue that many students accomplish this by excising 80 per cent or more of the reading material supplied to them, especially if a psychological threshold of ‘too much’ is reached on the opening of a multi-kilogram study material package in addition to the required prescribed text. Elearning delivery is likely to make such selectivity far easier and less guilt-ridden than more traditional distance education delivery methods. The ability to locate relevant material easily and to communicate with fellow learners via email is likely to be important to learners. Indeed, Jefferies and Hussain (1998) discovered that students regarded these to be the main advantages of elearning (these findings were based on their survey of all 45 final-year honours students at a UK university in four computing courses at the undergraduate level).

The fifth and final aspect deserving consideration concerns the question How much elearning is enough? Jefferies and Hussain found that 72 per cent of students surveyed wanted less than 20 per cent of their course to involve elearning, with just 2 per cent desiring full Internet delivery. This is evidence in favour of ‘blended’ (or hybrid) modes of delivery. Voci and Young (2001:157) defined blended learning as ‘balanced learning’ that is achieved by combining the advantages of two learning modalities, such as classroom instruction, with self-paced instruction that is delivered on the Internet. Further, they described how classroom instruction makes for easy social interaction and sharing of experiences, how students are usually very familiar with and comfortable in such settings, and how immediate personal feedback may be received in these classrooms. On the other hand, Voci and Young also described advantages of web-based, self-paced learning. They indicated that such course delivery respects differences in learning styles and pace, offers flexibility and convenience (there are no waiting lists, there is no need for a student to postpone learning until a class is offered, there is no time gap between when a student is motivated to learn and when learning takes place), while content presentation is consistent (free of human frailties). Voci and Young (2001:161) concluded:
The effect of these combined e-learning experiences with stand up instruction is potent; participants praise the curriculum in final programme evaluations, citing the sense of heightened teamwork and camaraderie. The blended learning approach helps to create a shared understanding of concepts important to the learning culture and provide opportunities to reinforce them in a live classroom setting. Leveraging the convenience and accessibility of online components with traditional classroom instruction also expands the curriculum without increasing programme completion time.

Sarojni Choy, Cathy McNickle and Berwyn Clayton (2002:27-42) surveyed students to identify their online learning expectations. Analysis of student responses show that the top ten services that online students expect are:

- Detailed information about what is required to complete the module/course;
- Detailed information about the courses;
- Security of personal details on the institute’s database;
- Clear statements of what they are expected to learn;
- Helpful feedback from teachers;
- Requirements for assessment;
- Communication with teachers using a variety of methods; for example, email, online chat, face to face;
- Timely feedback from teachers;
- Instructions on whom to approach for help; and
- Information on how to enrol (Choy et al., 2002).

### 3.4.7 Factors influencing adoption of elearning by teachers

Kathawala, Abdou and Elmuti (2002), who researched elearning delivery of MBA programs, identified a list of difficulties that face instructors/facilitators. These are:

- It takes time to learn the technology;
- Malfunctioning technology can be very frustrating;
- There is a need for longer lead time in preparation than there is for face-to-face instruction;
- More time is required to communicate in writing with students;
- There is less time for research;
- There is generally a lack of elearning set-up funding; and
- There is an added monetary cost to maintain a home office.

Time pressures are not new to staff who have experience in distance education delivery. Cooke and Veach (1997: 204) describe their situation well:
Lecturers too are time pressured. The lead time for revision, update, or complete rewrite of the distance education package continues to increase. In fact over the past three years the average lead time required for production of unit material at CQU has increased from one semester to over two semesters.

Cooke and Veach saw a move to elearning delivery as a means of decreasing these sorts of pressures facing staff.

Kathawala, Abdou and Elmuti (2002) also saw potential benefits for facilitators: they can stay current and alert about electronic education; they enjoy enhanced ability to use technology; there is excitement in doing something new and different; there is greater employment security because of expanding markets; and they don't have to go to their office to work.

More important, perhaps, are the instructional concerns of facilitators, and this is where cultural, language and literacy issues are most important. McFadzean and McKenzie (2002) draw on the well-known work of Malcolm Knowles (for instance, 1978) to express the view that a good learning situation does not simply deliver pre-formed knowledge in some conduit or assembly-line manner. Instead, the argument goes, that situation where all learning occurs offers learners assistance to 'put flesh on skeletal concepts' through conversation, practical activity, negotiation and collaboration with others. To the extent this is true, there are clear implications for the instructor in regard to pre-planning, supporting the course and post-course follow-up. With this in mind, McFadzean and McKenzie (2002:474) claim the instructor must be attentive to five matters:

- The learning tasks, the processes and structure of the learning process;
- The development of the team;
- The team’s dynamics;
- The emotions and feelings: and
- Trust of the participants.

One might ask what makes this different than any other method; after all, this is what all facilitators do regardless of method of delivery of instruction. The point, again, however, is that elearning delivery is not merely a matter of technology — teaching and learning are at the very heart of it.

An important question is who develops the online educators and trainers. Leu (2001) makes it clear that the instructor's role in orchestrating learning contexts becomes more rather than less complex with the uptake of elearning delivery. Thus, to improve the quality of learner support, content and online communities, there is the need for ongoing professional development for facilitators. Learners can be 'trained' by facilitators to search for learning material and processes that best suit their own learning styles, cultural backgrounds and so on. However, who will 'train' the facilitators to be able and willing to carry out this function? Professional development will be required. Furthermore, structural changes will have to be made within the organisations of education providers both to value the new instructional imperatives and to enable them to be enacted within the organisation.
Jefferies and Hussain (1998) reported that the main disadvantage for students in elearning delivery was slow access speed. They also found elearning costly for students who have to provide a compliant computer, printer and other hardware. Kathawala, Abdou and Elmuti (2002) found that elearning shifted printing costs from the institution to the student.

Factors that affect teachers’ ability to provide flexible online VET (see Smith, Wakefield & Robertson, 2002; Bowles, 2002b; NET*Working Workshop, 2001) include:

- Capacity to access and use technology;
- Flexibility of delivery structures and timetables;
- Availability of physical resources — especially financial, human and physical (technological) assets;
- Capacity of students to move from one RTO under mutual recognition into another RTO and progress easily to the next level of qualification; i.e. national reports such as the IT Training Package Review (Bowles, 2002b:94) have noted across Australia difficulty was being experienced because students coming from school-based VET programs had not achieved the required level of competence to proceed directly onto the next qualification they expected to undertake when entering TAFE or other RTOs;
- Availability of training staff with competencies necessary to:
  - Support development and management of self-directed learning
  - Assess skills and knowledge
  - Directly supervise learning that resulted in the student’s acquisition of authentic work-based, applied competencies
  - Engage in a learning community (community of practice) across multiple workplaces
  - Provide learning resources — human, physical, courseware — customised to the needs of the individual student and the context of learning;
  - Satisfying tight resource (revenue versus expenditure) imperatives;
  - Satisfying the learning styles and preferences of students;
  - Interoperability of not just technologies but also language and content between providers and the student, enterprise or third-party providers;
  - Understanding the pedagogies related to various modes of delivery;
  - Identifying reliable and valid indicators of learning effectiveness for online content; and
  - Supporting students through initial acquisition of the competencies to learn online and/or in self-directed mode.
3.4.8  How do people engage in or complete elearning?

While the literature clearly warns that elearning delivery is far more than a technological matter, technology is still an important element. Volery and Lord (2000) identified the following technology aspects as being important:

♦  Reliability of hardware;
♦  Quality of software;
♦  Richness of medium, including having both synchronous and asynchronous characteristics and a variety of didactical elements (such as text, graphics, videos);
♦  Convenient access for students;
♦  Minimum time for document exchange; and
♦  Good interface design, including ease of use and navigation, appropriate cognitive load, pleasant aesthetics, overall functionality.

Just because there are more than 600 million people worldwide connected to the Internet (according to the United Nations Conference on Trade and Development, 2002:3) does not mean all people with Internet connections can or will access elearning. The availability of channels to market influences how content and technologies are sold as well as the design of supply chains and the design of elearning that can be promoted to a particular market and customer segment. Many potential users simply lack the means to access elearning due to infrastructural or technology limitations.

This section examines some of the major differences in how global customers can access the right elearning content, in the right mode, at the right time.

3.4.9  Synchronous versus asynchronous learning

Elearning may be one-way (synchronous learning) or two-way, also called both-ways (synchronous learning). Synchronous events happen at the same time; for example, chat rooms, or in more traditional technology, telephone conversations. Asynchronous events do not happen at the same time; these include discussion boards, or, more familiarly, posted letters. Synchronous events allow for immediacy, in-the-moment dynamism. Asynchronous events can promote thoughtful discussion. The variety supports different learning styles.

Asynchronous technologies deliver information, content and services one-way at a given point in time. That is, events that do not take place concurrently or in real time.

♦  Email — Email is the most common form of electronic information exchange.
♦  Whiteboarding/eboards — These functions replicate the traditional blackboard in a classroom and allow files and data to be viewed and edited by the learners. Electronic boards permit multiple individuals to create and present images, text and information that other participants can view. It is also possible for stand-alone eboards in physical locations to be linked to a computer and present information generated
on a computer to a classroom, often in multiple geographic locations via the Internet.

- **Application sharing** — The learning advisor and learners can access and work on the same application, program, document or data at the same time, in sequence. Individuals may work collaboratively in applications that permit the generation of spreadsheets, text documents, project plans, music, graphics and so on. All participants can ‘take turns’, while seeing what is happening at all times.

- **Classroom management** — Technologies exist to permit the teacher to log students into ‘classes’, establish breakout or work groups, manage interaction between students and shared applications, and receive feedback. Feedback includes receiving questions or answers in real time across the Internet.

- **Support services** — This includes provision of real-time reporting on learners’ progress, timetabling for classrooms and activities, tracking of student and teacher activities, and authoring tools that permit teachers and learners to generate documents or content.

- **Collaborative learning** — This includes tools that promote learner interaction such as message boards where collaborative questions and answers can be posted by students; text chat or forums within which the learners can communicate outside of the main classroom; and threaded discussions where facilitators or students studying together can ‘discuss’ a given topic.

- **Simulation, project-based group learning or virtual laboratories** — This element of asynchronous learning permits projects and simulations to be constructed and completed by one student or as teams of students. The labs may also permit the student(s) to complete simulations at their own pace.

- **Library/learning session cache access** — Students can access archived text, presentations, video and audio and data files. This is especially useful for reviewing or accessing previous online learning sessions that may have been missed or for revision.

- **Real-time tests and evaluation** — One advantage of using learning in asynchronous mode has been the ability to complete tests online. These can be triggered at agreed times or, alternatively, completed at the learner’s own pace (i.e. self-assessment tests).

- **Video and audio streaming** — These applications use audio and video to present material and disseminate information to learners. It can enable individuals to see and speak with the facilitator via information technology and the Internet, rather by telephone. This includes audio streaming or broadcasts web radio.

- **Broadcast television** — Distinct to video streaming, learning channels and content broadcasts may occur over Internet (iTV) or in Internet Protocol using such technologies as cable, satellite or wireless to be received on computers (desktop or mobile), or by televisions fitted with decoders.
Synchronous learning involves two-way content and service delivery occurring at the same time. This may involve current and emerging methods such as:

- **ICQ/IRC** — interactive conferencing and chat rooms.
- **Teleconferencing and online webconferencing** — audio and visual connections between individuals or groups.
- **Interactive lectures** — where the teacher can see the student and vice versa.

Synchronous learning adds new dimensions to the initial asynchronous modes of learning. Applications can be shared at the same time and embedded into fully interactive lectures using audio and visual exchanges. Blackboards, simulations and threaded discussions can trigger dynamic learning exchanges. Synchronous functions represent the advance in technology that most closely replicates the traditional classroom learning experience. It permits individuals logged into a session to share information in real time. For the lecturer or presenter this most commonly means being able to present to students in multiple locations in real time. The facilitator may be able to present video, audio and document content to the students using a ‘virtual classroom’ that replicates the complete functionality of the traditional brick-and-mortar facilities. Sharing the information is also augmented by real-time, including audio and visual, interaction. Visual and audio interaction in one or both ways is contingent upon connection bandwidth and capacity. Usually the teacher can be seen by all students in real time. In some cases the teacher can see all students and it is even possible for the teacher to permit individual students to switch to view other individuals connected to a synchronous session at the same time.

One of the emerging advantages from synchronous technologies is the use of games, simulations and virtual laboratories for accelerated learning. With high levels of interactivity and real-time response to student interactions, synchronous elearning has actually moved a dimension ahead of what was possible in physical environments.

Nevertheless, synchronous learning faces restrictions. As with such learning in traditional, scheduled classroom sessions, the learner has less control over when they choose to access a synchronous learning session. For many providers and students, the capture (cache storage) of synchronous learning sessions has permitted access by students studying in asynchronous mode only recently.

In both asynchronous and synchronous modes of online learning, the type of Internet connection and the available bandwidth affect the learning exchange.

### 3.4.10 Internet connections — Global trends

The Internet is a major driver of elearning advancement. The ability to participate in online elearning is closely tied to how people access the Internet.

The numbers of people potentially able to access elearning over the Internet has been revised upwards beyond the 300 million population forecasted to exist by the end of 2002. Best estimates by NUA suggest the maximum worldwide Internet population is 605.60 million; this is supported by the United Nations figures (UNCTAD, 2002). The reason for the increase is the sustained growth rates of more than 40 per cent that occurred in Asia and Africa, and more than 30 per cent in Latin America and Europe.
throughout 2001 and 2002. The distribution of the Internet population at the beginning of 2003 is depicted as follows by major region.

**Figure 3.7  Online population by region (total 605.6 million January 2003)**

![Chart showing online population by region](chart1.png)

(NUA, 2003)

The growth of the Internet has also seen a corresponding radical shift from English as the leading language. In 1999 SunTrust (Close, Humphrey & Ruttenbur, 2000) reported that English represented the main language at 92 per cent of the global Internet population. By 2003 this had decreased to some 36.5 per cent of the user population (people possessing Internet connections and accounts). Details are provided in the following figure.

**Figure 3.8  Percentage of total online language populations — total 610 million persons, September 2002**

![Chart showing percentage of total online language populations](chart2.png)


The statistics for the Australian marketplace can be sifted to provide a more granular view of the Internet use population.
Table 3. 6  Supply and demand — the online marketplace in Australia

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of</td>
<td>42</td>
<td>67</td>
</tr>
<tr>
<td>households with PCs</td>
<td>67</td>
<td>53</td>
</tr>
<tr>
<td>Percentage of</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>households with</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Internet connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>individuals sourcing</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>buying information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>online^</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numbers of individuals</td>
<td>803,000</td>
<td>1,344,000</td>
</tr>
<tr>
<td>buying online^</td>
<td>(1999)</td>
<td>(165 mil. online)</td>
</tr>
<tr>
<td>Total consumer</td>
<td>250 million</td>
<td>920 million</td>
</tr>
<tr>
<td>spending online*</td>
<td></td>
<td>42 billion</td>
</tr>
</tbody>
</table>

* Source: consult.com.au (see also DCITA, 2000; Ernst & Young, 2000: 16; ABS 8153.0 Internet Activity in Australia, March 2001; ABS 8147.0 Online Shopping, 2000; Forrester Online Retail Index, May 2001.
^ Includes individuals accessing the Internet at home (32%), at work (25%) and elsewhere (24%).
Note: there were 3.5 million households and 482,000 businesses and government Internet connections as at March 2001.

Key performance indicators for Australians accessing the Internet illustrate a steady growth. The National Office for the Information Economy’s (NOIE) State of Play (2002) confirmed:

♦ 97 per cent of households have telephone connection;
♦ 67 per cent of Australia households own or lease a personal computer (some 4 million households);
♦ 52 per cent of households are connected to the Internet;
♦ 72 per cent of Australians aged 16 years and over have Internet access from any location;
♦ 73 per cent of Australian males and 72 per cent of females aged 16 years and over have Internet access; and
♦ 80 per cent of people aged 16–34 and 68 per cent of people aged 35 years and over in Australia have Internet access.

In 2001, the Australian Bureau of Statistics reported that more than 44 per cent of all adults in Australia had never used a computer (ABS, Cat. 8146.0, 2000:4). By mid-2002 this figure remained around 38 to 40 per cent (Bowles, 2002b).

3.4.11 Bandwidth and access to elearning

Elearning options are impacted by the bandwidth available to the user. The single most important effect of the lack of bandwidth is the type of application and the level of interactivity that can be deployed.

Bandwidth is the information-carrying capacity of a network connection or communication channel. The greater the bandwidth, the greater the carrying capacity and speed of information transmission. For users of the Internet what content and services may be accessed are dictated by the bandwidth available. Ideally, the
A connection should be broadband (high-speed data transmission), which is essentially as high as possible over 56.6 kilobits per-second dial-up modem speed. The following table depicts certain bandwidths from mobile cellular network voice connections at 9.5 kbps to the much larger 2400 kbps.

**Table 3.7 Bandwidth and elearning applications**

<table>
<thead>
<tr>
<th>Application</th>
<th>9.6</th>
<th>14.4</th>
<th>28</th>
<th>64</th>
<th>144</th>
<th>384</th>
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Key

- = Nil capability
- = Uncertain
- = Preferred

(Modified from Sabnani, 2002:18)

The prevailing assumption amongst U.S.-based elearning theorists is that bandwidth will naturally increase with technology developments and so eliminate barriers to elearning experiences (Ruttenbur et al., 2000:84). U.S.-centric predictions need to be tempered against actual adoption in countries outside the U.S. In Australia by 2002, for instance, only 10 per cent of homes had high-speed broadband connections over 56.6 kbps (NOIE, 2002b:19). The cost of connecting on lines over 1200 kbps (1.2 mbps) remained high, especially when measured against U.S. benchmark costs or other countries possessing a low-cost cable network, i.e. Canada (as measured in late 2000, see NOIE, 2002b:29).

**Emergence of wireless and mobile technologies**

Alongside data transfer across mobile cellular networks, use of wireless spectrums (e.g. 802.11a and b — WiFi) offers students and elearning businesses the opportunity to access the Internet anywhere, anytime, using multiple technologies. This section examines the networks and devices (technologies) that can enable mobile elearning (mlearning).

**802.11 networks**

One of the major restrictions on wireless mobile technologies and their adoption for learning purposes has been the absence of standards guiding the use and development of technologies. This absence seriously hindered interoperability (connectivity across networks and access by different devices). In June 1997, the Institute of Electrical and Electronics Engineers, Inc. (IEEE) finalised IEEE 802.11, the first standard for wireless Local Area Networks (LANs) (titled IEEE Standard for Information...
Technology, Telecommunications and Information Exchange Between Systems, Local and Metropolitan Area Networks — Specific Requirements — Part 11: Wireless LAN MAC and Physical Layer Specifications). This initial standard specified a 2.4 GHz operating frequency with data rates of 1 and 2 Mb/s for 802.11.

Due to pressure to increase data rates and the bandwidth available across the spectrum, the IEEE published two supplements to the initial 802.11 standard in late 1999, 802.11a and 802.11b. As with the initial standard, 802.11b operates in the 2.4 GHz band, but includes 5.5 and 11 Mb/s (5,500 to 11,000 kbps) in addition to the initial 1 and 2 Mb/s (Geier, 2002). The 802.11a standard specifies operation in the 5 GHz band with data rates up to 54 Mb/s (54,000 kbps). The advantages of this standard (compared to 802.11b in the 2.4 GHz Band) include much higher bandwidth capacity and less radio frequency (RF) interference than with other types of devices (e.g. Bluetooth).

Devices established to operate in the 802.11a are not immediately compatible with the 802.11b or the subsequent 802.11g solution. Nevertheless, 802.11a networks can be scaled up to 802.11b/g using cost-effective modifications.

802.11b has tended to be the most popular wireless development option in the early twenty-first century. In Australia it is ideal for servicing remote communities or clusters of metropolitan users. It also is directly competitive with 3G (third-generation mobile technologies). Access to 802.11a/b wireless options by LANs of various configuration is assisted by most semiconductor companies producing single integrated chipsets that combine both standards, while manufacturers of plug-in cards for mobile computing devices are producing technologies that can sense the type of wireless LAN access point (either 802.11a or 802.11b/g) (Geier, 2002a).

The extension of the wireless networking technologies (Wireless Local Loop, etc.) has enabled them to directly compete with other technologies, particularly G3, for services. This is depicted in the following figure.

![Bandwidth and competition by technologies for service](image-url)
Mobile phones and 3G networks

While 64 per cent of Australians 16 years and over with current access actually used the Internet, the exact same percentage, 64 per cent, of Australians 16 years and over possessed and used a mobile phone at September 2001 (NOIE, 2002b). In Asia Pacific some 165 million Internet users are expected to exist by the end of 2003; this is in contrast to some 400 million mobile phone users and 25 million mobile Internet connections (India Spearheads Growth, 6 January 2003).

Mobile ’phones are primarily communicating devices. However, they also are a rapidly evolving technology that can stimulate a wide range of new data applications. These include the ability to use mobile ’phones to:

♦ Send and receive short message services (SMS);
♦ Take and send pictures;
♦ Send and receive data files (music, text files, video); and
♦ Access and browse the Internet.

As mobile technologies advance, subscribers are gradually moving away from Frequency Division Multiple Access (FDMA) and the typical second-generation GSM, Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) to third-generation (3G) technologies. 3G include cdma2000 and wideband CDMA (W-CDMA). 3G employs wideband radio frequencies that can create data transmission rates of 2 Mbps (maximum). This fact completely alters the possibilities for applications that can be accessed using mobile ’phones.

Mobile computing and handhelds/PDAs

Personal digital assistants (PDAs) or handhelds are relatively ubiquitous in the business landscape of many countries. In the business sector their functionality has extended to many mobile applications. For instance, bar coding, once the domain of point of sale, stock control and pricing personnel over radio frequency or computer-cable-fixed scanners, can now be integrated with handhelds. The evolution of technology and applications has meant new handheld computers not only can provide powerful scanning capabilities but also can record, transfer and interrogate data more effectively and efficiently than previous manual or electronic means. Handheld devices can scan bar codes, use wireless transmission to immediately update central databases (in many cases using the old radio frequency) and batch or sort data specific to immediate decision-making needs (pricing, ordering, sale monitoring, etc.). Handhelds can also undertake additional functions once performed only by computers. These functions include:

♦ Print records or receipts;
♦ Store data to portable storage devices;
♦ Take photographs;
♦ Read electronic chips and storage devices;
♦ Network with other devices;
♦ Be programmed;
 Communicate across mobile cellular networks as well as wireless networks to access the Internet; and
 Synchronise data across multiple platforms.

There is both convergence and the inevitable integration of capabilities across network technologies and mobile and wireless devices. The following figure depicts the current network available in Australia, while the second illustrates the integration available under the model evolving between 2000 and 2005.

**Figure 3.10 Network architecture today (mobile and fixed phone and wireless)**

![Network architecture today diagram](image)

**Figure 3.11 Network architecture with 3G and Internet protocol integrating mobile and fixed phone and wireless (evolving model)**

![Network architecture evolving model diagram](image)

(Sabnani, 2002: Slides 9–10)
In Australia, 3G infrastructure is still very embryonic. CDMA-2000 deployment is ongoing. Telstra’s W-CDMA will not be in effect until around 2005. At a cost of $1 billion dollars, the deployment will radically alter the types of applications available to the 95 per cent of Australia’s population that can subscribe to the network.

The company Hutchinson has purchased the 10 MHz spectrum in Sydney and Melbourne at a cost of $72 million. AAPT has also explored but made no commitments to roll out services to 10 million Australians across the 800 MHz spectrum it purchased for $36 million (Budde, 2002:66).

Wireless Local Loops (WLL) centred on Very Small Aperture Terminals (VSATs) and satellite technologies are being combined to provide new solutions. These will permit both-way wireless and satellite connectivity over satellite at speeds of more than 2000 kbps both ways (upload and download) while the bandwidth landed will be distributed to users via the WLL using 802.11b on the 2.4 GHz band at rates up to 11,000 kbps. These installations are mostly targeting remote areas where existing services tend to be low bandwidth or unreliable, or metropolitan areas unable to access high-speed services using fixed connections.
Chapter 3  Foundations of Elearning

3.5 What Are the Market Trends in Elearning?

3.5.1 The New Economy — education and knowledge markets

As elearning moved from the computer into the world via the Internet, it advanced together with other technological innovations and economic developments. The Internet spawned and sustained new businesses and markets that traded in information and knowledge. In this New Economy people became the major assets and what they knew represented the new wealth of organisations and societies. Learning became the means to equip employees and communities with the competencies necessary to compete effectively. Against this backdrop, elearning has become a major vehicle to build knowledge and sustain this change.

To build elearning capabilities was to leverage information transfer and knowledge deployment for competitive advantage. Just as in the industrial revolution the machine and tool manufacturers drove the technology that enabled productive capacity to be deployed across all industries, so in the modern era the learning industry is enabling knowledge and information technology workers in all sectors to compete in the New Economy. Elearning and information technology ‘feed’ their own developments to create even more momentum in the transformation process. As reported by Bancorp Piper Jaffray Equity Research (Peterson et al., 1999:72) in late 1999:

. . . rapidly evolving communication technologies have facilitated increasingly faster and vastly improved communication channels and information mediums. During the twentieth century, we have witnessed an escalation in the rate of technological change, producing a nonlinear increase in technological advancement.

In addition, features of the New Economy reinforce the need to move knowledge across electronic networks (Bowles, 2002c:12). These features include:

- Knowledge has a very short life cycle, which requires far more attention to how it will be rapidly and continuously updated by an individual or a company;
- Competency is tied no longer to routine tasks (or skills to complete tasks) but to often complex interactions and ‘know how’;
- Speed is essential as business cycles are shortening and customer demands for improved responsiveness increasingly place greater pressure on business systems and the need for lower cost and more flexible approaches to conducting business and acquiring learning;
- Quality and reliability of products and services is emphasised at all points from producer to retailer to customer to maximise everyone’s outcomes;
- Cost effectiveness needs to be delivered not only with the product and service, but throughout the life cycle of the product and its contribution to the individual or business;
Access to knowledge is required by designated individuals on demand, as required, on time, to their needs and preferences, using all available communication channels;

Systems need to be sustainable in terms of not only what we call ‘effectiveness’ and ‘competitiveness’, but also their ability to evolve and satisfy all the above.

In Australia, John Mitchell (2000c), reported that corporate customers are being driven to elearning by the transition to a knowledge-based economy and factors such as:

- Increasingly competitive global business environments;
- Rapid technological change;
- The migration towards value chain integration;
- Lack of skilled personnel;
- Rapid increase in information technology vendor certification programs (McRea et al., 2000 cited in Mitchell, 2000c).

**Ecommerce and elearning**

Elearning products and services are a form of electronic commerce (ecommerce or e-commerce). Ecommerce can basically be regarded as the tools, capability or broader economic activity covering business, government and consumers to undertake electronic business. Electronic business (ebusiness or e-business) is any business that strategically deploys ecommerce tools and communications tools such as the Internet, intranets, extranets and wireless or digital networks to improve internal business processes or to connect its business systems directly to the end consumers, employees, vendors, government or other communities of interest.

Changes initiated by ecommerce also have impacts beyond the business, affecting communities and consumers. Elearning vendors and educational companies deploy many features of ebusinesses in their own operations (NOIE, 2002b). Advances in ebusiness or ecommerce business models have also influenced business models adopted by elearning businesses (NOIE, 2002b:23).
Figure 3.12 Changes effected by Internet-enabled commerce and learning

Ecommerce may involve business-to-business (B2B) and business-to-customer (B2C) sales. As such, many elearning businesses are part of the ecommerce marketplace. Elearning businesses are those that leverage various ways of delivering content and services, or develop architecture and technology that enables people to complete learning in an electronic context (see Peterson et al., 1999:7). While elearning may be viewed as an ecommerce activity, it can be isolated and studied as a distinct marketplace.

The size of the ecommerce market suggests that products and services of some elearning companies have the potential to migrate into other segments outside the elearning marketplace.

Table 3.8 Worldwide ecommerce: some estimates and forecasts (billions $)

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<tr>
<th></th>
<th>2000</th>
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<td>IDC</td>
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<td>615.30</td>
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<td>4,600.00</td>
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</tr>
<tr>
<td>Emarketer (B2B only)</td>
<td>278.19</td>
<td>474.32</td>
<td>823.48</td>
<td>1,408.57</td>
<td>2,367.47</td>
<td></td>
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</tr>
</tbody>
</table>

(UNCT, 2002:2)

3.5.2 Elearning market segments

Three main segments or activities have traditionally been used to define the elearning marketplace:

♦ Content;
♦ Services;
♦ Architecture or technology.

Content relates to digital format, available for transmission via the Internet, satellite or other mediums using courseware or support materials delivered in asynchronous or
synchronous modes (one-way or interactive two-way). Content includes authors and publishers of intellectual property and licensed resellers.

**Services** include a variety of learning-related services from portals, e-marketplaces for learning (portals or exchanges), online communities and learning service providers, recognition and assessment services and so on.

**Architecture/Technology** includes vendors and developers providing learning-related technology and infrastructure to complete learning, manage learning, manage learning content, host learning (environments), design websites and interfaces and build virtual classrooms and learning environments, distribution and interaction hardware, testing and assessment tools or software and so on.

The major customers components serviced by the three segments listed above in the elearning or digital learning markets (Australia and worldwide) include:

- Corporate sector — workplace, individual modules, workplace oriented
- Academic sector, including:
  - K–12 school division
  - University division
  - Vocational education and training (VET) division
  - Mature-aged students seeking additional qualifications
  - Individuals (home or work)
- Community or general consumer sector, including:
  - Individuals (home or work)
  - Adult learners
  - Lifelong learners
  - Associated community learning initiatives (i.e. learning communities, health, justice, heritage and cultural)
- Government sector

In overall terms, while the so-called elearning marketplace has experienced patchy growth in 2000 to 2001, in early 2002 it picked up again. After the dot.com crash of 2000, elearning technology and content developers suffered from shrinking markets. However, the September 11 event and the current political turbulence as well as the growth of regional economies in Asia have led to the re-emergence of a very strong elearning market growth pattern. In real terms, the elearning marketplace is replacing in-house education and training as a major market force in the global education market and becoming a critical component of the global education marketplace.

### 3.5.3 Forecasting elearning market size — hype and hoax

Market forecasts and value projections for elearning, as was the case for ecommerce and ebusiness, are so huge that it is difficult to translate them into data that is meaningful at the enterprise decision-making level. Some cynical organisational managers are adopting the view that some research bodies think of a number over 10,
place a billion after it and set it as a projected number of transactions or value for any ‘e’ market!

Nevertheless, this report has been compiled at the beginning of 2003, the date elearning forecasters suggested elearning would ‘come of age’. At the turn of the century forecasters had set 2003 as the date when corporate elearning would overtake revenue generation from instructor-led classroom-based corporate training (IDC, 2000; Urdan & Weggen, 2000). These forecasts place a value of US$7 billion on this threshold. For most forecasts this elearning corporate learning threshold had in fact been surpassed by 2002, but overall market growth resulted in instructor-led classroom-based instruction also generating some US$11 billion revenues globally in 2002 (see Table 9). (need to write a or b for IDC)

Predictions of the size of the elearning marketplace vary significantly. Note the following statements on forecasted elearning market growth.

| Table 3.9 Worldwide elearning: Some estimates and forecasts (billions $) |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                             | 1999          | 2000          | 2001          | 2002          | 2003          | 2004          | 2005          |
| Forrester                   |               |               |               |               |               |               |               |
| IDC (US Corporate) (2000b)  | $0.94         | $2.1          | $3.9          | $5.5          | $7.8          | $11.4         |               |
| IDC (Global Corporate)      |               |               |               |               |               |               |               |
| (January 2000)              | $1.78         |               |               |               |               |               | $23.1         |
| IDC (Asia Pacific)^*        |               |               |               |               |               |               |               |
|                            | $0.835        | $1.7          |               |               | $2.34         |               |               |
| Merrill Lynch (Global all  |               |               |               |               |               |               |               |
| sectors 26 January 2001)    | $3.6          |               |               |               |               |               | $25.3         |
| IBM (Global elearning       |               |               |               |               |               |               |               |
| market)                    |               |               |               |               |               |               | $43           |
| Gartner Group Inc. (Global  |               |               |               |               |               |               |               |
| elearning market)           |               |               |               |               |               |               | $22           |
| (www.gartner.com)^          |               |               |               |               |               |               |               |
| Brandon-Hall Total US       |               |               |               |               |               |               |               |
| Elearning market (Adkins     |               |               |               |               |               |               | $10.3         |
| 2002)                      |               |               |               |               |               |               |               |
| WR Hambrecht + Co           | Web —         |               |               |               |               |               |               |
| (Urdan & Wedden, 2000)      | $1.07         |               |               |               |               |               | $11.5         |
| (US Corporate elearning     | Tech’y        |               |               |               |               |               |               |
| market)                    | $2.99         |               |               |               |               |               |               |


International Data Corporation (IDC) dominated the early reporting on the financial size of the international elearning marketplace, although many other commentators (e.g. Urdan & Weggen, 2000; McRea et al., 2000; Peterson et al., 1999) concur with IDC’s estimates. If IDC’s estimate on the market is deconstructed, it would appear that technology-based IT training accounts for more than half the current sales, with technology-based ‘soft skill’ training currently in the minority. The vendors or
manufacturers such as Microsoft, Oracle, Novell, IBM, SAP and Cisco and the like dominate much of this IT training.

At the turn of the century, IDC estimated that the size of the elearning market in the Asia Pacific would be US$1.7 billion by 2003 (IDC 2000a). By the end of 2002, the Australian component of the elearning market was reported to be worth some $900 m. This appeared to be consistent with the 2000 predictions as IDC had forecast that the growth in the Asia Pacific region would be largely driven by Australia, which would account for almost half of the elearning market in Asia Pacific at the end of the forecast period. IT training constituted more than half of the elearning market across Asia Pacific. By late 2002, developments had moved more quickly than predicted. One estimate of the value of software dedicated to teaching and knowledge, as opposed to recreational software, valued the worldwide industry at US$30 billion ($AUD53.5 billion). According to IDC, elearning in the Asia Pacific region was growing by 94 per cent annually. The company predicted that, by 2004, elearning in that region would reach US$235 million and Australia would continue to account for almost half of the Asia Pacific elearning market by 2004 (Harcourt & Burchill, 3 December 2002).

**Figure 3.13 Global educational market 2000–2004**

3.5.4 **International market trends**

The OECD (2001) identifies four education and learning themes and characterises their elearning growth opportunities as follows:

- The early years and compulsory school cycle (representing opportunity for the transformation of existing business);
- The initial tertiary and higher education level usually regarded as ages 18 to 24 (opportunity for transformation and extension of existing business);
- The adult or continuing education (massive growth of new business in new elearning modes); and
- Whole of society learning (a diffuse, intangible market and vision, not yet in focus).
Hambrecht (Urdan & Weggen, 2000) identifies 12 trends in the U.S. elearning corporate market. The research for this project suggests that these 12 trends are also indicative of trends in Australia and parts of Asia.

1. With the proliferation of new providers in the elearning market, many consumers will select the known, brand-name provider, to ensure quality;
2. Traditional training companies are adding the ‘e’ to learning, such as Global Knowledge Network, which previously used classroom-based delivery strategies;
3. Customers will look beyond single courses to providers who can deliver a comprehensive training solution;
4. Elearning companies will buy smaller companies to be able to provide a comprehensive training solution;
5. Elearning strategic alliances between elearning companies will increase; for example, content publishers will combine with educational technology vendors and training services suppliers;
6. Outsourcing training activities are expected to increase by more than 10 per cent each year;
7. Competition between elearning training providers will increase;
8. Elearning and c-learning (classroom learning) are blending rather than one overtaking the other: the strongest use of online training is as an extension of rather than a replacement for classroom learning;
9. Development times for content preparation will decrease, with increased use of templates and learning objects and fewer custom graphics;
10. The adoption of standards for elearning systems will enable content and courseware to be reusable across the whole organisation;
11. Web-based, real-time collaboration tools will become increasingly popular;
12. Internet/intranet will provide instructor-led classes with a sense of community, extra communication and supplementary materials.

While specifically examining VET, John Mitchell (2000a) reported that, in summary, the trends in the Australian online learning marketplace are different from the trends in more advanced markets such as the U.S. Variations between Australia and overseas markets noted were:

- The strong need for a local, on-site Asian partner;
- The need to customise materials to suit local cultures;
- The different education systems in neighbouring countries, some of which have very small vocational education and training sectors;
- The generally low recognition of the value of vocational education and training and the common perception that vocational training is for the poorer classes;
The substantial prestige attached to university qualifications in contrast to the low status accorded to most VET training;

- The growing need for training in vocational areas such as information technology, business and language studies;
- The value of combining face-to-face support with online learning materials; and
- Competition in the market from Britain, Canada, Europe, USA and other Asian suppliers and from large, multinational companies such as News Corporation.

### 3.5.5 Elearning delivery mode and market growth

The global marketplace for educational elearning products and services differs widely from one country to another, in course, type of technology and mode of delivery. Variations occur because of:

- Differing cultural attitudes to online learning;
- Levels of available technical infrastructure and support;
- Skill levels of staff;
- Educational appropriateness and effectiveness of online training for every course and module;
- Impact of government policies and initiatives; and
- Different training needs and characteristics of different industries (Mitchell, 2000a:11; reinforced in Mitchell, 2000b and 2000c).

The following series of figures depict recent research on surveyed trends in elearning within the corporate marketplace, particularly in the United States (Galvin, 2001). While in no way intended to be indicative of all countries, these figures depict both the trend towards blending online with existing course offerings that are facilitated by an instructor, and to using the Web through Internet or intranet connections.

**Figure 3.14 How training is delivered — trends 2000 to 2001, est. 2002**

![Figure 3.14](Galvin, 2001:10)
By 2005, it is expected that the delineation between mode of delivery (technology) and the content segmentation of the market will become blurred. The mark of an advanced and market-differentiated elearning provider will be its ability to integrate technology, content and services:

♦ To permit enterprises and users to avoid proprietorial solutions and allow them to migrate to best-of-breed learning management systems (LMS);

♦ To assist users and providers of education and training by 2003–2004 to operate within an integrated, highly responsive model incorporating real-time, asynchronous and content-management capabilities;
To enable elearning content and services by 2004–2005 to reside within technology that fully integrates with and complements enterprise portals, HR, knowledge and other business applications, and collaborative web-based learning and knowledge exchange systems.

3.5.6 Elearning customer groups in Australia

The composition of and trends in the elearning marketplace in Australia are marked by the absence of reliable data. Major research reported on Online delivery of education and training (2001) concluded that:

It is very hard to find any accurate data on the extent of education and training in Australia, and the data that are available are sometimes confusing and contradictory. (Brennan et al., 2001:19)

Pure elearning delivery is often hard to isolate as the technology is usually an enabler for other delivery methods such as face-to-face group or individual meetings between learners and their facilitators, video or telephonic conferencing or hard-copy materials. The National Centre for Vocational Education and Research suggests that few examples of elearning in its pure form exist in Australia. Instead, 'blended' delivery/learning in varying proportions is the norm, and, as a consequence, little is known about how much elearning delivery is actually occurring (NCVER online, 2002).

The following analysis presents an overview of what is known of the elearning market segments within Australia.

Corporate marketplace

In August 2001, TAFE Frontiers (2001) produced a report that analysed the current status of online learning in Australia. The report surveyed 1,200 of Australia’s largest employing businesses in both the public and private sectors. While fewer than 20 per cent of those surveyed responded, it was quite apparent why businesses were not using or planning to use online learning. Reasons included:

- 20.2% — Not a business priority at this stage
- 14.6% — Budgetary considerations
- 10.3% — Lack of knowledge about online learning
- 10.3% — IT limitations
- 9.9% — No appropriate training product available
- 9.4% — Not appropriate for our organisation.

The Australian Bureau of Statistics reported in 2001 that 26 per cent of the 3.9 million adults accessing the Internet at home in 2000 were doing so for educational purposes (ABS, 2001).

The following chart is presented with some reservations as it is an extrapolation based on surveys of small business use of learning technologies in relation to IT training.
Figure 3. 18 Percentage of surveyed businesses that were using specific learning technologies to acquire IT skills — 2002

Although the above includes CD-ROM the extrapolation is generally consistent with the 12 most commonly implemented elearning practices as surveyed by Monash University in 2002.

Figure 3. 19 The 12 most common forms of elearning practice in Australia (2002)

The latest research, released at the end of 2002 by Monash University (Boulton, 2002), on how 188 Australian manufacturing companies are deploying elearning provides the most reliable indication of two important issues: reasons for deploying elearning systems, and reactions data. This is detailed in Figure 3.20.
The reviews completed by Bowles (2002b; 2002c) and the investigation by Boulton (2002) all confirm the predominant focus on using elearning to acquire IT skills and knowledge. They also confirm the cost and lack of availability of bandwidth and suitable content providers as major barriers to the deployment of interactive two-way and live-expert elearning sessions.

Boulton also provides some of the first Australia-wide insights into both executive confidence and learner satisfaction (pre-entry) and perception (post-training) with elearning.

Boulton’s research provides less reliable but indicative support for anecdotal belief that many companies are focusing on short-term reasons for implementing elearning in Australia.
Figure 3.22  Employer motivation for adopting elearning

The Boulton survey focused on manufacturing companies. Their operations ran 24 hours a day using multiple shifts. The issue of flexibility was a core one in terms of learning design and access. The survey confirmed that elearning was considered easier to organise and meet individual learner needs.

Overall, Boulton’s survey indicated strongly that evaluation of elearning was not occurring beyond the Kirkpatrick levels of reaction and learning, to include behavioural data and outcome measurement (Donald Kirkpatrick proposed four levels of evaluating educational outcomes; see Kirkpatrick, 1988). Between 48 and 70 per cent of respondents did not know how elearning was contributing to reductions in training costs, development time and competency transfer, cost per hour of contact time, or overall return on investment (ROI) (Boulton, 2002:15).

University students

The 2001 Universities Online Report (Bell, Bush, Nicholson, O’Brien & Tran, 2002) found that 23 Australian universities were offering a total of only 207 fully online courses. Of these, the majority (90 per cent) were at a postgraduate level.

Table 3.10  Online university courses 2001

<table>
<thead>
<tr>
<th>Level</th>
<th>Online courses</th>
<th>Online courses available only online</th>
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<tr>
<td>Undergraduate</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>187</td>
<td>58</td>
</tr>
<tr>
<td>Other mode</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>207</td>
<td>65</td>
</tr>
</tbody>
</table>

(Bell et al., 2001:11, 14, 16)

In general, postgraduate online courses show a tendency towards specialised subject areas rather than generalist qualifications. More than one quarter of the 207 fully online courses were in Management and Commerce (55 courses). Education represented a further 35 courses and Health 32 courses. The remaining 85 courses
were spread across Natural and Physical Sciences, Information Technology, Engineering and Related Technologies, Agriculture, Environmental and Related Studies, Society and Culture, Creative Arts and Mixed Programs (Bell et al., 2001:ix).

While overall numbers of courses taught totally online remain modest, web-based learning is apparently widely used to support units delivered across most universities and most faculties (Bell et al., 2001:27). This is confirmed by the following.

Table 3.11  Total university units of study by level and by online access 2001

<table>
<thead>
<tr>
<th>Level</th>
<th>Total units</th>
<th>No Internet</th>
<th>Optional</th>
<th>Compulsory</th>
<th>Fully online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>63,498</td>
<td>44.4%</td>
<td>42%</td>
<td>5.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>30,378</td>
<td>49.3%</td>
<td>35.9%</td>
<td>4.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>93,849</td>
<td>46.0%</td>
<td>40.0%</td>
<td>5.3%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

(DEST, 2001)

With respect to online learning, it was shown that 29 universities used WebCT and 17 Blackboard proprietorial solutions. Only 20 had their own in-house solutions for learning systems, learning environments, middleware or similar. Only 4 of the universities with in-house solutions had implemented in-house course management and learning systems across all faculties. For most students, content could therefore be accessed and transferred only with appropriate proprietorial technology or applications.

Figure 3.23  Learning systems used by Australian universities 2001–2002

(Bell et al., 2001:22)
Vocational students

The VET sector in Australia has completed the most extensive analysis and reporting on the use, deployment and markets for online learning. These national reports were examined during compilation of the Research Report. Interestingly, very little within those reports, which were commissioned by government and public educational bodies, seems to have a commercial focus. None of the literature sourced, for instance, reported the level of activity across different elearning modes (CD-ROM, computer-based, online, etc.) or the level of activity within different industry sectors or market segments. Nor do the reports that were specifically commissioned to investigate flexible and online VET marketplaces isolate and confirm the size of the elearning component of the marketplace in Australia or its region (Mitchell, J., 2000a, 2000c, 2001; Mitchell & Wood, 2001a & 2001b; TAFE Frontiers, 2001; Brennan et al., 2001; NCVER, 2002).

What can be confirmed based on the reports is the overall size of Australia’s vocational education and training (VET) market. The apprenticeship and traineeship system has experienced huge growth since 1995, with 136,000 contracts of training (apprenticeships and traineeships) growing to 334,370 apprentices and trainees in training by March 2002. New apprenticeships now make up half of the numbers in training, compared to 10 per cent in 1995. Women now constitute more than 35 per cent of all trainees and apprentices, compared to 5 per cent in 1995.

Based on the National Centre for Vocational Education and Research’s first quarter in 2002 VET statistics, the following observations about VET in Australia can be made:
In the March quarter of 2002 the increase in apprentices and trainees in training was occurring in non-trades areas and in part-time traineeships and apprenticeships (23 per cent of the total in-training, up from 18 per cent at 31 March 2001);

School-based apprentices and trainees accounted for 2 per cent of the total in training;

There were 114,490 female apprentices and trainees in training, accounting for 34 per cent of all apprentices and trainees, an increase from the 33 per cent reported in March 2001;

There were an estimated 227,860 commencements in the 12 months ending March 2002, up 7 per cent from the previous 12 months;

In 2000, more than 7 per cent of VET students were still attending school while undertaking VET, and at least 10 per cent were recent school leavers (i.e. completed school in either 1998 or 1999);

There were an estimated 104,530 completions in the 12 months ending March 2002, up 23 per cent from the previous 12-month period.

Table 3.12 gives an indication of the gradual increase in numbers of persons in post-compulsory education. It also permits comparison across all the post-compulsory sectors.

Table 3.12 Applications to enrol in post-compulsory education and training by people aged 15–64 years ('000)

<table>
<thead>
<tr>
<th>All persons studying in May that year</th>
<th>1996</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gained placement but deferred study</td>
<td>199.3</td>
<td>182.5</td>
<td>176.2</td>
<td>188.0</td>
<td>185.4</td>
</tr>
<tr>
<td>Unable to gain placement</td>
<td>106.4</td>
<td>75.1</td>
<td>83.5</td>
<td>92.3</td>
<td>86.0</td>
</tr>
<tr>
<td>Total VET</td>
<td>67.3</td>
<td>44.0</td>
<td>47.7</td>
<td>59.2</td>
<td>53.4</td>
</tr>
<tr>
<td>TAFE institutes</td>
<td>48.3</td>
<td>35.3</td>
<td>35.2</td>
<td>45.8</td>
<td>40.5</td>
</tr>
<tr>
<td>Other VET(^b)</td>
<td>19.0</td>
<td>8.7</td>
<td>12.5</td>
<td>13.4</td>
<td>12.9</td>
</tr>
<tr>
<td>Higher education</td>
<td>25.3</td>
<td>18.3</td>
<td>22.9</td>
<td>20.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Study not for a recognised qualification</td>
<td>13.8</td>
<td>12.8</td>
<td>12.9</td>
<td>13.1</td>
<td>13.6</td>
</tr>
<tr>
<td>Applied to enrol for that year</td>
<td>2 433.9</td>
<td>2 389.3</td>
<td>2 402.8</td>
<td>2 537.5</td>
<td>2 527.8</td>
</tr>
<tr>
<td>Total population</td>
<td>12 042.1</td>
<td>12 187.0</td>
<td>12 340.9</td>
<td>12 482.6</td>
<td>12 652.7</td>
</tr>
</tbody>
</table>

\(^a\) Revisions for applicants not receiving a place in post-secondary education include: the course was full; the course was cancelled; they were not eligible; their entry score was too low; they applied too late; or other reasons. \(^b\) Includes other educational institutions not separately listed.


Online lifelong learning and adult education students

In 2000, the National Centre for Vocational Education research estimated that approximately 1.1 million to 1.3 million people, or 7.5 per cent to 8.5 per cent of Australia’s adult population, were enrolled in some form of Adult and Community Education (ACE). This ACE activity amounted to an estimated 25 to 30 million hours of learning for all learners across Australia (NCVER, 2000).

Vocational ACE programs, which in 2000 accounted for almost half of all ACE students (49.8%) and almost 70 per cent of ACE annual hours, are designed to:
♦ Develop specific vocational skills;
♦ Impart knowledge required in specific professional contexts; and
♦ Prepare students for entering vocational programs by providing general skills in literacy, communication, language and so on.

**Figure 3.25 Participation in ACE in Australia by type, 2000**

The skills that ACE students acquire through vocational training enable them to:

♦ Gain a nationally recognised qualification;
♦ Enter or re-enter the workforce;
♦ Retrain for a new career; or
♦ Upgrade their skills for an existing job (NCVER, 2000:7).

Nationally, more than 75 per cent of all students commencing ACE programs and 80 per cent of all contact hours for adult learning were delivered through non-TAFE delivery structures such as community and private organisations. More than 64 per cent of students were aged 35 and over and nearly 70 per cent were female (NCVER, 2000:9).

**Overseas students**

A key target segment for online education players is the distance learning market. In 2002 the total value of the Australian education exports was approximately AUD$4 billion. Some 27 per cent of these students studied in Australia (IDP, 2001; see [www.idp.edu.au](http://www.idp.edu.au)). Figures confirming actual online delivery of Australian courses from all sources to international students are not available at the time of writing. Early estimates in late 2000 by educational vendors do, however, suggest that the online and distance education services in Asia would equal the US$4 billion income from education exports achieved in 2000 (McKey, 2000 from NextEd, [www.nexted.com](http://www.nexted.com);).

The size and growth potential of education and training in the Asian region is self-evident. Numbers of students at universities in Asia are expected to grow from 28 million in 1998 to 45 million in 2010 (IDP, 2002).
Higher education in Australia is of an international standard with more overseas students per capita than the U.S., the U.K. or Canada. The majority of these students come from the Asian region. As a result, Australia has the opportunity to be a world leader in the provision of online education and training, particularly to Asia. However, it must capitalise on the first mover advantage quickly.

The infrastructure and other resources of brick-and-mortar institutions in Australia even with the efforts of domestic governments will simply not be sufficient to meet the increased demand by overseas students. Offering course offshore (in students’ home countries) and by distance education is the best solution for those universities attempting to satisfy unmet demand while also redirecting demand away from classroom-based options.

Many students are attracted by the perceived value of qualifications from universities in countries such as Australia as well as the U.S., U.K. and Canada. There are, however, significant limits on the number of overseas students who can come to Australia to study, both as a result of language, the high cost and other entry prerequisites enforced by institutions. Accordingly, a mix of offshore and onshore learning has been found to be a highly effective means to assure the educational standard of overseas students before they enter Australia. Some components of courses are completed either via distance and elearning, or through partnerships with providers in the student’s country of origin. The final components of a course is completed off-shore at the institution. This reduces time away from the country of origin and increases the institution’s confidence that prior study has evidenced sufficient quality of the student’s work.

### 3.5.7 Market share

The corporate user market is the fastest growing component of the elearning market. This market spans content, services and technology segments.

The global corporate elearning market generated nearly $US2.3 billion in 2000, and is on track for a growth rate of more than 50 per cent, which will allow it to exceed $18 billion in 2005, according to International Data Corp. (IDC, 2001). By 2003, it is expected that 40 per cent of corporate spending on training will be elearning related (IDC, 2001). Research by the U.S. government confirms that the U.S. corporate market for elearning will exceed $7 billion by 2002, representing a compounded annual growth rate (CAGR) of 98 per cent from 1997 to 2002. In 2001 to 2002, basic CAGR analysis was confirmed at 35 to 50 per cent for global elearning.
Content providers not only experience the greatest growth but also represent the largest segment in the market. While technology providers grew by 7 per cent in 2001–2002, content providers grew by 61 per cent (IDC, 2002).

Table 3.13 The major competitors and their international market share

<table>
<thead>
<tr>
<th>Company</th>
<th>Sales (US$'000m)</th>
<th>EBIT (US$m)</th>
<th>Annual revenue growth (one year %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content providers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smartforce plc</td>
<td>$170.6</td>
<td>$23.4</td>
<td>22%</td>
</tr>
<tr>
<td>DigitalThink Inc.</td>
<td>$22.5</td>
<td>$49.0</td>
<td>486%</td>
</tr>
<tr>
<td>Skillsoft Corp.</td>
<td>$13.1</td>
<td>$26.1</td>
<td>&gt;500%</td>
</tr>
<tr>
<td>Provant Inc</td>
<td>$215.7</td>
<td>$10.5</td>
<td>57%</td>
</tr>
<tr>
<td>Prosoft Training.com</td>
<td>$25.3</td>
<td>$2.0</td>
<td>125%</td>
</tr>
<tr>
<td>Median growth</td>
<td></td>
<td></td>
<td>91%</td>
</tr>
<tr>
<td>Technology and services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Click2Learn.com, Inc.</td>
<td>$41.0</td>
<td>$16.0</td>
<td>400%</td>
</tr>
<tr>
<td>Learn2.com, Inc.</td>
<td>$27.9</td>
<td>$20.5</td>
<td>407%</td>
</tr>
<tr>
<td>Vcampus Corporation</td>
<td>$9.7</td>
<td>$11.3</td>
<td>(21%)</td>
</tr>
<tr>
<td>Caliber learning Network</td>
<td>$24.7</td>
<td>$28.3</td>
<td>70%</td>
</tr>
<tr>
<td>ITC Learning Corp.</td>
<td>6.6</td>
<td>8.3</td>
<td>(10%)</td>
</tr>
<tr>
<td>eCollege.com</td>
<td>11.4</td>
<td>32.2</td>
<td>179%</td>
</tr>
<tr>
<td>Saba Software</td>
<td>26.3</td>
<td>67.2</td>
<td>&gt;500%</td>
</tr>
<tr>
<td>Docent Inc.</td>
<td>5.9</td>
<td>59.8</td>
<td>46%</td>
</tr>
<tr>
<td>Median growth</td>
<td></td>
<td></td>
<td>58%</td>
</tr>
<tr>
<td>Median all companies</td>
<td></td>
<td></td>
<td>70%</td>
</tr>
</tbody>
</table>

Source: Company websites and SEC filings; www.wmswordco.com, 2002
A full list of Australian elearning companies and their areas of expertise is contained in Attachment 1. A list of all U.S.-based elearning companies, by market sector, can be sourced from a Special Buyer Guide Report in *e-Learning Magazine* (November/December 2002, or from [www.elearningmag.com](http://www.elearningmag.com)).

### 3.5.8 Barriers to market entry

Barriers to entry into this emerging market and its known segments include:

- Inability to secure major customers prepared to pay for content conversion and transmission across digital networks;
- Lack of understanding of customer needs by both broadcasters and customers;
- Lack of access to networks with capacity to carry interactive content;
- Lack of online expertise of teachers and deliverers;
- Inability to package content on demand to customers’ needs;
- Lack of content and qualifications differentiation in the marketplace;
- Cost of start-up using facilitated programs; and
- Complexity of education and training requirements across different countries and regions and levels of education.
3.6 Summary

In setting the parameters for a broad-based reinvestigation of elearning this study has not depended on the base established by one or a few authors. Nor has this study started by conducting a literature review of all authors and then completing a comparative finding. The approach adopted has been to examine all available research and test it against applied outcomes.

The parameters for a definition of elearning have been derived from an examination of elearning by academics and practitioners writing on the topic. This examination has been augmented by analysis of investment and financial reports about the market size and forms of products and services encompassed by elearning.

Even at this early stage of the Learning to Elearn project it is possible to see that elearning intersects across fields of thought and practice and elearning cannot be trivialised into a single formula for success. Definitions and writings on the ‘theory’ of elearning encompass a huge array of academic perspectives and a complex set of interactions across training and education, learning and knowledge, technology and individual market segments (users).

Many of the criticisms about elearning being poorly conceived and designed, boring and unable to transfer the required knowledge specific to the individual’s needs can be applied to all forms of learning. It should be noted that the criticisms of distance and open learning are very similar. Elearning has inherited many of the expectations and false promises of flexible and distance education.

*The most talked about sector of e-learning is the K–12 market. Highly analyzed, discussed, debated and dissected. Why? It is the biggest market ($350 billion in U.S.), it is the most controversial (publicly funded institutions that serve children), and it is the most criticized. (Block & Dobell, 1999:88)*

In some cases, the focus on elearning can be defended because online learning was intended in many cases to augment and improve distance and flexible learning. In other cases, online learning was clearly intended to replace pedagogies employed in distance education. However, online learning had not reshaped user expectations as to what its relationship is with distance and flexible learning, or how elearning can advance existing pedagogies. In a new or emerging industry, such as elearning, the field of study is sufficiently immature for theory on key concepts and understandings across different dimensions to still be emerging.

Any investigation of the effectiveness and efficiency of elearning has to occur across multiple dimensions. These dimensions will include researching elearning through better appreciation for the effect and role of elearning in:

- Knowledge and learning;
- Competent performance;
- Organisational transformation; and
- Service and transactions between individuals.
To derive a foundation definition, a set of logical statements are presented on elearning. These include:

♦ Elearning is encompassed under distance and flexible learning and itself encompasses any form of learning distributed across technologies including web-based, online, computer-based, Internet Protocol, content distribution architecture and networks (Internet, intranet, extranet, mobile, cable, television, satellite and wireless), and fixed storage devices (CD-ROM, DVD, data storage cards, disks or tapes).

♦ Elearning is both a mechanism to transform individual and organisational performance and subject to the dynamics of socio-technological evolution.

♦ Elearning may be synchronous or asynchronous, self-paced or instructor-led, a process or a single event, online or offline, or any combination of these modes.

For this research report, a broad definition of elearning is advanced for the purposes of later research and comparative analysis:

Electronic learning (elearning) can be defined as a learning experience involving the acquisition or transfer of knowledge delivered or transacted through electronic means.

This definition will enable research not only to investigate the foundation for efficient and effective elearning, but also to provide a basis to investigate the following observations derived from the research illustrated in this chapter.

Critical observations derived from an examination of the research and literature establishing the foundations of elearning include:

**Observation 3.1**
By adopting narrow definitions of elearning that ignore emerging technologies (i.e. non-browser-based, mobile and other innovations), online learning and even more specifically, web-based training technology and content providers needlessly limit future opportunities.

**Observation 3.2**
The market is maturing to a point where inconsistent, technology-based definitional parameters and vendor and investor forecasts employing definitions from 1998 to 2001 no longer offer a reliable insight into elearning advancement around the globe or any useful user or organisational-level data on the full range of electronic technologies, satisfaction levels, enabling behaviours, needs and preferences, or trends. This is especially the case in Australia and Asia.

**Observation 3.3**
Learning is a constant, so the elearning debate should shift its focus from the technology perspective to the learning perspective, including what the technology can do for individuals.
Observation 3.4
For the purpose of this Investigative Research Report, elearning can be broadly defined as encompassing a learning experience involving the acquisition or transfer of knowledge delivered or transacted via electronic means.
3.7 References


Chapter Overview

Abstract

In this chapter the researchers undertake a substantial investigation of knowledge to raise expectations about the knowledge capital generation capacity of learning and therefore elearning activities.

Understanding the distinction between learning, knowledge management and knowledge capital (or intellectual capital), and framing understanding of knowledge and the multiple ways learning contributes to the creation of knowledge capital assets, is fundamental to how elearning can promote knowledge transfer.

The concept of learning is discussed and the difference between training and education, reviewed. The Bloom taxonomy (1956) is revisited to assess the complexity of learning and cognitive skills and the implication for the design and implementation of learning activities, content and assessment tools. This analysis moves on to examine cognitive and learner-centred approaches to learning in the context of ‘alternative’ types of learning such as action, situated, scenario-based and serendipitous learning. This leads to a consideration of learner-led learning (pull) and instructor-led learning (push) and the transformation to the former to engage individuals in making learning meaningful to them, their applied context and the capabilities sought by organisations. A self-discovery approach encourages individuals to adopt a ‘sensemaking’ approach to learning, problem solving and development of cognitive frameworks.

In researching ‘What is knowledge’ it was found that the word is often used ambiguously. Many have developed categories, typologies, structures, levels and other means of defining knowledge. A knowledge taxonomy with three broad levels was presented from Bloom’s work in order to integrate a range of perspectives.
Learning is the crucial process of leveraging knowledge assets that an organisation may not and in some cases cannot own. The structure and type of knowledge is discussed in the context of the relationship between data, information, knowledge and wisdom; migratory and embedded knowledge; tacit and explicit knowledge; and embodied, embrained and encultured knowledge. This examination led to understanding that for elearning to be effective and efficient it must be consciously framed with regard to the type of knowledge.

A survey of the literature identified that knowledge held by organisations and individuals has a capital value that can be managed, evaluated and manipulated. The value is not just determined by possession but also by the processes that impact the acquisition, transfer and generation of organisation knowledge. The combination of knowledge management and learning processes can promote an organisation's agility and responsiveness to new and emerging customer demands.

Next, the researchers evaluated leveraging knowledge asset value encompassing concepts of human capital, structural capital, intellectual capital (or knowledge capital), social capital and the relationship to individual competence, organisation capability and competitive advantage. This examination found that maximising capital value of knowledge assets requires recognition of the volatile mix of the dimensions; the variations in context; and the importance of social capital networks, groups and communities. It also must recognise the individual and social dimensions that promote tacit knowledge assets required to be responsive, agile and able to generate capabilities to meet potential market demands.

Learning is the key to maximisation of knowledge capital assets. The true determinant of effective management of elearning may therefore reside more in an organisation's capacity to harness all the knowledge able to be accessed by individuals who can contribute to operational outcomes.

**Chapter Proposition**

Proposition 4.1

Revisiting existing research on learning and knowledge not only may help disentangle their role in elearning, it may also clarify how approaches to knowledge transfer may be enhanced through elearning.

**Key Themes**

The relationship between learning, knowledge management and knowledge capital (or intellectual capital); differences between training and education; learning styles and domains of learning; taxonomy of the cognitive domain and learning retention; 'alternative' types of learning; elearning — from push to pull learning models — discovery-based learning; blending learning; a knowledge taxonomy; the structure and nature of knowledge; knowledge migration and transferability; learn by doing — knowledge conversion framework; leveraging knowledge assets by elearning; non-financial capital resource pools; the transfer of knowledge and organisation capability; comparison of types of knowledge; defining social capital and its value to organisations; creating knowledge through learning; and learning and organisational knowledge assets.
Graphic Overview of Chapter

Using elearning to convert information into organisational knowledge:

Dimensions of learning and knowledge

Potential sources of corporate knowledge

Information

Knowledge

Tacit or Explicit

Migratory or Embedded

Elearning
4.1 Introduction

In the Information Age or so-called New Economy, the ever expanding array of products and services includes the knowledge to access information across a broad range of choices. Economic change is being impelled by global markets and rapid evolution in technologies. The impact of these changes has irrevocably forged the valuable relationship between learning and knowledge. The importance of learning to acquire, transfer and expand knowledge has become apparent not only as a means to respond to change, but also as a gauge of an individual’s, group’s, organisation’s or society’s capacity to survive and compete.

Where once knowledge capital and learning, information and knowledge management would not even appear in the same text, now they have become closely interrelated and meshed into single documents. All these terms represent different perspectives on interrelated topics. Theories and definitions abound on all these terms; without limiting later study these critical terms can be broadly distinguished as follows:

**Learning** refers to the acquisition and possession of knowledge obtained through experience and study;

**Information** at its simplest level refers to structured data organised and communicated to transfer knowledge;

**Knowledge** refers to data and information structured for an agreed purpose;

**Knowledge management** refers to the management of information flows in an organisation to maximise its application to productive purposes desired by the organisation for current or future productive purposes and value creation as determined by the organisation’s core strategic intent;

**Knowledge capital or intellectual capital** refers to the knowledge, in all structures and forms, that can be attributed a value in terms of adding to the organisation’s productive capacity or market competitiveness.

The distinction between these terms, especially in the context of understanding of knowledge and the multiple ways learning contributes to the creation of knowledge capital assets, is fundamental to the understanding of how elearning can promote knowledge transfer. Managing learning to create knowledge has become an essential management activity. This has led to the emphasis on elearning as an improved means to enable knowledge development. However, elearning is not just an electronic, technology-enabled knowledge management process. Nor is it just a way to more rapidly place the right information with the right employee at the right time to generate knowledge capital through more competent employee performance.

To ascribe to such a belief is to trivialise elearning to a point where its true knowledge asset value is diminished and no investment in elearning would ever realise its true capital return.
This chapter explores learning and elaborates on the theoretical and business importance of its contribution to knowledge across multiple dimensions. Through the study of knowledge it is established that learning is inextricably linked with the productive capacity of an organisation. Learning is not a benign value chain activity resulting in information being moved to a higher order ‘knowledge’ or ‘wisdom’. Learning is a process that beyond enabling performance can both re-orient and shape performance and purpose. It can underpin activities that provide the means to orient an individual (internal or external to the organisation) towards the meaningful application of the knowledge required for personal or strategic ends.

To achieve maximum advantage for an individual, organisation or community, learning, including elearning, must be based on a full appreciation of the different sources of knowledge and how the learning can be structured. Learning also has to be able to deal with knowledge that may be invisible, or not ‘known’, to the individual who is required to harness it to achieve personal, customer or community outcomes.

Learning within an organisation is not about converting information into knowledge that individuals can hold and competently deploy for an organisation. Nor is it so contrived that it can develop only knowledge that the organisation owns and deploys to maximise productive capacity or profit. **Learning is more a means to absorb, generate and transfer all available forms of knowledge in order to enhance an organisation's human and productive potential.** To understand this, knowledge must be explored in far more depth and some lessons extrapolated that can be transferred to the deployment of elearning.

Given that elearning involves both knowledge and learning, it can be considered teleological in nature. If those implementing elearning underestimate the dimensions to knowledge, then this will narrow perspectives on the capacity to build effective and efficient elearning at all stages of implementation. The processes of learning and knowledge underpin so many dimensions to performance that trivialising complex relationships impacts multiple systems and levels of outcome.

The purpose of this chapter is to provide a significant investigation of knowledge and raise the expectations about the knowledge capital generation capacity of learning, and therefore, elearning activities.
4.2 Concept of Learning

The ability to learn faster than your competitors may be the only sustainable comparative advantage. (de Geus, 1988:71)

The investigation of research on learning was conducted to enable findings that can be extrapolated to provide a contemporary view on electronic learning and its impact on individual and organisational capabilities.

This chapter explores the well developed concepts of learning and its relationship to knowledge. It is not intended to redefine either term. The exploration is meant to yield understanding on the dimensions of knowledge and subsequently a better appreciation of why and how elearning is important in the management of knowledge in organisations, communities and societies.

The problem with knowledge management (KM) is its efforts to manage knowledge by making it explicit and by codifying it in such a way that ‘we not only know what we know’, but can transfer it to performance as required. Unfortunately knowledge is not that simple, often ‘we only know what we know, when we need to know it’.

This approach provides insights into what learning can and cannot do in relation to knowledge management. Learning is not simply a mechanistic function that can be switched on and off. Humans learn through every interaction with their environment and especially other humans. The learning function cannot simply be oriented by an organisation and ‘switched’ on to transfer knowledge relevant to performance. Not only is it impossible to codify it to make explicit all knowledge an individual will need to ‘perform’, it is undesirable. Learning itself has to be encouraged in all its forms to ensure the capture, transfer and generation of knowledge that people need to work and to collaborate. Elearning is part of this equation. It is in essence another form of learning activity that can be oriented towards the transfer of information required to achieve performance outcomes; i.e. purposeful information or data that holds a knowledge value to the organisation. Often this knowledge is hidden or tacit: unknown to any as a tangible asset until it is required or is leveraged through processes that can be mapped for or articulated only to those involved in the exchange.

4.2.1 Training and education

Defining the difference between education and training is another of the definitional ‘minefields’ elearning traverses. While acknowledging the ongoing, fractious debate about the delineation between the two, this debate is secondary to the main focus of this chapter and the overall report.

The distinction stressed in this section is that education is not just an act or process of educating individuals but also of ‘training’ their minds to think and learn. On the other hand, training is the act of acquiring and transferring knowledge into action. Training and education have complementary but distinct roles.

The problem with education is that many who have experienced education in schools and universities simply have been ‘taught’ what is required to be known to achieve an accepted level of knowledge. Students are often required to embed this knowledge in their memories and actions only as long as it takes to pass exams or complete
academic tests. The learner may not be required to examine facts or complete personal investigation of what the facts mean.

Equally training may require students to perform and apply learning to evidence knowledge transerral. But such activities may be removed from the capacity to repeat these actions later or from understanding the principles underpinning successful completion.

Clearly, the physical and the mental capacity of individuals to learn has to be harnessed together to maximise the effectiveness of training and performance.

Learning as an act and process encompasses both training and education.

### 4.2.2 How people learn

It cannot be pointed out too often that all education is self-education. Teachers may help define procedure, collect equipment, indicate the most propitious routes, but the climber must use his own head and legs if he would reach the mountaintop. . . . The best method of teaching adults yet hit upon is undoubtedly group discussion. (Knowles, 1978: 34–35)

The most important constant in learning is that individuals all learn differently.

According to David Kolb (1981), people learn differently because they have individual preferences for:

- Learning through doing; or
- Learning through thinking.

Doers and thinkers differ in the way they perceive (take in) information and the way they process (do something with) information.

#### Learning by doing

Doers prefer to learn by being personally involved in learning and transforming that learning into action. There are two types of Doers: Pragmatists and Activists.

- **Pragmatists** are interested in theories but only if they are able to apply them in a practical way. As a result pragmatists are very good at finding technical solutions to problems but may have problems dealing with the people who are meant to implement them. They learn by testing theories, questioning and hands-on experience. Engineers are good examples.

- **Activists** rely more on instincts than theories and prefer to get things done without worrying too much about the longer-term implications. They are very good at dealing with people and adapting to new environments but they may also be impatient and occasionally unaware of all the relevant facts. Activists learn by trial and error and have a hands-on approach to learning activities. They want to know how learning will improve their bottom line. Managers are an example.
Pragmatists and Activists are different in that they focus on different aspects of information. Pragmatists attend to theories while activists focus on people issues. They are similar, however, in that they learn by transforming their knowledge into action.

Learning through thinking

Thinkers prefer to stand back and consider the meaning of the new information and are drawn to observation and reflection rather than physical experience. There are two types of Thinkers: Reflectors and Theorists.

Reflectors enjoy being presented with ideas that they can be personally involved in and like discussing, brainstorming and group work. They enjoy learning for the sake of developing greater personal understanding of issues rather than transforming that learning into practice. They are able to get along very well with other people but may have difficulties making decisions and meeting deadlines. Counsellors fit this category.

Theorists are also interested in new ideas and theories but they like to consider these from an intellectual perspective. They are very good at identifying and defining problems as well as planning and developing their own theories but are less able to apply these theories in a practical manner and may be prone to criticism. They learn by thinking through ideas and prefer lectures and reading to small group training. Philosophers and academic lecturers sometimes fit this description.

Reflectors and Theorists share a preference for thinking about abstract concepts and for discovering the underlying meaning of new information rather than using that information to solve any particular problems. They differ in that Reflectors learn from personal involvement while Theorists learn from intellectual analysis.

The implications of learning styles: Training methods and styles

As everyone has their own personal preferences for perceiving and processing information, so too do people have their own preferences for delivering and receiving training. Not everyone enjoys lengthy lectures, but some do prefer to learn this way.

Similarly, trainers have their own preferences for delivering training sessions. Some like to work one-on-one with trainees and encourage them to learn through active modelling and experimentation. This is typified by the coaching model. Other trainers prefer to stand at the front of a classroom and convey their knowledge through lectures or PowerPoint presentations.

The following table is a guide to identifying preferred training and learning styles.
Table 4.1 Preferred training style

<table>
<thead>
<tr>
<th>Preferred Training Style</th>
<th>Preferred Learning Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activists</td>
<td>Coaching, sharing, encouraging students to do</td>
</tr>
<tr>
<td></td>
<td>Trial and error, hands-on practice and learning on the job</td>
</tr>
<tr>
<td>Pragmatists</td>
<td>Questioning participants and demonstrating practical knowledge and skills</td>
</tr>
<tr>
<td></td>
<td>Testing theories and using hands-on practice</td>
</tr>
<tr>
<td>Reflectors</td>
<td>Motivating students to question and find their own answers to problems</td>
</tr>
<tr>
<td></td>
<td>Group discussion and participation, listening to others</td>
</tr>
<tr>
<td>Theorists</td>
<td>Lecturing and providing information</td>
</tr>
<tr>
<td></td>
<td>Private study or group lectures</td>
</tr>
</tbody>
</table>

Children and adults also have different learning capabilities. As children develop so do their brains and the way they learn. For adults learning is shaped by different conditions. In 1960–1973 Malcolm Knowles (1978: 77–78) identified seven conditions that had direct impact on adult learning.

1. The learners feel the need to learn.
2. The learning environment is characterised by physical comfort, mutual trust and respect, mutual helpfulness, freedom of expression and acceptance of difference.
3. The learners perceive how the goals of a learning experience relate to their goals.
4. The learners accept a share of responsibility for planning and operating a learning experience and therefore have a feeling of commitment towards it.
5. The learners participate actively in the learning process.
6. The learning process is related to and makes use of the experience of the learners.
7. The learners have a sense of progress towards their goals.

As outlined in Table 4.2 the climate for the learning exchange can also influence the role of the learner.

Table 4.2 Climate factors influencing learning

<table>
<thead>
<tr>
<th>Climate Factor</th>
<th>Trainer/Coach-Directed Learning</th>
<th>Self-Directed Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motivation</td>
<td>Formal, authoritative, competitive, judgmental</td>
<td>Informal, mutual respect, consensual, collaborative, participative, supportive</td>
</tr>
<tr>
<td>2. Planning</td>
<td>By trainer/teacher</td>
<td>Participative</td>
</tr>
<tr>
<td>3. Diagnosis of needs</td>
<td>By trainer/teacher</td>
<td>Mutual dialogue</td>
</tr>
<tr>
<td>4. Setting goals</td>
<td>By trainer/teacher</td>
<td>Participative</td>
</tr>
</tbody>
</table>
Adults also have very different expectations than children, which impact the learning process. The expectation that learning can fulfill all individuals’ needs is an unreasonable one or a misconception. The following table summarizes the differences in adults and children across certain factors that impinge upon a learning experience.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Adult-to-adult</th>
<th>Adult-to-child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means–ends</td>
<td>Needs to know the ends (what objectives) but will work out the means (how) without help.</td>
<td>Concerned with the means, rather than the ends.</td>
</tr>
<tr>
<td>Need for feedback</td>
<td>Seeks knowledge of results, wants evaluation of performance to provide specific concrete feedback.</td>
<td>Avoids feedback and evaluation. Seeks approval rather than performance evaluation.</td>
</tr>
<tr>
<td>Self-appraisal</td>
<td>Measures own performance against past performance and personal goals.</td>
<td>Measures own performance against those of peers — tries to be the same.</td>
</tr>
<tr>
<td>Role of money as a reward</td>
<td>Considers money a reflection of achievement, rather than an incentive to work harder.</td>
<td>Is directly influenced in job performance by money incentives. Work varies accordingly.</td>
</tr>
<tr>
<td>Sense of responsibility</td>
<td>High personal responsibility for work, if goal achievement is impossible.</td>
<td>Low. Avoids personal responsibility regardless of opportunities for success.</td>
</tr>
<tr>
<td>Challenge</td>
<td>Seeks goals with moderate risk.</td>
<td>Seeks goals with either very low or unrealistically high risks.</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>Obtains achievement satisfaction from solving and overcoming difficult problems.</td>
<td>Obtains satisfaction from finishing a task.</td>
</tr>
<tr>
<td>Follower vs. leader</td>
<td>Initiates action. Could perceive suggestions as inference, if not properly presented.</td>
<td>Follows others’ directions. Looks for suggestions.</td>
</tr>
<tr>
<td>Self-expectation</td>
<td>Adjusts level of aspiration to realities of success and failure.</td>
<td>Maintains high or low level of aspiration regardless of success or failure.</td>
</tr>
</tbody>
</table>

(Field, 1991)

(Based on DIR, 1990:51)
4.2.3 Workplace training

It is important to select the right training method to meet the needs of the individual/team and their organisation. A list of learning opportunities is summarised as following:

On-the-job training

The most frequent use of on-the-job training is to teach employees specific job-related skills. This may be carried out under the supervision of a supervisor, mentor or fellow employee who observes the trainee apply new skills in their normal work setting. The trainer is able to model the required new skills and ensure that the trainee is able to apply all aspects of the new skill set. This training method is particularly suitable for less complex technical skills that are used in the everyday work environment.

Off-the-job training

Off-the-job training usually occurs when it is necessary to gain more complex understanding of technical or conceptual skills, such as team building, mentoring, leadership, web page design and customer service skills. Off-the-job training occurs when people within the organisation do not have the desired skills or are not able to pass them on to others. Off-the-job training in Australia typically is offered:

- At universities (including night school, Open Learning, and regular degree courses);
- By adult and vocational training providers (such as colleges, technical and further education institutes) and private providers (that deliver programs leading to qualifications);
- As industry-certified programs (not leading to a qualification);
- By companies as short courses (such as workshops and seminars);
- By outside training consultants;
- At or as conferences, seminars and lectures; and
- During sabbaticals and placements in other organisations.

Classroom training

Many off-the-job training options utilise the classroom to develop new knowledge in employees. The classroom may be used for aspects of on-the-job training as well, and may take place at a worksite. This form of training enables a large number of students to access learning material at the same time. The classroom also provides an environment that lets the student make mistakes without suffering serious consequences. Often this is important when students need to perfect their skills away from the critical eye of supervisors, or when mistakes can cause damage to people or property.

Self-paced training

This type of learning involves the individual employee learning by themselves, or in small groups of similar employees, using learning resources such as CD-ROMs, online education, distance education, books, periodicals and learning modules. This is an effective way for employees to develop and maintain their learning at their own
pace. It is especially beneficial if conducted in partnership with networks of other learners and with input from mentors or coaches.

**Coaching and mentoring**

Coaches and mentors provide one-on-one training and development for employees who have less experience in an organisation.

**Etraining (e-training)**

This encompasses learning in a workplace context via electronic technologies to advance transfer of skills and knowledge (competencies) to an individual or group.

The advantages and disadvantages of each method are detailed in the following table.

<table>
<thead>
<tr>
<th>Method</th>
<th>Cost ($)</th>
<th>Time-frame</th>
<th>Best for</th>
<th>Not recommended for</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-the-job training</td>
<td>Low</td>
<td>Short</td>
<td>Small-scale, job-relevant skills</td>
<td>Complex skills that require in-depth analysis and repeated practice</td>
</tr>
<tr>
<td>Off-the-job training</td>
<td>Moderate to high</td>
<td>Short to long</td>
<td>Broad ranging skills that are complex and require outside expertise</td>
<td>Skills that are relevant only to the organisation</td>
</tr>
<tr>
<td>Classroom training</td>
<td>Moderate to high</td>
<td>Medium to long</td>
<td>Training a large number of employees in skills that require practice or interaction with others</td>
<td>Small-scale, specific skills that are applied directly to the workplace</td>
</tr>
<tr>
<td>Self-paced training</td>
<td>Low to moderate</td>
<td>Short to long</td>
<td>Conceptual skills that require outside expertise, especially for employees with limited time</td>
<td>Small-scale, specific skills that are applied directly to the workplace</td>
</tr>
<tr>
<td>Coaching and mentoring</td>
<td>Low to moderate</td>
<td>Long</td>
<td>Skills that require complex understanding and gradual implementation</td>
<td>Small-scale skills that may be quickly acquired</td>
</tr>
<tr>
<td>Etraining</td>
<td>Low to moderate</td>
<td>Short to long</td>
<td>Skills and knowledge that are required for compliance with operational, legal or competency standards that are required to be transferred to many individuals within a given timeframe</td>
<td>Large-scale interactive sessions that require operational skills only able to be demonstrated in a work-based context</td>
</tr>
</tbody>
</table>

All forms of work-based training have at their core the formation of competencies — skills, knowledge and attitudes — by a trainee/employee through learning that will enable them to attain a standard of learning and/or performance.
The importance of on-the-job training is nothing new; in fact, most vocational learning throughout human history has been on the job. However, the emphasis on providing structure for existing activities and better resourcing work-based training is relatively new. While training conducted in the workplace does not replace all off-the-job training and education it has been recognised that trainees and the company benefit greatly from ‘learning and doing’ within the place of work.

**Off-the-job training** led by instructors is not in danger of being replaced. This method still plays a vital role in the formation of competencies by a trainee outside normal work-based activities. Instructor-led, classroom-based training may include company training facilities located at the place of work or another company-owned or hired location, or a location outside the company (a registered provider contracted for training services, such as TAFE, a university).

**4.2.4 Domains of learning and assessing educational outcomes**

In terms of learning styles and processes, elearning involves a type of ‘distributed cognition’ (Cole & Engeström, 1993) that accounts for the distribution of elements of the learning process between all of its components — human and otherwise. Volery and Lord (2000), for example, defined elearning delivery of learning very much as an adjunct to previous educational processes:

... Online delivery is a form of distributed learning enabled by the Internet. Uses may include the provision of student access to learning resources, the facilitation of communication and collaborative working among and between students and academic staff, the assessment of individual students or groups of students, and the provision of administrative and student support. (Volery & Lord, 2000:217–218)

That is, distributed learning is delivered using elearning technology with learners accessing courses via the Internet or via computer-assisted mechanisms such as compact discs, while working at a computer. As an adjunct to existing practices the technology enables distributed learning, whether education or training.

In an electronic learning environment, as for a physical environment, the assessment of educational outcomes maintains a different focus than the assessment of training outcomes. Often the assessment of educational outcomes occurs through the examination or ‘regurgitation’ of materials and information provided during class activities and lectures. This can often fall short of fully evidencing a student’s understanding (Entwistle, 1992:39). Deeper understanding that goes beyond simple knowledge retention can be evidenced only through applied assessment of the knowledge. Meeting the challenge of renewing assessment methods used in schools and universities has become a major initiative in Australia (Nightingale, Te Wiata, Toohey, Ryan, Hughes & Magin, 1996:6–8):

Traditional forms of assessment have usually focussed on ranking students according to the knowledge that they gained in a subject or course. Assessment methods were designed to let students demonstrate their knowledge in easily measurable ways so that comparisons between them are facilitated. Students’ achievements were viewed in quantitative terms — “How much do they know”. 


The shift from just assessing knowledge in a normative way (a student’s comparative ability compared with other students) has emerged from three key imperatives to:

- Develop and tangibly assess a broader range of learning outcomes and student abilities;
- Maximise the value of the assessment process to guide learning, enrich the learning process and encourage greater feedback; and
- Increase the capacity of the student to evaluate their own performance and practise independent judgment (Nightingale et al., 1996:6).

In practice teachers using norm-referenced assessment usually have a criterion or standard built into their assessment of a student (Nightingale et al., 1996:9). Nevertheless this standard is less likely to be an explicit part of the assessment process or ‘built into’ the assessment tools used. This has meant educational assessment has generated a high-level debate on how higher-order abilities may be assessed to reflect either academic standing or the ‘real-world’ standards required. Normative assessment methods often fail to support assessment of applied knowledge or performance because:

- Knowledge may not reflect the attitude or critical thinking capacity required in a range of real-world circumstances;
- Reliability is very difficult when marking reflects group or class abilities, not contingency or behavioural variables; and
- Validity is often undermined as the tools used to conduct assessment fail to assess application (Nightingale et al., 1996:9).

From a cognitive perspective alone, educators began to question the distinction between elearning based on the criteria that relate only to performance and not to critical thinking skills. More important was how the technology enabled improved learning. Figure 4.1 highlights how individuals learn and retain learning best.

**Figure 4.1 Cognition — learning retention**

![Retention Rate Chart](chi_bassock_lewis_reinmann_glaser_1989_148)

Differentiation of the types of learning and how learning outcomes are framed critically impact what and how assessment criteria are set or assessment tools are shaped. One way of separating out how educational outcomes can be assessed is to use an approach called the taxonomy of educational objectives (Bloom, 1956). This ‘taxonomy’ separates out three main ‘domains’ of learning.
Cognitive — concerned with knowledge (acquisition and application), understanding, thinking/creativity and intellectual abilities; for instance:

- Define a term;
- Describe a topic;
- Read a technical drawing.

Psychomotor — or performance domain concerned with motor and skills application; for instance:

- Type a letter;
- Drive a car;
- Communicate with staff;
- Develop an x-ray film.

Affective — concerned with attitudes, motivation, self-awareness, interests; for instance:

- Show concern for safety;
- Demonstrate sensitivity to problems of the environment;
- Demonstrate lifestyle preference(s);
- Take responsibility for hygiene.

Bloom’s taxonomy of educational objectives serves as a key reference point for the framing of assessment for non-educational outcomes, but also for assessing these outcomes within an elearning context. For instance, how well has the online learning experience delivered the behavioural outcomes required for task performance? The following diagram depicts a summary of the cognitive skills. Such a breakdown of cognitive skills highlights how assessment or learning outcomes can be framed in a manner that isolates the type and level of complexity. Figure 4.2 summarises Bloom’s taxonomy and is then followed by Table 4.5, which details the subcategories of cognitive skills and the verbs and activities that may usefully guide the framing of assessment and learning outcomes.
Using the above paradigm, knowledge can be seen to be akin to simple information transfer. The benefit of the Bloom’s taxonomy is that it enables instructional designers and teachers in the traditional classroom setting to focus research and implement pedagogically sound methods. The taxonomy also promotes differentiation of levels of thinking and development of high-order thinking skills. Bloom’s taxonomy ensures that learning activities, content and assessment tools incorporate metacognitive instructional aspects into their design and implementation. This supports the educative aspect to any learning, whether physical or electronic.

### Table 4.5 Major categories in the cognitive domain of the Taxonomy of Education Objectives

<table>
<thead>
<tr>
<th>Descriptions of the Major Categories in the Cognitive Domain</th>
<th>Illustrative General Instructional Objectives</th>
<th>Illustrative Behavioural Terms for Stating Specific Learning Outcomes</th>
</tr>
</thead>
</table>
| **1. KNOWLEDGE** Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain. | • Knows common terms  
• Knows specific facts  
• Knows methods and procedures  
• Knows basic concepts  
• Knows principles | Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states |
| **2. COMPREHENSION** Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding. | • Understands facts and principles  
• Interprets verbal material  
• Interprets charts and graphs  
• Translates verbal material to mathematical formulae  
• Estimates future consequences applied in data | Converts, defends, distinguishes, estimates, explains, extends, generates, gives examples, infers, paraphrases, predicts, rewrites, summarises |
### Descriptions of the Major Categories in the Cognitive Domain

<table>
<thead>
<tr>
<th>Category</th>
<th>Illustrative General Instructional Objectives</th>
<th>Illustrative Behavioural Terms for Stating Specific Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. <strong>APPLICATION</strong>&lt;br&gt;Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.</td>
<td>- Applies concepts and principles to new situations&lt;br&gt;- Applies laws and theories to practical situations&lt;br&gt;- Solves mathematical problems&lt;br&gt;- Constructs charts and graphs&lt;br&gt;- Demonstrates correct usage of a method or procedure</td>
<td>Changes, computes, demonstrates, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses</td>
</tr>
<tr>
<td>4. <strong>ANALYSIS</strong>&lt;br&gt;Analysis refers to the ability to break down material into the component parts so that its organisational structure may be understood. This may include the identification of the parts, analysis of the relationship between parts and recognition of the organisational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.</td>
<td>- Recognises unstated assumptions&lt;br&gt;- Recognises logical fallacies in reasoning&lt;br&gt;- Distinguishes between facts and inferences&lt;br&gt;- Evaluates the relevance of data&lt;br&gt;- Analyses the organisation structure of a work (art, music, writing)</td>
<td>Breaks down, diagrams, differentiates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides</td>
</tr>
<tr>
<td>5. <strong>SYNTHESIS</strong>&lt;br&gt;Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (scheme for clarifying information). Learning outcomes in this area stress creative behaviours, with major emphasis on the formulation of new patterns or structures.</td>
<td>- Writes a well organised theme&lt;br&gt;- Gives a well organised speech&lt;br&gt;- Writes a creative short story (or poem, or music)&lt;br&gt;- Proposes a plan for an experiment&lt;br&gt;- Integrates learning from different areas into a plan for solving a problem&lt;br&gt;- Formulates a new scheme for classifying objects (or events or ideas)</td>
<td>Categorises, continues, completes, composes, creates, devises, designs, explains, generates, modifies, organises, plans, rearranges, reconstructs, relates, reorganises, reviews, rewrites, summarises, tells, writes</td>
</tr>
<tr>
<td>6. <strong>EVALUATION</strong>&lt;br&gt;Evaluation is concerned with the ability to judge one value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organisation) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain statements of all of the other categories, plus conscious value judgments based on clearly defined criteria.</td>
<td>- Judges the local consistency of written material&lt;br&gt;- Judges the adequacy with which conclusions are supported by data&lt;br&gt;- Judges the value of a work (art, music, writing) by use of internal criteria</td>
<td>Appraises, compares, concludes, contrasts, criticises, describes, discriminates, explains, justifies, interprets, relates, summarises, supports</td>
</tr>
</tbody>
</table>

(Bloom, 1956)

Applying Bloom’s model to areas other than classroom practices and assessment of educational outcomes does not reduce the relevance of the taxonomy. Traditionally, the learning experiences in the classroom, the workplace and an electronic environment have required a range of pedagogical issues to be considered. The level of contact with peers and the facilitator and the methods and tools used to assess an individual’s knowledge may vary. However, in the workplace the pedagogies have often not been designed to develop learning experiences that span the cognitive domains. Rather, they seem to have focused more on skills development and actual
performance. The issue of applying Bloom’s taxonomy to elearning may then be revisiting an existing issue centring on the pedagogies adopted for workplace learning.

To some extent, knowledge and understanding underpin all learning and performance. Unfortunately the implementation of elearning and assessment of learning acquired through electronic means has tended to focus on removing or refining the more expensive forms of skills development or classroom education. This focus has caused some problems including:

- Inconsistency in performance;
- Variations in how individuals achieve performance;
- Difficulty developing instruments to consistently assess learning or performance outcomes to an agreed standard, irrespective of the mode of learning;
- An assumption that performance of the skills suffices as evidence that the underpinning knowledge has also been acquired;
- Design of elearning assessment tools that ignore knowledge and focus on collecting evidence of physical, observed performance;
- Design of online assessment tools and methods that give little indication of reliable and valid transfer of knowledge to support performance in the given cultural and work context;
- Criticism that learning outcomes are divorced from performance requirements expressed by individual organisations seeking learning for knowledge that promotes immediate task competence.

There seems to be a general belief that assessment tools for elearning could be framed for technical skills performance or common knowledge and understanding, but not both. Equally, improved methods of assessing skills and knowledge through elearning have been lost in the general debate over education versus vocational training. As the nature of work evolves in the Information Age, the business imperative to develop knowledge that underpins applied performance cannot be underestimated. It is critical to note that skills and knowledge assessment of elearning may not always require demonstration in the physical world. Certainly competencies may be granted to an individual where they successfully perform activities online that support evidence requirements for judging learning or competence.

It is certainly true that many learning outcomes or competencies simply cannot be evidenced through elearning and online assessment alone. That is why blending of classroom and online learning has advanced so quickly through the ‘connected’ world. Blending online learning and assessment with classroom activities can merge the strengths of education and training to address the business imperative to:

- Expand access by and volume of participants;
- Alleviate constraints imposed on accessing brick-and-mortar establishments;
- Develop employees who can apply core skills to changing customer needs;
♦ Use more courses, content and assessment events that have a greater ability to impact creative and innovative practices;
♦ Transfer common knowledge or generic competencies (i.e. induction) for new recruits or young people entering employment;
♦ Promote lifelong learning for all staff in their own time (especially for executives);
♦ Customise teaching practices and content rapidly to change the impact on the organisation (Volery & Lord, 2000).
4.3 Promoting Learner-Led Learning, Instruction and Technology Design

Using technology in an electronic environment to mediate and conduct the learning transaction may be a distinct, and even a radical departure, from previous practices, but this does not mean it is somehow separated from previous practices. Elearning practitioners can learn from previous developments in education and training. The reality is elearning is just a means of implementing education and training. It is an applied response residing in varying education models (i.e. flexible, distance, classroom-based) and pedagogical approaches (i.e. behaviourism and constructivism).

It is the attempt to isolate elearning developments from previous methods of learning and instruction that have disenfranchised many teachers and made the transition from 'the known’ to the ‘unknown’ future of electronic learning more difficult to embrace. Fox and Herrmann (2000:73) stated that teachers are:

. . . reluctant to take up the challenges to use the new online media. Some have deep-rooted concerns about changes in work practices, and others see the huge gap between the rhetoric surrounding technology and the realities of educational settings, while others boldly embrace new media with seemingly little critical pedagogical concern.

Elearning development must be, first and foremost, educationally sound. The balance is not only to engage teachers and users (students) in the design process but to ensure that elearning builds on foundations of sound learning and instruction methods. Oliver and Dempster (2002) confirmed:

Whilst the usability of the IT infrastructure and tools should match against these educational objectives (Dempster, 2002), engaging staff to make educationally sound changes to their teaching requires a genuine understanding of curriculum development and change management.

It is also important to recognise that how learning is packaged has to be reconsidered with elearning, especially online learning. Old content simply repackaged into an online environment does not improve learning. Elearning requires a recognition that new packages are required, that these packages have to be labelled for specific users and that the smaller nuggets of information and knowledge within them must be easily accessed. This requires a focus on not just transfer of skills and knowledge, but how the learning is packaged vis-a-vis how it is applied; that is, learning and doing are linked (Schank, 2001:21). Online learning permits staff to learn in a situation where they can complete actions that fail. They can do this without fear or embarrassment. This enables electronic environments to extend the possibilities for educational practitioners to design types of learning that result in improved learning experiences (Schank, 2001:4).

Different outcomes require different types of learning and instruction. There exists a proverbial ‘jungle’ of learning theories and typologies. Elearning challenges the more traditional behavioural view that instructional technology and electronic media are simply a learning stimuli or a mode of delivery. More recent approaches have shifted the emphasis of elearning from a cognitive approach to education. These theorists stress that learning needs to avoid the concept of the student as an ‘empty vessel’
waiting to be filled with information. They argue for learning as an active and
constructive social process. In this transaction the learner interacts with information
in the environment in order to gain new knowledge. This process of transaction draws
on the individual’s own experience, memory and ‘mental models’, or what may be
classified as their learning ‘trajectory’ (see Chapter 8 on individual variables). The
success of the learning transaction may be influenced by not only how well the
information provided can be transferred to the individual in order to enhance their
learning outcomes, but also how well the process aligns with an individual’s existing
trajectory and personal mental model.

Gagné promotes a definition of learning types by using five major categories of
learning (Gagné, 1985; Gagné, Briggs & Wager, 1992). The types and evidence of
application include:

- Verbal information — is stated;
- Intellectual skills:
- Concepts — are demonstrated by labelling or classifying things
- Rules — are applied and principles are demonstrated
- Problem solving — allows generating solutions or procedures;
- Cognitive strategies — are used for learning;
- Motor skills — enable physical performance; and
- Attitudes — are demonstrated by preferring options.

Gagné argued that the above categorisation offered a means to produce a consistent
insight into the types of instructional activity required for all learning processes and
learning outcomes. For example, cognitive strategies require learning that enables the
learner to change their mental models and embed cognition through application.
Learning to maximise outcomes needs to promote opportunities for practice. To
transfer attitudes during a learning transaction the learner should be exposed to
examples of attitudes in action (mentors, role models or persuasive evidence or the
impact of changed attitudes; for instance, customer satisfaction). The selection of
learning methods directly influences the structure, location and sequencing of
instruction. In addition, Gagné’s conditions of learning theory suggests that the
design, development and delivery media will be shaped by the instructional events
and corresponding cognitive processes (Gagné et al., 1992):

- Gaining attention (reception);
- Informing learners of the objective (expectancy);
- Stimulating recall of prior learning (retrieval);
- Presenting the stimulus (selective perception);
- Providing learning guidance (semantic encoding);
- Eliciting performance (responding);
- Providing feedback (reinforcement);
- Assessing performance (retrieval); and
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- Enhancing retention and transfer (generalisation).

Some researchers and writers classify types of learning and instruction by the mode or media used. This approach can be further categorised as types of learning defined by their transaction method. Such definitions include:

- On the job versus off the job;
- Classroom-based learning or instructor-led learning;
- Distance learning;
- Flexible learning;
- Online learning; and
- Learning communities.

Martin Weller (2002) suggests online learning draws from six main pedagogies. These include:

- Constructivism;
- Resource-based learning;
- Collaborative learning;
- Problem-based learning;
- Narrative-based teaching;

All the above classifications assume that both the type of learning, pedagogy and technology or tools adopted will vary to suit the audience and the outcomes to be achieved. A further means to classify the type of learning can be added. The classification may include formal and structured (i.e. academic or skills-based training with structured outcomes), or unstructured (self-directed). This distinction is important to consider as the transaction process for learning does not have to be structured; in fact, it is argued that the majority of learning completed by individuals over their lifetime is much less likely to be structured. Rumelhart and Norman (1978) suggest there are three forms of learning: accretion, structuring and tuning.

Acrettion is the addition of new knowledge to existing memory. Structuring involves the formation of new conceptual structures or schema. Tuning is the adjustment of knowledge to a specific task, usually through practice. Rumelhart and Norman also indicate that individuals use a mix of these approaches to learn.

Review of general research (Tough, 1999) suggests only 20 per cent of lifelong learning is likely to be acquired by formal transmission or structured enquiry. Formal transmission includes information, knowledge, ideas and skills taught to others through purposeful, conscious telling, demonstration and guidance. Structured effort in this case encompasses efforts by an individual to acquire knowledge through research, experimentation, self-directed enquiry or lifelong learning activities beyond those associated with formal qualifications (see Kearns, McDonald, Candy, Knights & Papadopoulos, 1999). Some argue that up to 80 per cent of learning by an individual over the duration of an average lifetime is through accretion (Tough, 1999). This is where subconscious or experience-based acquisition of social rules, behaviours and roles occurs. A small component (perhaps two per cent) involves tuning, which
results from patterning, structuring and the accumulation of new ideas and meanings that shape a person’s creativity, wisdom and problem-solving capabilities.

### 4.3.1 Cognitive and learner-centred approaches to learning

Ignoring the behaviour theorists’ concept of learning (tipping factual information and knowledge into the proverbial empty vessel), many cognitive approaches to learning have emphasised the importance of the learning process in the overall learning experience.

In many education systems and corporations there has been a drive towards a model of learning dominated by the acquisition of a Learning Management System (LMS) or Learning Content Management System (LCMS) to ‘manage’ off-the-shelf courses. This method of managing ‘courses’ generally seems to be derived from educational paradigms not far removed from traditional classroom-based instruction, implemented to ensure that these organisations can provide just-in-time (JIT) learning, customised to multiple users, at a lower cost per unit. This has often cynically been labelled the ‘spray-and-pray’ approach to elearning (Nichani, 2001:1).

Yet technology associated with elearning can be harnessed to promote more advanced types of learning. Ample examples exist of learning methods aimed at stretching traditional classroom-based instruction. Many of the practitioners of these ‘alternative’ types of learning promote learning in an electronic environment as a means to improve learning and instruction. Some of the more noteworthy examples of these types include:

- Action learning;
- Situated learning;
- Scenario-based learning;
- Serendipitous learning.

**Action learning**

Action learning is both a mode of learning and a means for developing an organisation. Initially advanced by Professor Reg Revans (1982) action learning reinforces the synergistic relationship between learning and action. In effect there is no learning without action, and vice versa.

Professor Revans believed, and strongly advocated, that individuals share and compare real work problems as the basis for learning. He proposed that this sharing and comparing be done in a small group (container), which he called an action learning set. In a set, everyone knows, cares and wants to do something about the problem.

A formula that action learning commonly utilises is

\[
L = P + Q + R,
\]

where **L**earning equals **P**rogrammed instruction plus **Q**uestioning plus **R**eflection. Programmed instruction represents the knowledge currently being used by the organisation/group and ‘programmed’ into the systems of action and interaction. The action learning process enables participants to question current assumptions and
continuously renew not only programmed instructions, but also existing knowledge. The final stage of reflection includes the overall evaluation of the process and making sense of the facts presented. It also permits evaluation of individual, group and organisational outcomes.

Revans (1982) advocated learning based on real problems and involving small teams interacting to solve problems. Subsequent advocates of action learning (Rothwell, 1999; Pedler, 1991; McGill & Beaty, 1995; Marquardt, 1999) and its adherents have heavily influenced how schools and particularly enterprises advance learning. Its strategic focus reinforces the importance of action learning for organisations undertaking rapid change during the late 1990s.

**Action learning is strategic. The central goal is to increase the capacity of individual learners and the learning of the organizations they are associated with to adapt to a rapidly changing environment. It is a marriage of action with reflection that produces the result.** (Dilworth, 1998:6)

Action learning has been especially embraced for its ability to provide benefits, including how:

- Organisations could deploy problem-solving exercises that resulted in collaborative learning, which generated solutions for operational problems;
- Learning is retained by individuals — for instance, instead of solving puzzles (to pre-arranged rules and parameters), real problems or challenges enabled individuals and groups to develop their own frameworks for problem resolution. These processes could be repeated;
- Learning becomes interwoven in the problem-solving process and affects how individuals learn to:
  - Problem solve
  - Learn outside structured contexts
  - Collaborate with others
  - Learn about themselves and their perceptions.

**Situated learning**

Learning is a social activity. Every human action involves learning because individuals adapt as they transact with people, technology and their environment. Perspectives can change as physical skills are acquired, transferred and deployed. It is with this knowledge that theorists have promoted an approach classified as situated learning. Advocates argue that the most effective learning is constructed with relevance to the individual’s situated role (Clancey, 1995:1).

Situated learning is based on the principle that it is impossible to develop a meta-model that can explain each individual’s situation and learning needs. Knowledge held and acquired by individuals is an ‘analytical abstract’ (Clancey, 1995:50). It is a virtual impossibility to assess everything an individual knows. It may be possible to determine explicit knowledge, but on what basis would tacit knowledge be determined? The learning process has to, therefore, not only lead the learner to
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Certain outcomes, but also encourage them to extract further knowledge and skills from participating in the exchange.

It is also acknowledged that the situated role of the learning environment and the providers’ views on the learner likely place constraints on a learning process. The purpose of learning, the description of outcomes, even the ‘value’ of learning’s application in a domain of work or life have been ascribed meaning by the community beyond the individual learner (Lave, 1988:1; Lave & Wenger, 1990:12). The strength of elearning is its ability to offer situated learning practitioners an alternative learning environment that can be ‘controlled’ by the learner. Construction of the learning process can actually be completed by the learner to draw on their mental models and learning styles. The environment can still be used to develop new perceptions and skills that shape action.

Fundamentally, situated learning practitioners promote two tenets:

1. Knowledge cannot be isolated from context and, therefore, learning must present knowledge in an authentic context, i.e. settings and applications that would normally involve that knowledge;
2. Learning is a social interaction and is more meaningful where collaboration is included.

Scenario-based learning

Scenario-based learning places specific, structured learning into a situation or ‘real’ framework. This classification once again reinforces the situated cognition approach where ‘knowledge can’t be known and fully understood independent of its context’ (Kindley, 2002:1). Scenario-based learning, which integrates features of action and situated learning approaches, is emerging as one of the most popular forms of learning. The use of the electronic environment to affect the acquisition of learning outcomes can be coupled with assessment and evaluation designed to confirm the learner’s progress. This presents an opportunity for individuals to immediately make an association between actions and outcomes. As learners change behaviours and achieve outcomes the learning experience is confirmed.

A sophisticated chain of psychological events occurs from the initial phases of learning about a subject to the internalization of habitual behavior required for successful interaction in a learning scenario. These reinforcements must be woven into the fabric of the learning experience. (Kindley, 2002:2)

Scenario-based learning can be designed to encourage the learner to:

- Share experiences;
- Reflect on their own experience before or during learning;
- Judge personal ability to complete scenarios;
- Shape scenarios to actions and a context relevant to the real situation; and
- Refine outcomes to be targeted in the learning process in order to better reflect personal learning and behaviour.
Serendipitous learning

Humans are unpredictable. Often the greatest lessons learnt occur without conscious thought or even rational understanding of the ‘need to know’. Serendipitous learning acknowledges that the human search for knowledge may occur as a by-product to the main task, or by luck.

Knowledge in organisation can no longer be assumed to be highly structured and easy to codify. The modern knowledge worker no longer works in the highly routine jobs that form components of highly structured occupations. Neither everyday tasks nor careers can be seen as static. Individuals cannot acquire one set of skills and knowledge and expect them to last a lifetime. Knowledge workers are therefore the first to insist on access to the knowledge that can update their competence, on demand. They have to be able to search for solutions or answers to problems impacting now. This impels learning and knowledge transfer to not only be highly situated, but also be very dependent on immediate availability. The emphasis here is to get an immediate solution to one’s problem (Nichani, 2001:1).

Often the search for knowledge leads to the individual making associations with other ‘knowledge nuggets’ in a manner that triggers wider understanding. For instance, an individual may search online using Google to obtain quick grabs of information about a specific knowledge area. While conducting the search they may happen across other information that takes them on a learning tangent — one that may be equally important. Serendipitous learning has occurred. However, this learning may not resolve the original line of enquiry.

Structuring information search and knowledge exchanges that can be driven by an individual’s needs seems to fall outside the assumption that access and availability will be determined by known purposes. Courses are packages of knowledge presented to achieve these outcomes. However, some learning requirements are unstructured and more akin to an information-providing service that satisfies an immediate knowledge need. The semantics of the individual’s needs and how the data is accessed and presented may vary enormously (Arumugam, Sheth & Arpinar, 2002:2).

Retention of knowledge acquired by serendipitous learning is very high as the motivation to discover the answer or solution resides with the learner (Nichani, 2001:2). This learning may occur through ‘legitimate peripheral participation’ when new members join existing communities of practice and modify their behaviours or adopt practices (Wenger, 1998:100). Equally, the individual making a ‘discovery’ by chance that is peripheral to core tasks, or by ‘stealing’ it from one source and ‘reinventing’ it in their own context, triggers a series of actions that promote ‘meaning’ (Brown & Duguid, 1992). These actions include placing the knowledge in a situated role, adapting it to fit a mental model and examining the best ways to transfer the knowledge to an applied outcome. The less the central control of this process and the greater the individual learner’s perceptions that they control the process of acquisition or have a ‘unique’ perspective (Cerri, Loia, Maffioletti, Fontanesi & Bettinelli, 1999:19), the more effective this form of learning can be.

Serendipitous learning promotes what may be labelled structured informal learning. It is possible to instructionally design learning or create knowledge transfer activities in
an electronic environment that encourages and allows learners to explore ‘between’ the structured pathways. Metaphors, stories or access to other information may encourage individuals to learn beyond the structured outcomes. Technologies in the elearning field can also be deployed to encourage these outcomes; for instance, use of information agents, games simulations, hypermedia, hypertext to encourage serendipitous learning (Cerri et al., 1999:4–5), or tools that encourage rapid knowledge exchange without central mediation (that is, messaging, mail groups).

Serendipitous learning reinforces the constructivist approach that learners will learn as an effect of communication and interaction. However, the learning can be completed as a conscious effort to design structured formal or informal approaches to elearning content, delivery processes or architecture (technology and tools).

4.3.2 Elearning — from push to pull learning types

All the above examples of learning types stress the importance of learner-led learning (LLL) over instructor-led learning (ILL/ILT). The acquisition of skills and knowledge may be a core rationale for learning, but just as critical is the learning generated as a by-product of a process that actively engages the mind beyond the simple absorption of information. LLL requires the individual to engage in making the learning meaningful to them and seeks to extend their existing capacity. This moves away from a force-fed or supply-driven approach to learning (push), towards a demand-driven one (pull). When the Web was first introduced, John Seely Brown said it provided a new media that, unlike the existing forms:

... from books to television — are one-way propositions: they push their content at us. The Web is two-way, push and pull... Indeed, its user can at once be a receiver and sender of “broadcast” — a confusing property, but mind-stretching! (Brown, 2000:12)

The Web permits designers and instructors to give learners an ‘experience’ that can immediately be related to the real world or encourage experiential learning (Kolb, 1984). In some cases, these experiences cannot be replicated in the real world, e.g. flight simulators, three-dimensional tours of ancient buildings. This in turn reinforces the problem-based or self-discovery pedagogies (Rieber, 2002). The self-discovery approaches also permit individuals to adopt a ‘sensemaking’ approach to learning. This approach encourages individuals to solve their own problems and develop cognitive frameworks to cope with current and future problems (Werkman & Boonstra, 2002:1). This form of learning is actively supported by online learning.

Most of us experienced formal learning in an authority-based, lecture-oriented school. Now, with incredible amounts of information available through the Web, we find a “new” kind of learning assuming pre-eminence — learning that’s discovery based. We are constantly discovering new things as we browse through the emergent digital “libraries”. (Brown, 2000:14)

Simulations-based training is one form of learning that combines many of the features of the above approaches to learning. This is where the learning environment or tools are constructed to reflect real-world activities. Combining visual, text/numerical and interactive media within online simulations can create a learning environment able to develop not only how people do things, but also their mental models of why they need to do things (Rieber, 2002:3). Instructional design of simulations can also encompass
group activities in a manner that enables individual or group ‘learning attributes’ to be factored into the activity. Lloyd Rieber suggests that this enables online simulations to not just outstrip the effectiveness of other forms of electronic simulation (i.e. single-platform or even non-Internet-networked applications), but also permits learning to address individual self-efficacy issues while building patterns of learning that encourage the use of ‘deeper cognitive processing’ (Rieber, 2002:6).

Whether they are scenario-based or other forms of discovery or experiential learning, this pedagogical strategy enables learners to examine significant issues that can be contextualised to real-world situations. The content or learning context can be designed to provide resources, guidance and the instruction necessary to help learners navigate tasks that are performed in the workplace. For the organisation and its management team, effective knowledge transfer through elearning is most likely to be assessed based on how well their employees and customers transfer the acquired knowledge into activities that benefit the company. This means learning in an electronic environment must translate into improved business productivity and profitability. It is clear that corporate elearning can encompass this outcome if management can escape the ‘skills’ and performance mindset and in addition seek a learning exchange to develop situated meaning and identity creation during the learning process.

The possible approaches to discovery-based learning do, however, reinforce different contextual relationships between individuals and groups. The learner, the instructor and the community at large have different situated roles in the process of knowledge transfer. The following table provides an initial look at these roles.

### Table 6.6 Comparative approaches to learning and instruction

<table>
<thead>
<tr>
<th>Knowledge source</th>
<th>Instructor-Led Training (ILT)</th>
<th>Action Learning</th>
<th>Situated Learning</th>
<th>Scenario-Based Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts determine the scope of learning by examining the subject, establishing its components and establishing right and wrong answers</td>
<td>Carefully selected, problems relevant to the situation</td>
<td>Context-based situations/case studies</td>
<td>Domain knowledge and heuristic control and learning strategies are initially modelled by expert</td>
<td></td>
</tr>
<tr>
<td>To explore and satisfactorily complete task or subject to be mastered</td>
<td>Develops critical knowledge to problem solve alone or with group</td>
<td>Creates meaning through explorative activities which can be applied in similar situations</td>
<td>Develops situated knowledge within a real context and may build collective identity on group exercises</td>
<td></td>
</tr>
</tbody>
</table>
### Instructor-Led Training (ILT) vs. Action Learning vs. Situated Learning vs. Scenario-Based Learning

<table>
<thead>
<tr>
<th>Instructor contribution</th>
<th>Action Learning</th>
<th>Situated Learning</th>
<th>Scenario-Based Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitates process, provides mentor/coaching support for individuals and the group and assesses outcomes</td>
<td>Provides guiding questions, resources, assessment exercises and frameworks for individuals within the group to interact and develop their own solutions</td>
<td>Creates opportunities for learners to transfer knowledge into real-world challenges</td>
<td>Provides initial scenario and may coach as much as needed along the way until self-directed competence is attained</td>
</tr>
<tr>
<td>From no interaction to complex interaction required to support learner’s acquisition of knowledge</td>
<td>Provides source for content and context for problems</td>
<td>Provides experts’ input and feedback on real work–based events</td>
<td>Provides mentors or experts able to support learners’ exploration of the topic</td>
</tr>
</tbody>
</table>

These processes are vital because they also reflect the importance of interactivity, tying learning to the individual context and avoiding the reliance on transferring generic, codified knowledge (i.e. textbooks, curriculum) to all learners irrespective of their needs and preferences. Similarly all these negatives described have been shown to be the bane of online learners and the cause of so much reported dissatisfaction with elearning (see Chapter 3 for more detail).

#### 4.3.3 Blending learning

Many of those who adopt elearning do so in a gradual manner. Some replace existing tools or learning components from classroom-based learning or single-platform applications (CD-ROMs, computer-based training and instruction) with online or more advanced forms of electronic learning components. Others use elearning to augment existing approaches to learning. They do this to more effectively accommodate diverse learning styles, learning types, or means of delivery and assessment. Others adopt elearning in a piecemeal approach to control both costs and perceived risks. Risk associated with adopting elearning can be attributed to fear of failure, uncertainty over levels of effectiveness or simply uncertainty over the stability of the technology, in terms of both its use with existing infrastructure and its lifecycle.
Blended (or hybrid) learning is used to describe a learning solution that involves electronic learning in combination with several different methods. As depicted in Figure 4.3, the methods may combine traditional and non-traditional approaches to learning. Bielawski and Metcalf suggest:

"The learning component of the blended learning model relies in blending classroom, asynchronous and synchronous eLearning, and on-the-job training to support the delivery and retention of the knowledge and skills needed to produce performance improvement. (2003:71)"

This is very much the prevailing contemporary view on blended learning. It still embodies the sense that blended elearning most commonly involves computer-based instruction or online programs (delivered across the Internet or Intranet) being meshed or run to support instructor-led, face-to-face training. This blending may involve content and learning resources loaded online; email, bulletin boards and chat rooms for interchange between students and facilitators; or even streaming video or audio presentations.

Blended learning is also popular with instructional designers who are endeavouring to establish more effective learning programs. Classroom-based instructor-led programs can be augmented with elearning to overcome specific disadvantages. Some learning objectives are also much easier to achieve when supported by follow-up elearning after an initial face-to-face session. Incorporating electronic environments or learning technology seems to assist instructional designers to better:

- Balance learning to cover required attitudinal, cognitive and psychomotor outcomes;
- Break learning into more effective sequences or pathways to capability attainment;
- Deal with class size and resource limitations (i.e. removes time and spatial constraints facing classroom delivery);
- Enable collaboration across time and spatial (location, cultural, etc.) constraints;
Provide opportunities for applications that translate into the real workplace;

Enhance the effectiveness of the content available (i.e. audio, visual, text, web-based tools); and

 Permit evaluation of individual and collective learning through use of more effective feedback and assessment mechanisms.

With the availability of synchronous elearning, instructional designers have a greater range of means available not only to introduce new approaches to traditional classroom-based environment, but also to overcome some of the limitations inherent in asynchronous elearning. Blending of asynchronous and synchronous elearning offers teachers and students the features of the ‘classroom’ in an online environment. This is evidenced by the advent of electronic tools such as eboards (interactive whiteboards), chat rooms, elearning facilitator studios and environments where all participants — students and facilitators alike — can view each other and communicate in real time.

Figure 4.4 Blending structured elearning

As depicted in Figure 4.4, blended elearning today is more than combining pedagogies and content distribution models. It just as likely to involve different elearning technologies. This is a step beyond recognising that blending has to apply to learning; it also has to apply to the reporting systems that not only interface elearning outcomes with training efficiency, but report business impact in terms of performance and knowledge management (Bielawski & Metcalf, 2003:20 & 141). As depicted in Figure 4 more sophisticated elearning users are now blending technologies and approaches to affect different business results. This is especially true as businesses seek to shift outcomes beyond the impact on individual learning.
4.4 What Is Knowledge?

Knowledge is a word often used very ambiguously. Many have developed categories, typologies, structures, levels and other means of defining knowledge. Many more work without definitions and assume the meaning of knowledge. As this report shows, this ambiguity is part of the paradox of knowledge.

As suggested by Despres and Chauvel (1999:110):

Knowledge management is clearly on the slippery slope of being intuitively important but intellectually elusive.

This all too closely echoes the current state of elearning. To ensure that this section contributes substance to the debate over how understanding knowledge can assist elearning, and vice versa, it revisits the core taxonomy and the relationship of knowledge to learning and elearning. It should be noted that these definitions are still evolving. It is not possible to draw neat boundaries around and make distinctions between all the dissenting schools of thought. Knowledge, like the subject elearning itself, is a living term with components that will continue to evolve.

The section is divided broadly into three subsections:

♦ A knowledge taxonomy (4.5.1);
♦ Knowledge structure and transfer (4.5.2); and
♦ Knowledge as an asset with value (4.5.3).

4.4.1 A knowledge taxonomy

Existing writings explore a range of perspectives on knowledge application in organisations and these perspectives can be sorted into three broad levels: individual and collaborative groups, organisational and societal.

At the individual and group interaction level, there are the following types:

♦ Knowledge communities;
♦ Communities of practice;
♦ Knowledge alliances; and

At the organisational level, there are:

♦ Knowledge assets;
♦ Knowledge management;
♦ Intellectual or knowledge capital;
♦ Human capital;
♦ Organisational learning;
♦ Corporate intelligence;
♦ Corporate memory;
♦ Corporate wisdom; and

At the wider societal level, one sees:
♦ Knowledge-based economies;
♦ Learning societies;
♦ Knowledge economies; and
♦ Knowledge societies (Masuda, 1990; Nonaka & Takeuchi, 1995, Young, 1995; Amidon, 1997; Castells, 1996).

The profusion of texts about knowledge management has confused some of the simple messages concerning what knowledge management can and cannot do. This confusion is exacerbated by the basic fact that knowledge cannot be sorted and managed based on desired outcomes without first understanding the limitations of such an approach and possessing a very sophisticated understanding of the structure of knowledge.

For instance any organisation that assumes it can establish a knowledge manager to manage knowledge assets in the same way that it manages physical and financial assets ‘has missed the point and wasted money’. This assumption fundamentally ignores the fact that the organisation cannot own all knowledge assets. In fact, the majority of knowledge that contributes to productive capacity and the majority of knowledge assets that can hold a capital value for an organisation are not owned by the organisation — and they do not need to be owned by the organisation. The assets are actually owned by individuals and groups that, in many cases, are external to an organisation’s domain of operation.

The value of learning to the management of knowledge becomes apparent when one accepts that if the majority of knowledge is owned by individuals then its ‘value’ can be measured only in terms of how well individuals and groups transfer information into knowledge that enhances productive outcomes. Both the process of absorbing, transferring and expanding this knowledge and the ability to re-orient and generate new bodies of knowledge in response to emerging demands on the organisation are learning processes. **Learning is the crucial process of leveraging knowledge assets that an organisation does not and in some cases cannot own.**

Knowledge is any body of information (or data) given meaning by its relevance to a particular purpose or set of values. The individual pieces of information which finally form the ‘knowledge’ assume the new category of ‘knowledge’ because they relate together in some way in the eyes of the person using the information.
Knowledge can be divided into four groups (Bowles, 1999b:34):

1) Knowledge of

Having a surface acquaintanceship with people and objects’ existence.

For example, you may know Jane Brown, but not know any more facts about her.

2) Knowledge how

The knowledge of how to do things, such as skills or competencies.

For example, you can know how to fix a TV set, diagnose an illness, use a screwdriver or clean a house.

3) Knowledge that

Prepositional knowledge about people and things.

For example, you can know that there is a computer in front of you because you can show it is there, you believe it is there and there is good evidence for believing it to be there.

4) Accumulated knowledge

This kind of knowledge is often used in reference to an already established body of knowledge, kept by professionals such as lawyers, academics, archivists and librarians; accumulated for later retrieval in such organisations as libraries; and gathered under topic headings such as ‘engineering’, ‘sociology’ or ‘philosophy’.

For example, there is a mass of information in the field of human resource development. This information remains as isolated ‘bits’ of data unless connected by an idea such as ‘principles of workplace assessment’. Then it can be said that all the information about assessing people in workplaces has become a body of knowledge called principles of workplace assessment.

Identifying these four groups of knowledge is different from identifying how knowledge is created and transferred, a study to be completed in the following sections in this chapter.

Confusion often exists between terms such as knowledge and information. In recent times this confusion has intensified with a further hierarchy of differentiation building across data, information, knowledge and wisdom. Many texts and papers talk about the huge amount of knowledge available on the Internet, while it would be more accurate to refer to a huge amount of information available there. Similarly, when those management texts talk about knowledge management, they also include the management of information. The difference between managing knowledge and information is enormous.
What is necessary, therefore, is a definitional basis to distinguish learning from some other related terms such as data, information, knowledge and wisdom. The following definitions are proposed:

**Data** is usually used in information systems terms as a direct parallel to information. However, the term may also be used to denote structured ‘bits and bytes’, or unstructured information that is to be processed and given a strategic purpose.

**Information** may simply be defined as the systematic, structured data organised and communicated to transfer knowledge (Castells, 1996:17).

**Knowledge** is typically data and information structured for an agreed purpose, or as defined by Bell (1973:175):

*...A set of organized statements of facts or ideas, presenting a reasoned judgement or an experimental result, which is transmitted to others through some communication medium in some systematic form.*

**Wisdom** is accumulated knowledge, usually covering knowledge with a more intense and contextual relationship because of an individual’s ability to bring their own experience to bear on the knowledge (Katezenbach & Smith, 1993).

In summary:

- **Data** → The basis for forming information
- **Information** → Data + meaning
- **Knowledge** → Data + meaning + purpose
- **Wisdom** → Data + meaning + purpose experienced in a specific context
4.4.2 Knowledge structure and transfer

This section examines how the structure of knowledge may vary and how these variations in turn affect the creation, management and transfer of knowledge within an organisation seeking to harness that knowledge.

Joseph Badaracco (1991) suggests that organisational success is dependent on the organisation’s identification of two types of knowledge: migratory and embedded knowledge. Appreciating the distinction between these two types of knowledge is an appropriate starting point for examining the structure of knowledge. Competitive advantage or organisation survival can depend on how well an organisation manages both types of knowledge.

*When knowledge crucial to an industry has migrated to firms with lower costs, greater flexibility, or the capacity to improve the knowledge, other companies face challenges that affect activities such as finance, marketing, and manufacturing, as well as their corporate culture and strategy.* (Badaracco, 1991:55)

In reality, many companies have ‘discovered’ the importance of managing knowledge to preserve vestiges of competitive advantage only after they have lost the knowledge associated with the product and its production to competitors with lower margins of profit and higher levels of quality output.

**Migratory** knowledge is knowledge that can be accessed by another individual or firm, or transferred from one firm to another. Basically it is knowledge that once identified becomes hard to control and protect (Badaracco, 1991:34).

**Embedded** knowledge is differentiated from migratory knowledge because this knowledge ‘moves very slowly, even when its commercial value is high and firms’
have strong incentives to gain access to it’ (Badaracco, 1991:79). Badaracco (1991:80) defines firms as ‘vast repositories of embedded knowledge’. How a company manages embedded knowledge across its absorption, transfer and expansion can determine a company’s competitive success.

Table 4.7  Conditions for migration of knowledge and examples

<table>
<thead>
<tr>
<th>Conditions for migration of knowledge</th>
<th>Examples of knowledge types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to exit one organisation — how well it is articulated and packaged together</td>
<td><strong>Designs</strong> (blueprints, patents, trademarks, instructions for design and use)</td>
</tr>
<tr>
<td></td>
<td><strong>Machines and technology</strong> (knowledge encoded into use and construction of technology)</td>
</tr>
<tr>
<td></td>
<td><strong>Individual minds</strong> (knowledge to replicate discoveries or for specific purposes)</td>
</tr>
<tr>
<td>Ability to enter another organisation</td>
<td><strong>Complementary capabilities</strong> (human and financial capabilities to exploit knowledge)</td>
</tr>
<tr>
<td></td>
<td><strong>Legal and regulatory restrictions</strong> (trademarks, contracts of employment, etc.)</td>
</tr>
<tr>
<td></td>
<td><strong>Incentives</strong> (e.g. paying for an individual’s intellectual capacity)</td>
</tr>
</tbody>
</table>

(Badaracco, 1991:34–36)

Fundamentally knowledge has to be sourced, captured, stored and retrieved with sensitivity to its migratory or embedded nature. The affect of the knowledge type on its management as a resource is illustrated in the following table.
Table 4.8 Dimensions of knowledge and its management

<table>
<thead>
<tr>
<th>TYPES</th>
<th>Finance</th>
<th>Marketing</th>
<th>Strategy</th>
<th>Culture</th>
<th>Partnerships</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Migratory</strong></td>
<td>Inability to invest in specific knowledge creation</td>
<td>Competitor builds knowledge relationship with customer and dealer/service provider to reinforce their competitive advantage</td>
<td>Investment in knowledge that can be replicated by competitor able to operate on lower profit margins or lower production costs for equivalent quality</td>
<td>Lack of value placed on sustainable change and role of workforce in visioning and achieving goals</td>
<td>Inability to share costs, risk, market analysis, and competitor information or develop relationships that enhance responsiveness</td>
</tr>
<tr>
<td><strong>Threat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opportunity</strong></td>
<td>Innovation and research, and investment in technology or human capabilities</td>
<td>Greater responsiveness to customer needs and use of knowledge migration through advertising, warranties, incentives, image promotion</td>
<td>Cognisance of the strengths or weaknesses in their management of migratory knowledge when setting strategy</td>
<td>Overcome problems and respond to market demands</td>
<td>Reduce costs and risk through collaboration; accelerate speed to market through and aggressive migration and sharing of knowledge; flexibility through management of environmental constraints and monitoring of competitors by allies in regions/sector, channels to ‘share’ knowledge for advantage, and neutralise competitors through networks (e.g. establish product distribution network)</td>
</tr>
<tr>
<td><strong>Embedded</strong></td>
<td>Financial management imperatives loses relationship with existing organisational capital and (infrastructural, social and human) capabilities</td>
<td>Loss of identity for product, workforce or customers</td>
<td>Investing in production competencies or types of knowledge that, when codified, can migrate outside the organisation (e.g. designs, skills, machines)</td>
<td>A production-focused culture, not a long-term market success or shared basis for wanting to work and meet new challenges</td>
<td>Inability to focus strategic relationships on problems that limit responsiveness, market agility or customer needs</td>
</tr>
<tr>
<td><strong>Threat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inability to manage geographic-specific relationships that impact market success</td>
</tr>
<tr>
<td><strong>Opportunity</strong></td>
<td>Invest in developing sense of craftsmanship and expertise beyond competencies to just ‘do a job’</td>
<td>Basis for individual, team and group behaviour and interaction is reinforced within and outside the organisation by public communication, advertising, training and image-reinforcing activities</td>
<td>Focus on developing highly specialised personal knowledge in individuals and processes that promote organisational learning (collective and generative learning)</td>
<td>Reinforce sense of craftsmanship and expertise of individuals and teams</td>
<td>Exchange of embedded knowledge to create shared capabilities, rapid information and communication flow, and shared search for opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ability to empathise with and relate to customers, markets, societal factors and political issues in a geographic region</td>
</tr>
</tbody>
</table>

(Table based on Badaracco, 1991:55–73, 80–114)
Referring to Badaracco’s model (1991:34), the degree to which knowledge is migratory depends on how the systems for capture, storage, retrieval and use permit:

- Knowledge to be linked, articulated and packaged together;
- Other individuals access to ‘open the packages’;
- Other individuals sufficient incentive to open the ‘knowledge package’; and
- Barriers to be constructed that limit migration.

Embedding knowledge requires strategies to address internal factors such as craftsmanship, teams, the organisation’s culture and communication relationships; and external factors such as strategic partnerships and its community or geographic context (Badaracco, 1991:80–96).

Companies seeking to achieve market responsiveness before a competitor, or to enter the marketplace with a new product or service that competitors cannot match with their existing capacity, need to allocate resources to attract competitive knowledge or to prevent migration of its own knowledge to a competitor (Badaracco, 1991:56).

Badaracco’s structure of knowledge into two categories is a helpful counterpoint to an examination of two other categories commonly used to delineate knowledge; the *tacit* or *explicit* dimensions.

As early as the 1940s Michael Polanyi (1948; see also 1966) advanced significant arguments for broadening the focus on the constitution of knowledge. Polanyi raised intricate arguments for separating what an individual knows, the knowledge they are conscious of holding, and the knowledge they can transfer. Basically knowledge can be tacit or explicit. Respectively this refers to knowledge that by its structure and creation can be highly personal and context-specific or codified in a manner that makes it transferable between individuals (Nonaka & Takeuchi, 1995:59).

This approach to the structure of knowledge has been widely adopted due to the success of Nonaka and Takeuchi’s work, *The Knowledge Creating Company* (1995). The book explores the link between tacit and explicit knowledge and focuses on how management of both aspects of knowledge and their sources can advance a company’s competitive advantage.

*Our dynamic model of knowledge creation is anchored to a critical assumption that human knowledge is created and expanded through social interaction between tacit knowledge and explicit knowledge. We call this interaction “knowledge conversions”. It should be noted that this conversion is a “social” process between individuals and not confined within an individual.* (Nonaka & Takeuchi, 1995:61)

Nonaka and Takeuchi expand the social process of knowledge conversion to include not only individual, group or organisational levels, but also inter-organisational levels or levels beyond the organisation. Movement of knowledge and its transferral from tacit to explicit is argued to be central to how Japanese organisations successfully generate new knowledge, and encourage greater creativity and innovation. The speed with which knowledge is transferred and converted also is critical to an organisation’s competitive advantage (Nonaka & Takeuchi, 1995:5–7).
**Tacit knowledge** may include subjective knowledge such as experience, simultaneous knowledge use in a specific context, and analogue knowledge relating to practice or application (Nonaka & Takeuchi, 1995:61–65).

**Explicit knowledge** may include objective knowledge such as rationality (mind), sequential knowledge (procedures and rules) and digital knowledge (theory) (Nonaka & Takeuchi, 1995:61–65).

Nonaka and Takeuchi then argue for four types of knowledge conversion represented in the following diagram.

**Figure 4.6 Dimensions to Nonaka and Takeuchi’s knowledge conversion**

<table>
<thead>
<tr>
<th>Tacit Knowledge</th>
<th>TO</th>
<th>Explicit Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOCIALISATION</strong></td>
<td>From Tacit to Tacit</td>
<td><strong>EXTERNALISATION</strong></td>
</tr>
<tr>
<td><strong>What</strong></td>
<td>Sharing experiences and mental models and technical skills</td>
<td><strong>What</strong></td>
</tr>
<tr>
<td><strong>How</strong></td>
<td>- Apprenticeships</td>
<td><strong>How</strong></td>
</tr>
<tr>
<td></td>
<td>- Mentoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Brainstorming</td>
<td></td>
</tr>
<tr>
<td><strong>INTERNALISATION</strong></td>
<td>From Explicit to Tacit</td>
<td><strong>COMBINATION</strong></td>
</tr>
<tr>
<td><strong>What</strong></td>
<td>Embodying explicit knowledge into tacit knowledge</td>
<td><strong>What</strong></td>
</tr>
<tr>
<td><strong>How</strong></td>
<td>- Learning by doing, action-based learning so skills-based practice (explicit) is also reinforcing individual behaviour (implicit)</td>
<td><strong>How</strong></td>
</tr>
<tr>
<td></td>
<td>- Encompassing tacit knowledge in explicit sources (manuals, training documents, etc.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Experiential learning or permitting individuals to have a range of experiences</td>
<td></td>
</tr>
</tbody>
</table>

The structure of knowledge can also be subject to variables possessed by an individual. This in turn impacts the transferability of knowledge. However, the early work by Nonaka and Takeuchi has been less rigorously pursued by management theorists and educators in terms of the implications for the management of learning and knowledge (Bontis, 2002:18). With the exception of a few texts (i.e. Von Krogh et al., 2000; Dixon, 2000; and Baumard, 1999), how tacit knowledge as an intangible asset is to be managed and developed through effective learning that can meet both the individual and the organisation’s needs have not been the subject of major research works.

How individuals acquire, generate and use tacit knowledge can directly influence an organisation’s knowledge assets and competitiveness. Yet individuals have innate
characteristics that impact upon their ability to learn and acquire tacit knowledge. Harry Collins (1997:146–148) further explains the structure of knowledge in relationship to individuals. Collins differentiates transferable knowledge — discussed above as explicit knowledge able to be transferred through interaction between humans or between a human and a machine — and three other subtypes of knowledge. Transferable knowledge can be embodied in symbolic forms of communicated knowledge that can be generalised without loss of meaning or understanding between brains/computers. Collins stresses that this type of knowledge is tacit and can be said to reside in symbols. However, some knowledge cannot be transferred without risk of loss because knowledge embedded in symbols does not necessarily equate with knowledge embedded within each individual. Three types of knowledge embedded within individuals and societies include (Collins, 1997:146–147):

**Embodied knowledge** — includes the ‘knowledge/ability/skills that cannot be transferred simply by passing signals from one brain/computer to another’ (Collins, 1997:146). This may be due to physical or hardware differences but reinforces how this type of knowledge relates to the individual holder of that knowledge more than others; e.g. it is five steps to the door: this relies upon the individual’s length of stride. This knowledge can be said to reside in the individual.

**Embrained knowledge** — this knowledge relates specifically to the physical brain functioning of the individual. For example, when explaining a theory to others they may understand the general principles being espoused but the physical linkages for recalling specific information are different in each person’s brain. Language provides a common frame of reference but the significance of one or another variable relates to how each individual makes memory linkages. This knowledge can be said to reside in the physical.

**Encultured knowledge** — knowledge acquisition certainly must use the linguistic and social frameworks that the individual has inculcated into them. Symbolic interactionists express this form of knowledge well in the identification of individuals in terms of the reference groups they participate in. Members of these groups (such as gangs or social classes) have their own language and frame of reference. For participants in workplaces this may mean using a language common to the group in the working or non-work environment and this can influence interaction within the workplace. This knowledge can be said to reside in the cultural or social context (Collins, 1997:147).

### 4.4.3 Knowledge as asset with value

For e-learning to be effective and efficient it must therefore be framed with a conscious understanding as to whether the knowledge is:

1. Tacit or explicit;
2. Embedded or migratory within the individual context; or
3. Shaped by individual variables or how they interact within a given context.

What, if any, are the parallels between explicit and tacit knowledge, and migratory and embedded knowledge? Does this help clarify how the source of knowledge may influence its structure?

Knowledge has value. Knowledge held by individuals or by the organisation has a capital value that can be managed, evaluated and manipulated. Knowledge has been variously described as contributing to ‘pools’ of capital value.

> *There are many forms of capital. Financial capital deals with qualification of value of assets. Physical capital covers various resources which may be described as natural and environmental which have not been adequately valued but are on the agenda. Human capital is used to describe the knowledge owned and acquired by individuals for use to earn and produce, and cultural capital is the knowledge used by individuals in the course of daily life . . . social capital is different completely because it deals with the social links which create society and cannot therefore be owned or depleted by one. (Cox & Lewis, 1998:2–3)*

Knowledge also has a value that is not determined by its possession. The value is determined by the processes that impact the acquisition, transfer and expansion of the knowledge required by an organisation. This is both a knowledge management and a learning process that can promote an organisation’s agility and responsiveness to new and emerging customer demands. In other words, knowledge also has a social value. It is valued by colleagues as a possession — something that gives the ‘owner’ some respect and authority. It is valued by the organisation, however, for its strategic capacity to enhance productivity in the dollar value sense.

Edvinsson and Malone (1997:44–45) studied intellectual capital as a means of building successful organisations. From experiences at Skandia they determined that:

> *Intellectual Capital is the possession of the knowledge, applied experience, organisational technology, customer relationships and professional skills that provide Skandia with a competitive edge in the market.*

They devised a formula:

**Human Capital + Structural Capital = Intellectual Capital**

This formula reinforces human capital as the knowledge ‘owned’ by an individual and harnessed by a company to achieve strategic ends. It was tacit. It was structural capital that the authors viewed as explicit to the company. Besides the traditional financial capital they confirmed that management of structural and human capital requires a strategy to build intellectual capital. Structural capital refers to the knowledge possessed by the company or having only contextual value in the organisation (Edvinsson & Malone, 1997:46). Market value of an organisation and its success is tied to the management of more than just people and the management of knowledge and intellectual properties. It requires management of relationships, values and the technology within the workplace. This formula varied from an earlier version advanced by Edvinsson when working with Sullivan (1996). This formula
had the additional dimension of relational capital. Relational capital was viewed as knowledge embedded in the relationships established with the outside environment. This included suppliers, customers, communities and so on.

Into the equation of intellectual capital subsequent authors replaced relational capital with customer capital (Stewart, 1997:142–144). Leveraging human capital assets to improve customer capital (relationships; networks; value chains; sales, supply and service alliances; and customer loyalty) requires an understanding of how to specialise knowledge to maximise specific sets of capital. Stewart (1997:100–101) emphasised the need to manage all three dimensions of intellectual capital, or the so-called soft and hard knowledge — or tacit and explicit knowledge— to achieve specialisation.

**Human, structural, and customer capital work together. It’s not enough to invest in people, systems, and customers separately. They can support one another; they can detract from one another. (Stewart, 1997:165)**

Stewart reinforces the importance of knowing not only how the types of knowledge impact intellectual capital but also how different types of capital assets can then be managed to support each other.

### Table 4.9 Intellectual capital and mutually reinforcing roles

<table>
<thead>
<tr>
<th>Source</th>
<th>Reinforce each other by . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human capital and structural capital</td>
<td>• Shared sense of purpose</td>
</tr>
<tr>
<td></td>
<td>• Entrepreneurial spirit</td>
</tr>
<tr>
<td></td>
<td>• Managers’ value on agility</td>
</tr>
<tr>
<td>Human capital and customer capital</td>
<td>• Individual feeling responsible for their part in the enterprise</td>
</tr>
<tr>
<td></td>
<td>• Direct contact with customers</td>
</tr>
<tr>
<td></td>
<td>• Clear sense of customer expectations</td>
</tr>
<tr>
<td></td>
<td>• Knowledge of internal customer relationships</td>
</tr>
<tr>
<td>Customer capital and structural capital</td>
<td>• Customers and company learning from each other</td>
</tr>
<tr>
<td></td>
<td>• Ease of doing business so that formal processes become ‘second nature’</td>
</tr>
<tr>
<td></td>
<td>• Customer loyalty</td>
</tr>
</tbody>
</table>

(Stewart, 1997:165)

Annie Brooking in her book *Corporate Memory: Strategies for Knowledge Management* (1999:16) defines intellectual capital as having four main categories:

- Market assets;
- Intellectual property assets;
- Human-centred assets; and
- Infrastructural assets.

**Market assets** include brands, positioning, customer base, company name, responsiveness to customers, distribution channels, collaborative structures, franchise agreements, licensing arrangements, contracts and the like (Brooking, 1999:17).
**Intellectual property** assets are knowledge able to be protected by law; this includes patents, copyright, design rights, trade secrets, trademarks and the like (Brooking, 1999:19).

**Human-centred assets** comprise the ‘collective expertise, creative and problem-solving capability, leadership, entrepreneurial and managerial skills embodied by the employees of the organisation’ (Brooking, 1999:21).

**Infrastructural assets** include the broad category of assets that contribute to how an organisation conducts business, such as processes, financial relationships, communication systems, information systems, philosophies and financial structures (Brooking, 1999:20).

Brooking’s categories encompass very broad areas of knowledge. However, she goes on to determine that competent employees encompass more than the knowledge required to perform work. They require experience and the capabilities that enable proficiency. As such, knowledge management requires corporations to enhance not only competencies but also factors promoting proficiency. The Brooking formula states:

**Organisational Capability = Competence + Proficiency (1999:46).**

Organisational capability also requires transfer of knowledge between individuals. Codification of knowledge is therefore viewed as essential to the construction of infrastructural assets (processes, management systems, etc.) and generation of intellectual capital. Managing knowledge as a corporate asset relies upon managers considering the tacit or explicit dimensions of knowledge (Brooking, 1999:51–52).

Brooking elaborates, suggesting two critical rules for knowledge management: ‘making knowledge explicit generates infrastructural assets’ (Brooking, 53) and ‘strive to make critical knowledge explicit’ (Brooking, 60).

Basically, Brooking argues that tacit and explicit knowledge in an organisation requires different management strategies and these directly impact both how intellectual capital is generated and the asset value of this knowledge to a corporation.

In *The Knowledge Evolution: Expanding Organisational Intelligence*, Verna Allee differentiates knowledge, wisdom, data, information and meaning (1997:67–68). However, she also examines who controls, builds and maximises the value of knowledge assets within an organisation. She supports arguments that not all knowledge required by the organisation can be owned by the organisation. While intellectual and codified knowledge (brand names, patents, copyrights, products, formulas, images, processes, etc.) can be ‘owned’ by an organisation (Allee, 1997:33–34), Allee identifies that the largest body of knowledge assets often exist in ‘collective knowledge’. This latter includes knowledge that may not be owned by the organisation, including working solutions, webs of relationships, communities of practice, expertise and theoretical knowledge and databases (Allee, 1997:35).

In her study of knowledge and learning, Allee stresses the importance of understanding how tacit and explicit knowledge require different approaches to learning. Equally some forms of learning require that knowledge be converted or codified to enhance learning and performance. For instance, converting tacit procedural knowledge into explicit shared knowledge can occur by codifying
knowledge in documents, formulas, procedural manuals and so on (Allee, 1997:69). This is seen as a ‘relatively straightforward’ exercise that can often help focus learning and transformation of individual performance to agreed organisational outcomes.

In defining organisational intelligence Karl Erik Sveiby (1997) defines two main types of knowledge: focal knowledge — ‘the knowledge about the object or phenomenon that is the focus’ — and tacit knowledge — ‘knowledge that is used as a tool to handle what is being focused on’ (1997:30). If knowledge is a combination of both types, all action requires both aspects of knowledge. Building on Polanyi’s work, Sveiby states: ‘Human knowledge is tacit, it is action-oriented, it is based on rules, it is individual, and it is constantly changing’ (1997:35). Defining knowledge as the ‘capacity to act’, Sveiby uses competence to differentiate tacit knowledge held by the individual from knowledge that is applied in a business context. Individual competence is defined as five mutually dependent elements (Sveiby, 1997:35):

<table>
<thead>
<tr>
<th>Explicit knowledge</th>
<th>The formal information acquired, or facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill</td>
<td>‘Know how’ to achieve proficiency in physical or mental practices</td>
</tr>
<tr>
<td>Experience</td>
<td>Acquired by (having done something previously and) reflecting on past mistakes and successes</td>
</tr>
<tr>
<td>Value judgments</td>
<td>Perceptions of what the individual believes to be right</td>
</tr>
<tr>
<td>Social network</td>
<td>Individual’s relationships with other human beings in an environment and a culture that is transferred through tradition</td>
</tr>
</tbody>
</table>

While the early writers on the subject have strongly influenced works of authors right up to the present (see sources used in major compilation works such as Bontis, 2002; Dieng-Kuntz & Matta, 2002), it is worth noting that Jac Fitz-ens, in his work on human capital, identified that other ‘organisational knowledge artefacts’ include process and culture, relationships, and intellectual property (2000:11).

All the authors who provide the foundations for the conceptualisation of intellectual capital and knowledge management note that the creation, transfer and utilisation of knowledge are all implicitly affected by the organisation’s capacity to learn (Choo & Bontis, 2002:16-17). While the concept of organisational learning is explored in some depth in Chapter 10, it is important to note that learning is affected by the type of knowledge. Learning is also a major force enabling the flow of knowledge across and outside an organisation.

Table 4.10 indicates how tacit and explicit knowledge can be aligned against a range of definitions used by various authors. However, to construct a comparable table using migratory and embedded knowledge as the basis for cross-alignment would be at best arbitrary and almost certainly unreliable.
### Table 4.10 Comparison of knowledge definitions

<table>
<thead>
<tr>
<th>Explicit</th>
<th>Tacit</th>
<th>Either</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural capital</td>
<td>Transferable</td>
<td>Intellectual and codified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infrastructural assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human capital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intellectual property</td>
</tr>
<tr>
<td>Collins (1997)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edvinsson &amp; Sullivan (1996)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveiby (1997)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allee (1997)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveiby (1997)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brookings (1999)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fitz-ens (2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tacit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migratory knowledge has a less than tangible relationship to explicit knowledge. Certainly the more explicit the knowledge, the more the factors influencing the migration of that knowledge can be determined (accessibility of the packaged/codified knowledge, compatible capabilities, incentives, barriers). But tacit knowledge is far more dependent on the individual. It is given meaning by interaction with others in a social context. Tacit knowledge when built into the relationship between individuals and their work or social context can become embedded into a context that is difficult to replicate. Tacit knowledge where it is held by individuals in ‘pools’ of human capital cannot be owned by an organisation. One would therefore argue that generally tacit knowledge is likely to be more migratory than explicit knowledge. This, however, is the crux of the problem. Explicit and tacit knowledge may be either migratory or embedded. Making knowledge explicit can embed the knowledge into the processes and systems owned by the organisation and completed by individuals. However, this action also increases the factors influencing how knowledge can become migratory. Codified knowledge is easier to manage and convert within the organisation. It is also easier to absorb, transfer and generate outside that organisation into another organisation or context. Uncodified or tacit knowledge may be hard to transfer and can be embedded within a specific context. Take the individual out of the context and the knowledge can diminish in value, meaning or relevance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11 Comparison of tacit, explicit, embedded and migratory knowledge

<table>
<thead>
<tr>
<th>Tacit Knowledge</th>
<th>Explicit Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Embedded Tacit Knowledge</strong></td>
<td><strong>Embedded Explicit Knowledge</strong></td>
</tr>
<tr>
<td>Non-transferable individual</td>
<td>Rules and beliefs that govern</td>
</tr>
<tr>
<td>knowledge that impacts how</td>
<td>conduct and interaction within</td>
</tr>
<tr>
<td>people think, the way they do</td>
<td>the workplace.</td>
</tr>
<tr>
<td>things and the way they interact.</td>
<td>Examples</td>
</tr>
<tr>
<td>Examples</td>
<td></td>
</tr>
<tr>
<td>• Shared commitment</td>
<td>• Codes of conduct</td>
</tr>
<tr>
<td>• Mentoring relationships</td>
<td>• Value statements</td>
</tr>
<tr>
<td>• Shared purpose</td>
<td>• Participative planning</td>
</tr>
<tr>
<td>• Alliances with suppliers</td>
<td>processes</td>
</tr>
<tr>
<td>(franchises)</td>
<td>• Manual on how to build</td>
</tr>
<tr>
<td>• Sense of well-being</td>
<td>empowered teams</td>
</tr>
<tr>
<td></td>
<td>• Image</td>
</tr>
<tr>
<td></td>
<td>• Shared visions</td>
</tr>
<tr>
<td></td>
<td>• Service ethic</td>
</tr>
<tr>
<td><strong>Migratory Tacit Knowledge</strong></td>
<td><strong>Migratory Explicit Knowledge</strong></td>
</tr>
<tr>
<td>The knowledge individuals hold</td>
<td>The knowledge owned by the organisation; usually the codification of tacit knowledge into explicit forms.</td>
</tr>
<tr>
<td>but can take beyond the</td>
<td>Examples</td>
</tr>
<tr>
<td>organisation.</td>
<td></td>
</tr>
<tr>
<td>Examples</td>
<td></td>
</tr>
<tr>
<td>• Professional skills</td>
<td>• Procedural manuals/templates</td>
</tr>
<tr>
<td>• Craftsmanship</td>
<td>• Training courses/manuals</td>
</tr>
<tr>
<td>• Social network</td>
<td>• Process flow charts</td>
</tr>
<tr>
<td>• Experience</td>
<td>• Design specifications</td>
</tr>
<tr>
<td>• Working relationship with</td>
<td>• Technology</td>
</tr>
<tr>
<td>bodies/people external to the</td>
<td>• Service strategies</td>
</tr>
<tr>
<td>firm</td>
<td>• Systems architecture</td>
</tr>
<tr>
<td>• Individual commitment</td>
<td>• Strategic plans</td>
</tr>
<tr>
<td>• Individual customer/service</td>
<td>• Market research</td>
</tr>
<tr>
<td>relationships</td>
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</table>

(See Nonaka & Takeuchi, 1995:62–70)

Tacit knowledge and embedded knowledge are closely related. How explicit knowledge is embedded may vary greatly. By definition and comparative analysis in the previous tables, the two seem to be mutually exclusive. The factors that make knowledge explicit also make it more vulnerable to migration. Embedding explicit knowledge is therefore conceptually very difficult to grasp.

Migratory tacit knowledge is also difficult to achieve, albeit not impossible. Tacit knowledge could be held in groups or individuals who leave or are removed from an organisation and who can take advantage of their knowledge; for instance, traditional craftsmanship skills or relationships between individuals and groups that cease to be utilised by a company for various reasons (the company removes large components of its workforce, markets no longer exist for specific activities, or a company simply closes due to other factors). The pool of knowledge, however, still exists and can migrate to another user, assuming that the knowledge can be utilised. Migration of knowledge can occur directly or indirectly.

One example could be workers in a unit of production who have been made redundant; they set themselves up as a spin-off company, keeping the shared knowledge that has evolved of corporate and production processes, working structures, common language, as well as skills and culture, even their hierarchy.
Imagine, as another example, that a company specialising in manufacturing high-quality traditional wooden furniture goes bankrupt. The workforce is made redundant and the workers all live in one geographic region.

The tacit knowledge held by this redundant workforce may migrate to another furniture manufacturing company that recruits the workforce because it wishes to expand its market presence into the ‘high-quality’ furniture marketplace. The new company can recruit the workforce into similar operations. The new company will ‘graft’ knowledge held by the individuals onto its existing capabilities or what Annie Brooking calls ‘infrastructural, market and intellectual property assets’ and Edvinsson and Malone list as ‘financial and structural capital assets’. The explicit knowledge that these individuals already possess is secured along with the tacit knowledge they have in terms of their craft, their working relationships and the relationships they have with their region or operational setting, such as suppliers and customers. The incentive to access this knowledge and the compatible capabilities required to utilise this knowledge can be evidenced in the value that the knowledge adds to the existing financial, market, strategic and cultural focus of the company recruiting these individuals.

Alternatively a company may wish to specifically recruit the workforce for its tacit knowledge. The new company may not be in the furniture business. As an extreme example, imagine that the recruiting company manufactures handmade, high-quality boots. The advantages of recruiting furniture joiners and carpenters may not centre on explicit knowledge. It may be that the members of the former workforce and their extended social networks are committed to making a business work in the region. The workforce may represent individuals with a personal commitment to quality products, who possess knowledge of regional players able to assist the export of high-quality merchandise and perhaps be attuned to a culture where craftspeople work alone within a highly effective communication network. Recruiting from a pool of labour with pre-existing tacit knowledge, but no explicit skills, may accelerate ‘start-up’ time for this new company and add knowledge assets that would be difficult to create or absorb.

Yet another example may be more familiar. The absence of tacit knowledge may impact on a company’s performance. Call centres are increasingly centralising customer service functions across large geographic regions. In many cases, tacit knowledge is not adequately addressed. For instance recruiting people in the geographic region where the call centre is located can break down service relationships with customers from other regions. All the best service skills and knowledge required to provide even the most routinised service by the service assistant does not represent all the knowledge required to build a sustainable service relationship with a customer or customer base (Frenkel & Donoghue, 1996:12 & 15). For instance a caller from a specific region, with a pre-existing frame of reference, may deal with a service assistant with no empathy for or understanding of that frame of reference. The assistant may have no basis for shared meaning or social experiences that can align the communication occurring over the phone line. The service provider lacks not only the face-to-face context but also a basis for constructing shared experiences and an ‘identity’ with each customer (Bowles, 1997; Frenkel & Donoghue, 1996:26).
The service provider can be taken out of the geographic region but the tacit knowledge that assists in building and sustaining a service relationship between individuals who share at least some sense of history, experience and context provided by their societal interactions may be lost.

Whatever the source of knowledge, it does not necessarily have to be “owned” by the organisation or a group or embedded in their context to have value. Individuals and organisations may need only to hold all the knowledge required to achieve their strategic purpose, and know where to find additional knowledge as required. Tom Davenport and Larry Prusak (1998) identified five types and related sources of knowledge or information within an organisation, as in the following table.

**Table 4.12 Type and sourcing of knowledge**

<table>
<thead>
<tr>
<th>Typology</th>
<th>Definition</th>
<th>Source</th>
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<tbody>
<tr>
<td>Acquired knowledge</td>
<td>Knowledge sourced from outside the organisation. While it may be employed for the organisation’s strategic purpose, its ownership remains outside the organisation’s domain of operations. In some cases, an organisation may purchase or graft such knowledge for its purpose for a period of time.</td>
<td>Common forms of such relationships include training, contract work or consultancies. May be rented or ‘grafted’ from an external source. This may be through formal relationships (e.g. research laboratories with manufacturers), outsourcing partnerships, labour hire firms, contracts or consultancies.</td>
</tr>
<tr>
<td>Adapted</td>
<td>Such knowledge results from experience in a new working or operational context. The organisation and work groups adapt to new situations and conditions and so acquire the capacity (competencies, new processes or technologies) to operate in the market place. Such knowledge also enhances agility and the ability to remain competitive.</td>
<td>An example of the source of adapted knowledge may be retailers or companies shifting from traditional approaches to business and the new requirements to trade online or complete business-to-business transactions. It could also involve moving across cultures or markets in different countries.</td>
</tr>
<tr>
<td>Dedicated</td>
<td>Dedicated knowledge results when an organisation sets aside some staff members or process resources to develop within the business for a specific purpose. These dedicated resources balance the need to generate specific competence in one knowledge set, while also ensuring that they do not become parallel to the organisation to such an extent that the knowledge cannot be integrated into the organisation’s knowledge management and information systems.</td>
<td>Sources may include a dedicated research team, technical experts within a work group implementing a new IT system, specialist teams or teams built for particular purposes. Often teams of dedicated knowledge are built to commercialise or realise an immediate, short-term strategic opportunity.</td>
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</table>
Chapter 4  Learning and Knowledge

<table>
<thead>
<tr>
<th>Typology</th>
<th>Definition</th>
<th>Source</th>
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<tbody>
<tr>
<td>Fused</td>
<td>Bringing together people with different perspectives to work on the same project can create fused knowledge. Their very difference may be the catalyst for generating new knowledge or insights. In some cases the purpose is simply to place individuals who hold tacit knowledge or such highly specialised knowledge together in an environment whereby they can share and ‘fuse’ knowledge together. It is not uncommon for conflict to exist in such situations. Useful for convergence technology.</td>
<td>Merged work teams or project management teams may fuse different ideas, cultures and skills into a core set of beliefs and skills. This enables the challenge of objective to be achieved.</td>
</tr>
<tr>
<td>Networked</td>
<td>Networked knowledge is one of the most important and poorly understood forms of knowledge within the corporate world. It exists in the system of interactions and understandings created when people share information with one another formally or informally. Knowledge networking, where professional or communities of practice gather together or share a discipline (such as in programming, marketing, human resource development), is most often viewed as the basis for networked knowledge. This is a limited view. Networked knowledge for an organisation exists not so much because individual employees can share information with one another and those outside the organisation, or because they may generate new ideas and knowledge but because the value of networks resides in their existence. It resides in the potential to utilise network interactions or the information resident in multiple sources to generate relevant knowledge not held by the organisation. In a world where adequate time and space cannot be devoted to creation or acquisition of all knowledge that may be important to an organisation, networks are critical.</td>
<td>Sources should include community groups, individual and work group interactions with formal (e.g. professional associations, health and safety groups, supply chain partnerships, government regulatory or planning groups and bodies) and informal groups outside the workplace (e.g. sporting groups, locals, hobby groups). Networked knowledge also resides in the social fabric of the location. This may include political stability and the well-being of the workforce at a particular workplace. Knowledge sourced in these settings is often studied as ‘social capital’.</td>
</tr>
</tbody>
</table>

The importance and functions of tacit knowledge can be reinforced by a deeper analysis of social capital.

In fact it is social capital that is required to multiply the effect of people working and interacting together. All relationships are enhanced by the quality of their interrelationships — trust, networks and shared values. That is what social capital is — the shared values, networks and trust that enhance the productivity of people’s interactivity. Social capital is the product of strategic learning, if that learning is for a shared and worthwhile purpose. Real lessons can be learnt from an analysis of social capital. In this section the study of social capital is not intended to cover the theoretical or empirical arguments surrounding social capital (Portes, 1998). Nor is
this section intended to expand on selections of current thinking to provide a definitive statement on the value of social capital within an organisation (see Woolcock, 1998:193–196 for an extensive list of sources). This section simply seeks to illustrate the importance of maximum individual knowledge assets by drawing on resources that extend beyond the boundaries of an organisation, into wider societal sources.

Social capital is the focus of many authors and managers because it deals with the management and quality of social relationships as both an asset and a critical factor effecting positive group, regional, community, social and organisational outcomes (Woolcock, 1998:170).

Social capital has variously been defined. From a network perspective:

*The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition.* (Bourdieu, 1985:248)

From a structural–functional perspective:

*A variety of entities with two elements in common: They all consist of some aspect of social structures, and they facilitate certain action of actors — whether persons or corporate actors — within structures.* (Coleman, 1990:302)

Robert Putnam, defining social capital, states that it:

*... refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordination of actions.* (Putnam, 1992:167)

Some core features of social capital are that it:

- ‘*Inheres in the structure of their [individual] relationships*’ (Portes, 1998:7);
- Is mobile and cannot be embedded in structures or processes;
- Cannot be physically banked (Portes, 1998:7) or placed on a balance sheet;
- Is not easy to gauge by studying types of relationships because it is context specific (i.e. weak relationships may provide the information and links necessary to achieve a profound outcome where strong relationships may not have generated the same outcome);
- Resides in humans and in their ‘accumulated mutual obligations’ and the societal need for reciprocity (acquittal of obligations) (Portes, 1998:7);
- Is built as acts of reciprocity and relationships that promote group trust, norms and collective ‘rituals’ that govern behaviour and facilitate further interaction (Falk & Kilpatrick, 1999); and
- Is both the means that reside as individual property and the ends achieved through networks and relationships.
Some claim that social capital can generate negative influences (Portes & Landolt, 1996; Portes, 1998:13) such as:

- Exclusion of others not sharing purpose or mutual obligations (for instance, cliques and rhetorical communities);
- Competing claims for group membership and group direction;
- Restrictions on individual action through collective demands for converging behaviours rather than individual divergence; and
- Downward levelling norms (e.g. group think; bounded innovation and problem solving).

However, others claim that if the effects of interaction are negative, the interactions do not generate social capital (e.g. Falk & Kilpatrick, 1999; Falk, 1999). This is one of the debates in this field.

Michael Woolcock (1998:164) distinguishes between two forms of social capital:

**Embedded** — The integrative elements that assist structure relationships such as capacity, networks, credibility and procedures; and

**Autonomy** — The linkages at a micro level that may refer to intra-community ties or, at a macro level, the state–society relationships. Networks across homogeneous cultures may encompass individual reason and social ties that dictate how individuals interact.

Social capital picks up on earlier works that emphasise both relationships and customers as holding capital value. The value lay in the networks of interaction and the ability to hold a relationship with an individual. Bowles (1999b), reporting on the implementation of integrated learning and performance systems established in Woolworths Australia from 1994 to 1998, actually reported a three-tier approach to encompass the creation and management of knowledge capital within an organisation. The types or dimensions of knowledge assets include infrastructural, human and social capital.
Unlike some proponents of intellectual capital, Bowles (Figure 7) suggests that social capital is an additional knowledge capital resource, not a subset of infrastructural, or other categorisations such as customer, structural or human, capital (Edvinsson & Malone, 1997:52; Stewart, 1997). Writing on social capital, Woolcock (1998:179) warns:

Forging and sustaining social relationships connecting top-down resources and bottom-up capacity building is not easily achieved.

The warning generates fear in those wishing to add social capital to existing knowledge management equations that have social aspects tied to performance and its ‘asset value’ determined through attainment of set customer and market outcomes. The approach posited by Bowles sees human capital focusing on skills and knowledge associated with operational outcomes — the explicit knowledge. Social capital represents the stocks of tacit knowledge resident within individuals, networks of interaction, relationships and cultural attributes of people, the organisation and society (Bowles, 1999:23). The framework acknowledges that the stocks and flow of knowledge within an organisation may extend well beyond the boundaries of the organisation.

Firstly, however, managers must acknowledge that the outcome of social capital is inconsequential in terms of its asset value. The ‘capital value’ resides in the potential...
to utilise social interactions or the capacity to **source** knowledge utilising social capital (Woolcock, 1998:157, 185; Portes, 1998:6).

Secondly, different types of social relationships are directly related to the forms of interaction that add to the tacit knowledge held by individuals within the organisation. Social capital provides a mental construct that warns us, at the very least, to be aware that management of these individual relationships must occur beyond the organisation’s parameters if certain sources of knowledge assets that can affect outcomes of an organisation are to be managed.

Thirdly, there is no predictive model that can sort social capital into means–ends, negative–positive and cost–benefit dimensions of organisational management. Social capital does, however, exist and is a positive factor that can be harnessed in the generation of knowledge capital.

So, social capital reinforces the fear of the power of knowledge — that knowledge can reside not only in individuals but also in networks and relationships between individuals that cannot be owned by an organisation, and may well exist outside the organisation’s domain of operation and influence.

The study of tacit and explicit knowledge, whether this knowledge is embedded or migratory, must also span interactions within and outside the organisation. The development of knowledge assets is about managing knowledge that is tacit or explicit, migratory or embedded; that is, knowledge found not just in pools of knowledge capital resources owned by the organisation, but in:

- Networks that orchestrate individual interaction, inside and outside the organisation (micro level — individual to group);
- Groups or communities within the organisations that have connections to other organisations and the wider society (meta level — group to organisation); and

The very reason tacit or explicit knowledge is embedded or migratory may in fact be due to who ‘owns’ that knowledge, and where that knowledge is sourced. Harnessing existing social networks and relationships may accelerate communication between individuals and enhance organisational responsiveness, but can these relationships be sustained, and oriented towards sustainable strategic outcomes, and are they unique so that a competitor cannot replicate them with their existing capabilities?

Capital value of managing knowledge as an asset is not complete if the aim is only to embed explicit knowledge. Maximisation of knowledge as an asset requires recognition that it is a volatile mix of explicit, tacit, embedded and migratory dimensions. Each varies with the specific context. Management based on the achievement of set actions or strategic outcomes may well deny the competitive advantage inherent in how individuals source knowledge. Ignoring the individual and social dimensions that promote tacit knowledge assets may restrict the sorts of knowledge an organisation requires, if it is to be responsive, agile and able to generate the capabilities necessary to meet potential market demands.
4.5 Creating Knowledge Through Learning

The following recaps some key terms:

**Knowledge management**
Managing knowledge and learning to expand the *total capabilities* (knowledge, skills, attitude and identity capabilities) within the *domain of the organisation* (individual, team, corporate and community/strategic partners);

**Knowledge assets**
The infrastructural, human and social capital resources that enhance the capabilities available to an organisation for current or future strategic outcomes. Knowledge assets can encompass intellectual capital;

**Capabilities**
Knowledge, skills, attitude and identity factors held by individuals or networks of individual interactions that can contribute to an organisation's current performance and strategic imperatives.

Figure 4.8 offers what could be construed as a simplistic representation of learning and knowledge. What is required now is further understanding of how dynamic this process can be.

![Figure 4.8 Using elearning to convert information into organisational knowledge](image)

![Figure 4.9 Elearning and knowledge capacity](image)

(Reddin & Catalanello, 1994:36)
Chapter 4  Learning and Knowledge

Figure 4.9 depicts a simple learning cycle used in the management of knowledge. How well knowledge can be transferred between individuals or an organisation’s capacity to plan, reflect and implement learning can be improved depends upon the type of knowledge. Not all knowledge required can be tied to actions that produce known outcomes or found in processes used by individuals or the organisation to achieve productive outcomes. Knowledge may be generated through learning.

The value of elearning to organisations can be appreciated if it is viewed in terms of its contribution to the speed at which organisations can innovate. Iteration is the term used to describe the cycle of innovation within organisations using learning. Redding and Catalanello (1994: Ch2) suggest that the effectiveness of learning can be assessed by the:

1. **Speed of learning** — the pace at which organisations can move through the learning cycle; the speed at which the organisation can complete the learning cycle determines the opportunities available to learn.

2. **Depth of learning** — the ability of organisations to learn. How much knowledge is taken in at each learning cycle.

3. **Breadth of learning** — the capacity for the organisation to utilise the learning or ‘how extensively organisations are able to transfer new insights’.

Traditional learning in organisations takes a long time to occur. The development of organisational structures and procedures to meet new conditions, and the reconfiguration of organisational processes to strategic planning may be completed only when the next market change impacts an organisation. For the learning organisation, the implementation of change is based on the realisation that all processes within the management system are learning processes. The speed of the organisational learning cycle increases as the organisation learns to learn and respond to change.

Learning is impacted by the specific context of the organisation and the knowledge being absorbed, generated or transferred. Understanding the source and structure of knowledge is therefore a precondition for understanding how to manage knowledge as an asset and for determining its capital value.

### 4.5.1 Shaping learning to the source and type of knowledge

Knowledge is diffused subject to the distance and time factors that impact different individuals and groups. It may, for instance, be easy to train one team in a new service strategy. However, it may take longer for the knowledge to diffuse to other teams. How this knowledge is communicated or learnt will impact knowledge diffusion. Boisot suggests that constraints of technology can be removed by using electronic forms of transmission to more rapidly diffuse knowledge. While this may avoid constraints such as time (Boisot, 1995:106), to be effective the communication strategy must also consider the social and physical constraints impacting the target audience. One of the key constraints is the meaning a message has for the audience.
Meaning promotes ‘an individual’s disposition to act’ and serves to ‘code’ the individual’s receptivity to future messages (Boisot, 1995:107).

Diffuse as used herein refers to knowledge that can be transmitted. Undiffused means knowledge that is in a form that cannot or does not possess the necessary features to enable it to be transmitted.

The level of competency required as an outcome of the learning is an essential question. Is the aim of learning to achieve an immediate threshold of proficiency for a new employee or apprentice/trainee? If so, the transfer of knowledge has to occur with an appreciation that the individual will not have the cognitive awareness or tacit knowledge cultivated within the specific situation. The individual may have already made some progress towards competence in the required application of the skills and knowledge but lacks the appropriate behaviours to effectively deploy the required
skills and knowledge. In this case, the organisation may require competence to move to a basis where the individual can become aware of their own performance deficiencies (conscious incompetence). The employer may require performance standards to a level of mastery or unconscious competence. In organisations that learn, the aim is to ensure that all individuals achieve a level of unconscious competence in order to ensure those with mastery level competence can training other employees on the job. This promotes how well new employees, or employees new to a job move beyond conscious incompetence/competence.

Mastery, unconscious competence — Ability to demonstrate competent performance, integrating all aspects of the required skills, knowledge and attitude, on a consistent basis across a range of conditions and variables, without full concentration. This is where tacit knowledge built from experience applying explicit knowledge in a context builds to create situated performance excellence.

Conscious competence — Ability to demonstrate competence in performance while concentrating on requirements, integrating most aspects of the required skills, knowledge and behaviours but still requiring supervision and support on various conditions and variables.

Conscious incompetence — Awareness of task and performance requirements but inability to achieve the performance standard.

Unconscious incompetence — Unawareness of the performance requirement or that own performance falls below required standards.

As individuals progress in a job they develop the understandings and insights necessary to perform better. While competence can be taught and proficiency reached (conscious competence), it is situated experience in applying skills and interacting with others that builds mastery. Mastery requires self-reflection and the ability to move to a stage where action is completed with unconscious competence. Competence becomes an inbuilt, instinctive ability to learn from ongoing actions (experiential learning).
As suggested by Figure 4.12, competence is a longer journey that just proficient performance. It requires experience in the situated context and the development of underpinning knowledge that enables meaning to be attached to performance.

Figure 4.13 provides an example of how different jobs involve different knowledge. The examples provided represent tasks (A to E) performed by a financial adviser. Each task has a different mix of knowledge types and each can be transferred to a different extent. Different competency and identity capabilities require different modes of transferral. Different knowledge types can be modified over time to be incorporated into more mobile and explicit forms. This can promote transferral by textbook, manual and similar forms of learning. As represented by moving knowledge from (D) to (E) the company may take jargon and slang regularly used by employees and integrate it into a manual or training program on government compliance training. The government language may be better understood or adopted once employees see it codified in a way that uses language appropriate to the workplace culture.
Different explanations of knowledge and its dimensions have been explored in this chapter. The real challenge facing those concerned with using knowledge in the pursuit of the development of organisations and other communities lies in understanding its nature and how to harness it. Knowledge resides in people, places and things. It is given meaning through relevance of the collective information to the particular purpose in hand. Knowledge, however, is not ‘objective’. It exists only as people make it live through the sociocultural resources they draw on as they interact with each other, their technologies and environment. The resources involved in the creation of knowledge are sourced in people and objects in the immediate and remote environment. The act of knowledge production — learning — depends for its richness and effectiveness on the flexible and unfettered availability of appropriate resources. These resources are the infrastructural, human and social capital embedded in people and distributed across their technologies and environment. Social capital is in fact the oil that lubricates productive capacity, transforming resources into productivity through purposeful strategic learning.

The model in Figure 4.14 illustrates how elearning can influence not only the capture, transfer and generation of new knowledge from the information base, but also can stimulate the flow of knowledge across existing typologies.
Figure 4.14 Elearning and organisational knowledge assets
4.6 Summary

The ability to learn in order to meet productive outcomes should be given equal weight to the organisation’s ability to use learning to leverage improved agility. Learning can help redefine purpose and processes and access all available relevant knowledge held by individuals within and outside its jurisdiction. Potential productive capacity is determined by the organisation’s ability to access all available knowledge assets that deliver the capabilities required to meet both current performance and future market demands.

Knowledge assets are not, therefore, a ‘bank’ of codified explicit knowledge and sets of skills and knowledge (competencies) held by individuals completing productive actions. Nor is learning restricted to the transfer of knowledge in this capability ‘bank’ to meet performance outcomes. To meet current performance and maximise future potential, an organisation must access not just explicit knowledge but also tacit knowledge; the knowledge of ‘how to do things’ as well as ‘why they are being done’. This tacit knowledge should include the shared basis for individual action and frameworks for interaction that generate new knowledge and continually redefine collective purpose and commitment, inside and outside the organisation.

The examination of explicit and tacit knowledge reinforces the channels through which an individual’s knowledge base is influenced by social and cultural sources. Further, despite encultured knowledge being an aspect of tacit knowledge it is not something that can easily be defined. Sources of cultural knowledge cannot be made explicit through general rules or principles. While guiding principles may be developed to identify encultured knowledge, the knowledge is still very difficult if not impossible to define outside a specific context.

Brown and Duguid (1991) suggest that formal workplace practices and structures are not representative of the socially constructed realities of the participants involved. Individuals develop rules and behaviours that may either improve performance or simply make work easier to complete. The development of general rules for application of knowledge or codification of tacit knowledge to make it explicit, such as that found in manuals, work instructions and training programs, cannot capture all the knowledge that dictates performance.

Only novices use expressible rules to guide their actions while experts use intuitive, inexpressible competencies. (Collins, 1997:151; Dreyfus & Dreyfus, 1997)

Tacit knowledge may be used through the internalisation and unconscious use of what is known. Some of this may relate to tasks that are so highly routinised that they can be made explicit. One can, therefore, manage the absorption, transfer and expansion of some forms of knowledge. However, if the tasks require thinking then solidified processes, rules and structures can actually inhibit the development of tacit knowledge that individuals use to achieve expert performance, intuition, creativity and innovation within an organisation (Dreyfus & Dreyfus, 1997:33–35; Robinson & Stern, 1997:89).

In many cases the tacit levels of knowledge may be far harder to replicate by organisations seeking to acquire the knowledge that has given a competitor a unique
market advantage. Acquiring the knowledge to build a widget may often be much easier to achieve than constructing teams with the commitment and relationships necessary to achieve productive efficiency.

Attempts to transform tacit knowledge into explicit knowledge make sense if the knowledge must be ‘codified’ and embedded in how the organisation manages its systems and processes. However, the idea that tacit knowledge can be embedded or transferred from tacit to explicit ignores that:

- Some tacit knowledge, by its very nature, cannot become explicit;
- Trying to codify or embed tacit knowledge by making it explicit may destroy its inherent ‘value’;
- The ‘capital’ value of knowledge for an organisation does not necessarily increase when one transfers knowledge owned by individuals and makes it explicit and able to be ‘owned’ by the organisation as an infrastructural asset;
- Tacit knowledge is not a progression point in knowledge management prior to transitioning it into embedded forms of explicit knowledge;
- Making tacit knowledge explicit does not necessarily increase its embedded nature or prevent knowledge migrating out of the organisation to market competitors; and
- Explicit knowledge exists because it can be codified into actions or oriented towards an outcome, but this cannot encompass tacit knowledge held in what has been described as social capital where the value is embedded not in the outcome but in the source — an individual or group’s networks and social relationships.

Ownership of knowledge is not the determinant of capital value to an organisation. The true determinant of the effective management of knowledge is the organisation’s capacity to harness all of the knowledge that can be accessed by individuals who can contribute to operational outcomes.

In this setting, elearning is as much about facilitating the exchange of knowledge between individuals and contexts, as it is about transfer of codified skills.

Key observations that can be made from research in this chapter include the following.

**Observation 4.1**

The types of learning and knowledge are critical variables influencing how elearning is designed and conducted.

**Observation 4.2**

Assumptions that learning and knowledge are somehow combined to form elearning is flawed. How learning and knowledge in reality affect elearning is dynamic and dependent on the context of application, the individuals involved and the mode of collaboration.
Observation 4.3
Improved knowledge transfer and overall skills performance is best achieved when learning in an electronic environment avoids a focus exclusively on ‘skills’ training for performance and instead seeks to additionally build situated meaning and identity creation during the learning exchange.

Observation 4.4
It does not matter how far or fast learning practices develop beyond the classroom; whether online, virtual learning or other, good educational pedagogy still influences the effectiveness and efficiency of elearning.
4.7 References


CAPABILITIES DEFINED

Chapter Overview

Abstract

In the New Economy, an employee's skills, knowledge and motivation to deploy those attributes have economic value to organisations because they enable performance and adaptability to change. People constitute an organisation's human capital. Elearning's contribution has progressed from delivery of learning outcomes to encompass knowledge management (KM) outcomes and now human capital (HC) outcomes. The relationship has been expressed by the equation:

$$L + KM + P + HR = HCM$$

where learning combines with knowledge management to generate performance and through human resources permits human capital management. Review of literature reveals no major research work has been undertaken on how elearning will affect each component in the HCM equation, or how such interventions will be measured and reported.

A common 'currency' is needed to measure effectiveness and efficiency of elearning within, between and across organisations' operating domains. The creation of a structure and taxonomy for defining and measuring capability is essential to appreciate the contribution of elearning to knowledge capital value. The model developed in this chapter defines capabilities and how elearning can enhance the knowledge assets required by an individual, a group, an organisation and/or community. A conceptual framework is provided for better accounting of how elearning can support overall knowledge capital acquisition, expansion, mapping and management.

Capabilities are the special elements in the pool of potential capacity to perform, held by individuals, interacting in teams, organisations and community groups.
Capabilities are then deployed through individuals. Performance capability in a given context is defined by:

**Competence + Identity = Performance Capability**

where competence is the sum of skills and knowledge, and identity is the sum of cultural attributes, roles, traits and behaviours. Organisation capabilities can be held at three levels: corporate, process or group, and individual levels. Capabilities contribute to an organisation’s overall capacity for performance and agility. The Bowles typology is advanced to tie capabilities to human capital, infrastructural capital and social capital resource pools that determine an organisation’s intellectual or knowledge capital.

Earlier works by many authors are examined to uncover the original foundational understandings framing competence and identity components such as culture, roles, traits and behaviours. Research illustrates that possession of competencies alone does not define the capacity of an individual, group or organisation to actually perform.

Research also illustrates how identity provides a robust construct for differentiating tacit and explicit forms of knowledge that influence both individual and organisational performance. The review of discussions and literature reinforces how individuals derive meaning from their roles at work and emphasise how organisational identities are influenced through the interactions of individuals within and outside the organisation’s domain of action. In effect, how individuals learn and behave affects how organisations learn and deliver products and services.

Individuals, groups and organisations may hold multiple identities that provide meaning. Therefore, common components may combine to forge organisation or self-identity and meaning, varying within any organisational or performance context. Identity in this sense is both a construct defining 'self' and a basis for action affirming and sustaining identity. Meaning is more about 'symbolic identification' by the individual with the purpose of the action.

Capabilities provide researchers with a robust construct that can help distinguish the parameters for an organisation's capacity and its purpose. Capabilities provide a common 'currency' portable and comparable across individuals, occupations, jobs, functions, teams or communities, locations and cultures. It is also the 'currency' for reporting outcomes across performance, learning, human resource and capital management systems. The identification and utilisation of capabilities also permits analysis of the effect of learning and on the relationship between individual and organisational outcomes.

The development of a capability-based approach is proposed to assist human capital management. The capability approach suggests elearning can do much more than assist competency acquisition and deployment. The emphasis can also be placed on building individual and collective identity. Identity is a valuable asset when individual and organisational identities are aligned. Elearning in that context not only can build the skills and knowledge necessary to improve productivity and performance, but also is a process enabling identity attributes to be enhanced. In such an environment, organisations seeking to enhance human and knowledge capital can deploy elearning to target competency and identity capabilities while also using capabilities to plan, transfer, generate, report and analyse outcomes.
Chapter Proposition

Proposition 5.1

Determining the efficiency and effectiveness of elearning requires targeting effort, management of processes and reporting and evaluation of outcomes using not just consistent metrics, but a form of ‘currency’ that is comparable across learning, performance, knowledge and human capital management.

Key Themes

The concept of human capital management; a common 'currency' measurement and quantification to support knowledge capital valuation; capability components including competencies and subsets of skills and knowledge components; identity and subsets such as cultural attributes, traits, roles and behaviours; defining capability as the basis for performance and meaning; a model for studying capabilities; knowledge capital, capabilities and performance capacity relationships; the function of beliefs and values in shaping individual and collective identity and organisation culture; the difference between role and identity; understanding performance variables from studying behaviours and traits; capability profiling; and elearning as a contributor to leveraging knowledge sharing, promotion of collective identity and targeting capability enhancement.
Elearning is not only able to develop competencies; it is also a process encouraging identity formation. Building identity during a knowledge-transfer process reinforces meaning and orients many individuals towards attainment of an organisation’s strategic purpose.

The ability to learn, develop knowledge assets, and perform constitutes the main ingredients in human capital value. Human capital is a component of the broader knowledge capital, alongside infrastructure and social capital.
5.1 Introduction

A popular theory is that the evolution of elearning has inherited a positive history of how well training has supported business outcomes. This statement brings to light the different yardsticks being used to gauge the success of training interventions within organisations and societies. A major issue seems to be the polarised views on targeting and evaluating the contribution of specific learning interventions to individual development or organisational performance and profitability.

Elearning is becoming viewed as an essential ingredient in delivering outcomes that go beyond training. As elearning has evolved the focus on outcomes has expanded to encompass business outcomes. In the New Economy, an employee’s skills, knowledge and motivation to deploy these attributes have economic value to an organisation because these attributes enable the organisation to perform and adapt to change. In this context, value has come to refocus on people as they constitute the organisation’s human capital.

Efficiency and effectiveness have become as much about ‘human capital’ value as they are about individual learning outcomes. In evolutionary terms, elearning’s contribution to business outcomes has progressed from delivering learning outcomes to encompassing knowledge management outcomes and now human capital outcomes. An equation has been proposed to summarise this,

\[ L + KM + HR = HCM \]

— where L is Learning, KM is Knowledge Management, HR is Human Resources, and which together equate to HCM or Human Capital Management.

The measurement of elearning efficiency and effectiveness has not only to be determined across different individuals in a variety of occupations and locations, but also to encompass the knowledge or intellectual capital value of these contributions to an organisation and its constituent functions.

To measure the effectiveness and efficiency of elearning a common ‘currency’ that can be used to judge success is needed. If the contribution of elearning to knowledge capital is to be fully appreciated, it is essential to create a structure and taxonomy for defining and measuring capability.

This chapter sets forth a model for presenting the different terms, tools and conceptual frameworks used to describe what is learnt and how it is translated into performance outcomes. To this end, the chapter re-examines capabilities and how they differ from competencies, performance and knowledge. It also isolates factors that define the role of learning as a central contributor to an organisation’s current performance and long-term strategic success.

This study of capabilities calls for a study of how an 'effective' individual employee cannot be determined solely by focusing on the development of task competencies. The development of ‘effective’ employee capabilities is shown to require learning activities that are supported by applied tools and a knowledge base that can integrate employee development with an organisational development strategy.
Chapter 5  Capabilities Defined

The intention is to demonstrate on completion of this chapter a model for defining capabilities and how elearning can enhance the knowledge assets required by an individual, a group, an organisation and/or a community. The heuristic purpose will also consolidate descriptions of competencies, behaviours and other terms into a framework where they can underpin the prevailing business emphasis on developing human capital. Capital resources in organisations are delineated between tangible and intangible resources. Tangible resources comprise financial, physical, human and organisational resources. Intangible resources are identified as reputation, technological resources and innovation.

Tacit knowledge as an intangible asset that can be held by an organisation has always been an essential part of a successful organisation yet deployment of learning to enhance the transfer of knowledge capabilities within organisations is only now being identified as critical to success or failure. Savage (1996:121) stated the ‘basis of wealth (in the ‘knowledge age’) is shifting from that which is ‘possessed as a commodity’ to the value of human capability’.

This chapter develops a conceptual framework for better accounting how learning, and particularly elearning, can quantify and support knowledge capital acquisition, expansion, mapping and management.
5.2 Performance and Meaning: Defining Capability

The desire to provide staff with the competencies necessary to perform is often the most pressing consideration for managers sponsoring learning interventions. However, this outcome is interconnected with the need to transfer the attributes required to enable or encourage an individual to deploy the capabilities required to perform.

It is often said that when individuals engage in learning — or indeed any transaction — they undertake a communication exchange that will in some way affect their performance or mental model. Further, communicating and building meaning occur during all human interactions (Bormann, 1983; Bowles, 1999:63). For most organisations developing a capacity to perform effectively first requires a culture that encourages communication and learning (Argyris, 1993:15).

Elearning is a process and framework not only for orienting individual actions towards agreed ends, but also for shaping how individuals interact to generate new knowledge. While elearning has been promoted in the corporate world as the means to transfer codified knowledge to individuals and teams within and outside the organisation, elearning mainly deals with transferral of explicit knowledge. It is important to note that elearning can contribute to performance improvement while also being conducted as a process of interaction that can build tacit knowledge.

In examining what a common currency may look like for a capability we need to appreciate the underlying concepts, such as:

| Competence | The knowledge and skills that are required to undertake a level of performance within a specified context. |
| Performance | Application or deployment of capabilities to achieve an outcome. It may also include the composite outcomes or end results that emerge when an individual, group or organisation pursues actions that may be measured to determine whether they are optimal (minimised or maximised). |
| Qualification | A consistent and portable credential recognising an individual’s attainment of all the criteria, learning outcomes or capabilities nominated as requirements for recognition at a given level of accreditation. This may be through the completion of a course or through direct assessment or a combination. |
| Knowledge management | Capturing, organising and storing knowledge and experiences of individual workers and groups within an organisation and making it available to others in the organisation. The information is stored in a special database called a knowledge base. |
| Expertise/mastery | Unconscious competence in capability deployment. |
5.2.1 Capabilities: a model for studying performance, knowledge and learning

A conceptual framework needs to be presented that can enable this Investigative Research Report to review, understand and qualify how individual participation in elearning contributes to multiple organisational outcomes such as learning, performance and knowledge. A better framework for understanding learning, performance and knowledge and their interrelationship would not only inform elearning professionals on the design and management of interventions, but may enable existing interventions to be better measured. If this is so, then it will also provide a basis for evaluating how efficient and effective elearning can improve individual and organisational outcomes.

The quest for this form of investigative framework has been pursued by other researchers. One of the approaches that has been used as a base is the concept of organisational capabilities. Tovstiga and Birchall sought to:

...present a methodology that can be used to identify key capabilities and also the knowledge internalization trajectory that describes (1) the sourcing; (2) the internalization of new knowledge streams and, ultimately, (3) the reconfiguration of existing knowledge in the form of maximum impact. (Tovstiga & Birchall, 2002:105)

By examining capabilities writers such as Quelin (1997) and later, Tovstiga and Birchall, could classify different forms of capabilities within an organisation. Quelin separated out capabilities that were specialised (individual or task related), functional (specific to areas of operation), cross-functional, and organisational (1997:146). Tovstiga and Birchall organised knowledge into capabilities classified as relating to processes (e.g. quality systems), markets (delivering product and services) and functions (skills and technologies to perform) (2002:109). This classification enables the authors to then examine how different types of knowledge could be targeted to individuals, jobs and areas of activity. The differentiation of levels or classes of capability is devised to improve flexibility, resource allocation and the effective deployment of learning interventions.

Figure 5.1 Distinguishing knowledge within an organisation

As Figure 5.1 depicts knowledge may vary in both its type (tacit and explicit) and how it flows within an organisation. Concentrating only on building explicit skills and knowledge in an individual may not deliver the capabilities required by other
levels within the organisation. Nor will concentration on only one area of knowledge generate the overall stock of knowledge capital required to perform and satisfy customers in a competitive manner.

The capability-based approach supports other literature that views skills and knowledge related to task performance as one aspect to overall organisational performance. Having the skills to perform may be accounted as a human capital knowledge asset, but it does not guarantee successful deployment of these skills.

As will be investigated in greater depth in subsequent sections, the competency approach to building skills and knowledge (i.e. competency-based human resource [CBHR], or competency-based training), has been advanced as offering an effective means to define and measure individual and collective capacity to perform (Spencer & Spencer, 1993:105; Fitz-ens, 2000:15; Lapierre & MacKay, 2002:308). However, accounting for the other factors that contribute to performance is essential when organisations attempt to account for the overall ‘bottom-line’ value of knowledge. The bottom-line metrics for human capital and any mix of the constituent components such as learning, performance and knowledge have to encompass all the aspects that can contribute to potential performance capacity.

Capabilities are the special elements in the pool of potential capacity held by individuals interacting in teams, organisations and community groups. These specified capabilities do not represent actual performance, but rather the potential capacity to perform. The context of application and the interaction generating performance determine which capabilities the individual is able to apply to that situation. The definition of capabilities, therefore, needs to extend beyond the traditional knowledge and skills required to predict performance and also encompass the human factors that shape performance capacity in a known current, and unknown future, context.

The need for process improvement within principally manufacturing organisations led to the need for specified competencies. Competency is the demonstrated ability of an individual to perform to an agreed, defined standard within a given context. That is, competence is an aspect of capability and denotes the visible elements of a performance capacity. Capabilities define the range of activity performance that is possible. Competencies are the visible indications of these capabilities.

Bowles presented a framework for defining the different variables associated with competency and capability. Based on work with major corporations in Australia, including Woolworths, from 1993 to 1998, the framework integrated a competency-based approach to learning and performance with an effort to analyse and report outcomes within an intellectual capital accounting system (Bowles, 1999:52).

The current performance capability in a given context requires competent performance to be defined as

**Competence = the Skills + Knowledge**

**Competency** is here defined as the **knowledge** and **skills** that can be identified in the individual's performance.
The current performance capability in a given context requires competent performance to be defined alongside identity factors

**Identity** = (meaning + cultural beliefs) + (values + roles + behaviours)

Identity is the individual's ability to network in such a way that tacit knowledge is distributed, contextualised and prioritised. The identity will be appropriate to the behaviours, roles, meaning and worldview promoted by diverse interests (individual, societal, organisational, etc.) impacting a given performance context. Identity may also be evidenced as cultural awareness or values that are acquired through experience and focused by an individual in a given performance situation. It also encompasses the capacity to identify purpose and convey meaning on a given subject (method, media, semiotics, etc.).

Therefore, identity stimulates the communication of actions that are linked to a purpose and the building of relationships and commitment that enable the purpose to be realised.

(Bowles, 1999:53)

The current performance capability in a given context can be defined as

**Competence + Identity**

### 5.2.2 Internal capabilities within an organisation setting

Capabilities extend beyond the individual. An organisation’s capacity to perform contains all the possible configurations required for anticipated action. When an individual operates in a particular context, they will (if they are ‘competent’) draw on those capabilities relevant to achieving the purpose of the activity that the organisation has allocated to them. An organisation may hold such capabilities at three levels:

1. Corporate;
2. Collaborative or group;
3. Individual.

It is essential that development of capabilities occurs at all three levels.
Figure 5.2 Levels of learning and performance

Figure 5.2 represents the small leap in management perception and practice that is required to generate integration between individual performance outcomes and organisational strategic outcomes. This suggests that any attempt to finalise a capability development strategy that is intent upon integrating learning with knowledge cannot ignore the variations in context that will impact on an individual's performance within a specific job context. Knowledge required to perform may reside in different levels and both within and external to the organisation. As stated by Bowles (1999:54–55):

This extends beyond just defining competencies that depict performance. Standards of competent performance, no matter the framework used to describe competence, need to integrate a sense of purpose and shared identity before it can orient individual performance to outcomes that transcend task and process levels to meet future contingencies. Group or team outcomes and organisational level outcomes require capabilities that span all levels, and describe capacity in a way task level competencies simply cannot encompass.

Such capabilities must also help distinguish the parameters for an organisation's capacity and its purpose.
5.3 Capability and Productive Capacity

As a construct, capability-based approaches to managing knowledge and learning can be extended to conceptualise how it permits the attributes of competency and identity to be integrated, targeted, reported and analysed for their value contribution to overall knowledge capital — the potential productive capacity and agility of an organisation.

Capacity is the general term for the pool containing the collected infrastructural, human and social capabilities that exist in a particular organisation (Bowles, 1999:20-23). One might talk, for example, of the capacity of an organisation (public, private or community-based) to respond in the event of a medical emergency. One might also identify areas in which the organisation’s capacity to respond to a severe medical emergency can be anticipated and built.

Capability is a quality or ability that can be developed or deployed — here used simply as the term for the specified elements of physical, human and social resources that are collected in the capacity pool and then deployed through individual capabilities (Bowles, 1999:140; see also Figure 3).

The terms capacity and capability can be used synonymously, but it seems most useful to differentiate between them as capacity representing the overall capacity of this organisation, to deploy the physical, human and social capabilities that are linked to it. Total capabilities only represent the potential for performance capacity.

Figure 5.3 shows how knowledge capital can reside in different forms and while many different ways of describing this exist (see Chapter 4, sections 4.3.2 to 4.4.1), the Bowles typology as represented in Figure 3 refers to human, infrastructural and social ‘resource pools’. All can be managed to enhance the capabilities required to achieve performance outcomes. However, the three circles of capital, and the two for competence and identity, have overlapping sectors, which indicate how productive outcomes do not draw on all knowledge capital or capabilities available to the organisation. Performance outcomes do not, at any one time, reflect or draw on the entire knowledge assets resident within individuals, teams or the organisation.

Managing knowledge assets to maximise performance capacity must recognise that the untapped knowledge capital resources and capabilities of the organisation cannot be ignored if the full potential of the organisation and the individual is to be realised. Knowledge assets resulting in applied outcomes or task completion (competency) are not necessarily the only contributors to performance. Identity capabilities (those non-competency-based attributes such as culture, roles, behaviours and traits) that may include tacit or embedded knowledge hold equal value to current performance. In addition, they may be essential in order to achieve transformation to future performance needs as organisational purpose changes.
5.3.1 Defining competence

Once again, however, the concept of competence as a formal field of research has undergone many evolutions and has inspired a wide range of approaches. Literature around the globe has since the early 1960s presented competencies as a behavioural form of pedagogy, a means to structure work, a basis for organisations achieving competitiveness or the foundations for national vocational education and training systems.

In the late 1970s and early 1980s many writers explored the concept of competence as a basis for improving human and management performance. Such authors include:

- Chris Argyris (1962): *Interpersonal Competence and Organisational Effectiveness*;
- W. J. Popham (1979): *Criterion Referenced Measurement*;
Research shows that competency-based approaches to training, assessment and human resource activities (i.e. recruitment, selection, etc.) have been in evidence within organisations since the early 1970s. They are no less prevalent today. While the approaches to implementing competencies usually vary depending on the consultants and the organisational needs, in the 1990s the emergence of formal, national strategies to implement competency-based systems began to have a profound influence on the field of research.

Beginning in the mid-1980s England and Wales started what became codified into the United Kingdom’s National Vocational Qualifications (NVQs) system. After examining development in the UK and Europe, New Zealand established a competency-based training agenda under the National Qualifications Framework. After its 1998-1990 European fact-finding taskforce missions returned (TAMOMS–DEET, 1991) Australia also establish a blueprint for a vocational education and training framework based on competency standards. In the same 1989-1992 period the Secretary's Commission on Achieving Necessary Skills (see SCANS at http://wdr.doleta.gov/SCANS/) and the National Skills Standards were advanced in the United States. The appearance of the agendas varied from identifying less than a dozen core or key competencies that all entrants to the labour market should hold, to a complete competency-based framework for reforming education, vocational training and industrial productivity.

Wide-ranging advances were made in Australia, New Zealand and the UK by tying competency development to qualifications, workforce mobility, industrial reform and economic growth. Subsequently, a number of other countries began to drive national training reforms based on a competency approach. Table 5.1 indicates some of these countries.

### Table 5.1 Countries adopting national competency-based training systems (2000)

<table>
<thead>
<tr>
<th>Major Imperative</th>
<th>Evolving Imperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales/United Kingdom</td>
<td>The European Union</td>
</tr>
<tr>
<td>New Zealand</td>
<td>United States</td>
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<tr>
<td>Australia</td>
<td>Thailand</td>
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<td>Malaysia</td>
<td>Canada</td>
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<td>South Africa</td>
<td>Singapore</td>
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<tr>
<td>Sweden</td>
<td>Taiwan</td>
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<tr>
<td>Germany</td>
<td>Mauritius</td>
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</tbody>
</table>

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The approaches to competencies at a national level did enforce some reconsideration of how competencies were framed, grouped and managed. While the literature from the relevant countries on how their approaches are undertaken abounds, the focus for this section is on the foundations of competence that can inform a concept of capability.
Advocates for competency-based approaches to training and HR classically embrace it because it sets a defined standard for both learning and performance outcomes. This outcome is independent of the person, job and situation. As such, there is clarity as to what individuals need to know and do. The consistency of the descriptions and their classification (job families, levels of performance, or such like) also permits mobility between jobs, locations and courses that use competencies. Once a standard of competence has been set this standard becomes the consistent basis for assessment.

Critics of competency-based approaches mainly target its behaviourist origins. Many view it as reductionist, narrow, inflexible, and empirically and pedagogically a ‘one size fits all’ approach (Chappell, 1996). It has also been criticised because its behaviourist approach could not provide qualifications and curriculum with an indication of the non-skills based attributes that would underpin competent performance (Bowles & Graham, 1994:12). While research and literature continues to establish the new frontiers for competency-based approach or debunks existing approaches, competencies have become embedded as major national as well as industry and organisational approaches to completing the management of learning, performance and knowledge.

While there are many variations on how to frame and write competencies analysis of the literature shows in most cases these all draw upon the theoretical constructs developed by the early writers. Most influential were the early works by Argyris (1962) and Boyatzis (1982). Boyatzis’s seminal work formed the basis for defining and producing a model for competency-based education, training and development. It is in Boyatzis’s work that one can also find many of the shortcomings of approaches that distinguish what constitutes a definition of a competency required for a specific work context.

Boyatzis proposed a model of management training, education and development based on competency. He stated competencies would make clear:

...what sort of person will be effective in our organisation in specific jobs...
a template for decisions such as selection, promotion, firing and design of and assignment to management development activities...interpret responsibility for success or failure with respect to accomplishment of performance objectives...communicate to all managers how they should act and what they should be doing...basis for the design of management jobs and the organisational systems, policies, procedures and programs. (Boyatzis, 1982:13)

Figure 5.4  Boyatzis's model for competencies and effective performance
In very simple terms, Boyatzis saw effective performance as requiring a consistent attainment of three factors: job demands, organisational environment and individual competence (Boyatzis, 1982:13). Other dimensions were added by later literature to expand upon these three aspects of effective performance.

Job demands were seen as being formed around roles in planning, organising, controlling, motivating and coordinating (Boyatzis, 1982:17).

The organisational environment was almost exclusively seen as being formed around a study of climate and culture with a heavy emphasis on theorists and concepts associated with identifying the role/function and characteristics of management in a given organisational environment. This was consistent with ideas advanced by such theorists as Mintzberg (1973) and Drucker (1973).

Unlike Mintzberg’s earlier contingency approach (1973:102–103), which externalised the common variables that shaped the different ways managers performed specific work, Boyatzis’s model sought to integrate organisational environment, functions and personal competencies as variables that shaped management jobs into a common set of performance requirements.

Boyatzis sought to integrate Mintzberg’s model (see Figure 5) into a concept of ‘individual competence’ defining the characteristics of managers that enabled them to perform successfully in a job (Boyatzis, 1982:20). This definition included the dimensions of skills, individual characteristics and what were termed traits and motives (Boyatzis, 1982:27, 33, 195). Later Boyatzis went on to identify competence as a dynamic interaction between components of job competency and levels of application.

Figure 5.5 The variables impacting a management job in a given environment

Environmental Variables:
Characteristics of the milieu, the industry, the organisation

Job Variables:
The level of the job and the function supervised

Personal Variables:
Personality and style characteristics of the incumbent in the job

Situational Variables:
Temporal features of an individual job

Basic Managerial Role Requirements
Basic Characteristics of Managerial Work

One Manager’s Work

(Mintzberg, 1973:103)
Boyatzis found common or core management clusters could be determined by examining the groupings of specific sets of competencies under different functions. This is an important factor as Boyatzis was focusing on developing functional management competencies. He stated that the list of specific competencies in a discrete or highly specialised function ‘is not as important to this analysis as the predictive accuracy of the entire set’ (Boyatzis, 1982:203).

To assist differentiation, levels of job application were broadly grouped into entry, middle and executive level jobs (Boyatzis, 1982:217, 219, 222). Boyatzis identified management clusters that included:

1. Goal and action;
2. Leadership;
3. Human resources management;
4. Directing subordinates;
5. Focus on others; and

It was under the sixth topic that most of the variations or specific management competencies were included when they did not fall into the other clusters. For each function, under each of the clusters one could define tasks that a specific manager at a different level of performance would perform in their organisational environment (Boyatzis, 1982:215, 242). Boyatzis’s approach to competency-based development did not effectively address some important considerations, including:

- The concept of generic was related to common functions and clusters of competencies within a level of performance not explicitly related to a function across an industry or nation;
- Analysis did not differentiate how skills may relate to either ‘functions’ or ‘roles’;
- Except where it was included as a competency cluster called ‘specialised knowledge’ the definition of competence excluded knowledge and concentrated on the individual’s socio-psychological characteristics, traits, motives and skills;
- The model placed heavy emphasis on both conscious and unconscious behaviours inherent in a manager’s functioning but did not define them.

Contemporary research and literature still indicate competence-based approaches at an organisational level will vary (Hodkinson & Issitt, 1995; Barrie & Pace, 1997). Spencer and Spencer suggested competencies have four defining features (1993:15):

1. A competency is an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job situation.
2. Underlying characteristic means the competency is a fairly deep and enduring part of a person’s personality and can predict behavior in a wide variety of situations and job tasks.
3. *Causally related* means that a competency causes or predicts behavior and performance.

4. *Criterion-referenced* means the competency actually predicts who does something well or poorly, as measured on a specific criterion or standard.

Other authors stress the role of competencies as the core technical skills, knowledge and technologies that enable organisations to maintain unique productive capacity. Such approaches reinforce the need for competencies to be specific to the organisation and unique components of the overall competitive capabilities held by an organisation and its workforce (Prahalad & Hamel, 1990:79; Sanchez & Heene, 1997:5-6; Allee, 1997:21). These types of models may be able to accommodate national approaches to competency frameworks but ultimately these approaches recognise competitiveness cannot be generated from the same skill and knowledge available to anyone in the marketplace.

### 5.3.2 Competence as a component of capability — an Australian perspective

Given that this Investigative Research Report is intended in the first instance for an Australian audience it is worth noting the specific approach adopted by Australia. In the early 1990s, Australia moved its national vocational education and training system to one based on competencies. The then National Training Board (now the National Training Quality Council — NTQC), defined competency as:

> The specification of the knowledge and skills and the application of that knowledge and skill across industries or within an industry to the standard of performance required in employment. (NTB, 1992:10)

In essence a competency is what a person can actually do within a real job. This involves more than just completing a range of tasks. It requires that performance be assessed to an agreed standard, and can be completed in a range of different contexts when considering variables (e.g. type of technology, time) that may impact performance.

A competency standard is the specification or benchmark which describes the knowledge, skill and attitude required to attain performance outcomes. A National Competency Standard is endorsed by the National Training Framework Committee.

This council ensures that the ‘standard’ is written in a certain format, is validated, involves wide consultation and is advanced by an institution that can support and promote ongoing review. As competencies are identified they must be aligned with the Australian Qualifications Framework (AQF) to enable cross-industry and cross-occupational comparisons and levels of performance to be benchmarked.

Standards can be submitted to the National Training Framework Committee by:

- **An industry body**
  - e.g. the Wholesale, Retail and Personal Services Industry Training Advisory Board

- **A cross-industry body**
  - e.g. Workplace Assessors, Small Business Management Competency Standards Body
An enterprise  e.g. Woolworths, McDonald’s, Qantas.

Competency standards and combinations of units of competency (competency standards) are matched against the AQF to produce the relevant qualifications that are to be used nationally. Competency standards therefore form the basis for vocational qualifications. According to the national guidelines developed by the Australian National Training Authority (2000: Chapter 2:3):

National standards define the competencies required for effective performance in the workplace. A competency comprises the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance required in the workplace. This definition of competency encompasses a range of features:

- The concept of competency focuses on what is expected of an employee in the workplace rather than on the learning process, and embodies the ability to transfer and apply skills and knowledge to new situations and environments;
- In competency standards the emphasis is on outcomes and on the application of skills and knowledge, not just specification;
- Competency standards are therefore concerned with what people are able to do (e.g. maintain and use networks), and also with the ability to do this in a range of contexts (e.g. maintain and use networks of suppliers, government agencies).

A combination of units must cover the four primary components of competency:

- Task skills;
- Task management skills;
- Contingency management skills;
- Job/role environment skills.

The development guidelines for national competencies explicitly include knowledge and skills. They also include information as to how the competency may be deployed across different contexts and contingencies (range of variables) and evidence requirements for judging competency attainment (evidence guide).

Under the Australian model, skills and knowledge are subsets of competencies. In the model posited in this section, competencies are subsets of capabilities.
Figure 5.6  Skills, knowledge and capabilities
5.4 Identity and Meaning

Fundamentally, identity is the source of meaning for individuals (Castells, 1997:6; Whetten & Godfrey, 1998:163). It is explored as part of a capability definition because possession of the competencies required to perform does not alone define the capacity of an individual, group or organisation to actually perform.

Exploring the concept of identity permits this Investigative Research Report to develop a construct that permits a robust investigation of how individual capabilities influence elearning and contribute to organisational learning and performance. As suggested in earlier chapters the success of elearning will not just be its ability to transfer skills and knowledge. Its true value will be to enhance performance while presenting a process and means for collaborative transactions. It is in the social transactions between individuals, groups and organisations that identity is shaped and shared trajectories created.

In the early 1990s researchers began in earnest to examine identity as a means to provide a meta-approach that could encompass many of the human elements required to explain how individuals and organisations perform and gain advantage within an organisational context (Dierickx & Cool, 1989; Dutton & Dukerich, 1991; Giddens, 1991; Straw & Sutton, 1993; Dutton, Dukerich & Harquail, 1994). The importance of these studies was to highlight:

- Many resources typically associated with individual or organisational performance were not ‘tangible’ or easy to transfer;
- Many tacit beliefs and attributes of a workforce were not considered as assets or collectively managed (i.e. individuals’ identification with an organisation’s goals, motivation and commitment);
- People defined themselves through work; and
- Organisations were not acknowledging how their identities were being shaped by individuals and their interaction.

Researchers on identity continued to reinforce how individuals derived meaning from their roles at work while also emphasising how organisational identities were being influenced by the interactions of individuals within and outside its domain of action. In effect, identity was supplying a means to study and isolate the ‘meaning of events and even influences’ and the ‘criteria for deciding the success, failure, effectiveness, or value of actions and outcomes’ for staff and organisations (Gioia, 1998:23).

Individuals, groups and organisations may hold multiple identities that provide meaning. The components being combined to forge identity and meaning may therefore vary with any organisational or performance context. Still, organisational, group and self-identity were being forged by common components in different ways. Identity at all these levels was being forged by the need to ‘belong’ or possess a sense of not only ‘who am I?’ or ‘who are we?’, but also how people differentiate themselves to others. Presented in this manner identity is both a construct defining the characteristics for the ‘self’ and a basis for action that affirms and sustains identity (Gioia, 1998:19). Meaning on the other hand is more about the ‘symbolic identification’ by the individual with the purpose of the action (Castells, 1997:7).
While the search for meaning and identity may be common, its construction differs. Diana Gioia identified three key elements research seemed to confirm as the factors influencing how individuals form a sense of organisational identity (1998:21):

1. The purpose taken by organisational members to be central to the organisation;
2. What distinguishes the organisation from others; and
3. What is perceived by individuals and teams to be the enduring factors that guide current action, interaction and information, while building on the past and presumably informing future action.

Individual and collective identity may be refined and developed as individuals interact and associate within an organisation. The formative three elements shaping individual and collective organisational identity may occur through:

- Subscription to the core visual and symbolic iterations from the organisation (brand, documents, information, etc.);
- Individual needs and preferences (personal alignment with the organisation as it offers a pathway to satisfy future requirements);
- Expectations alignment (personal wishes and hopes satisfied through organisational actions);
- Endorsement (organisational support and validation of individual aspirations and purpose); and

Dis-identification may also occur. This is where the individual creates their own construct of self-identity because the above factors are not being delivered or satisfied by the organisation. Individual and collective rebuff of organisational meaning can consolidate identity in opposition to the organisation’s core purpose. As new information flows emerge and people de-couple from identities promoted by institutions or dominant organisations, identities can be deconstructed and individuals can generate new personal and collective identities (Castells, 1997:13).

Whether a consumer or a staff member, an individual associating with an organisation may carry self-identity that is composed of elements that render it more inflexible and enduring that an organisation’s identity. For instance an individual may hold more deeply embedded influences such as language, culture, location, ethnicity, religion and so on. The drivers for the organisational identity may include more dynamic and specific factors that do not impact individuals until they associate with the organisation. These may include:

- Technology;
- Information and communication;
- Product and market placement;
- Competitiveness; and
Identity as a capability can be broken down into components that can be examined at the individual or the organisational level. This can be seen to include the study of three core elements that forge the construct of collective and individual identity within an organisational setting:

♦   Organisational culture;
♦   Roles; and

5.4.1 Organisational culture

Ernest Bormann (1983) argued that organisational culture was built upon symbolic and shared purpose.

A public consciousness is a crucial element in a group or an organization's culture. Culture in the communicative context means the sum total ways of living, organizing, and communing built up in a group of human beings and transmitted to newcomers by means of verbal and non-verbal communication. Important elements of an organization’s culture include shared norms, reminiscences, stories, rites and rituals that provide the members with unique symbolic common ground. (Bormann, 1983:100)

Bormann contends that the symbolic constructs of reality that a group shares evolves into new patterns of reality. He argues, for example, that technological change — the revolution in computers and information technology — is preceded by symbolic change. According to this argument, the preconditions for change are created symbolically before the technology is introduced. Therefore, the basis for responding to organisational contingencies is built into how an organisation already understands its core purpose and how well individuals can collaborate to achieve these outcomes.

A study of identity is differentiated from one of culture. While the terms and concepts framing identity and culture are inextricably linked, an examination of culture involves a more expansive tableau. This study focuses on individuals and their interaction within or with organisations. While organisational culture may be seen as a precondition and integral component of identity formation it draws upon the wider study of culture to concentrate on the 'general system of rules that govern meaning in organisations' (Smircich, 1983:339). Thus organisational culture and individual or organisational identity is more about a difference in perspective than components or levels of analysis (Gioia, 1998:57).

Individual and collective identity influences organisational culture through the shaping of beliefs and values. These can vary depending on the individual’s level within the organisation and the types of networks or interpersonal relationships held. Beliefs and values may be simply defined as:

Beliefs   Shared truth based on tradition, religion, emotion, a common guide for behaviour.

Values   Shared personal judgments/preferences about what is considered good/bad, likes/dislikes that serve as broad guidelines for social life.
For many managers the prevailing organisational culture is perceived to be directly linked to their own roles and responsibilities. Owner–operators or entrepreneurial managers most often ‘imprint’ upon others and an organisational culture the beliefs and values they personally espouse. Some line managers may also feel a close affiliation for the link between organisational culture and individual beliefs and values. For instance, those managers responsible for external customer relationships may be particularly attuned to how individuals internal and external to the organisation perceive the organisation’s reputation, brand, promise or commitment to the customer. All these are identity factors that reinforce the value of the company and its ‘service culture’.

A non-managerial individual’s perception of an organisation’s culture may be more distant or hold a less intimate relationship with their sense of self. Yet, the examination of roles and their effect upon individual competence and identity is not well covered in contemporary management literature. A review of literature and research on the roles as factors influencing human behaviour and performance in organisations suggests the more prolific point for theoretical formation was made by sociologists, organisational psychologies and organisational theorists writing in the 1960s to 1980s.

The following section examines roles and behaviours. It re-examines some of the earliest theorists in the fields. In conducting this review it is noted many of these works concentrate on managers. The findings have to be extrapolated to encompass individuals who are interacting with an organisation from both internal and external sources.

5.4.2 Roles

Identity is also not the same as roles. As advanced by Manuel Castells (1997:7):

... identities are stronger sources of meaning than roles, because of the process of self-construction and individualisation [sic] that they involve. In simple terms, identities are stronger sources of meaning while roles organise the functions.

While roles may assist the individual to define who they are and their purpose, for the organisation roles are usually derived to achieve an agreed purpose. The constructs of collective identity and the purpose of the organisation generally pre-exist and shape the roles allocated to individuals. This is not to say, however, that individuals and groups in performing these roles may not re-shape collective identity.

The study of the role of a leader is inextricably entwined with the study of roles within task management and organisational performance (see Gardner, 1986; Grove, 1986; Zaleznik, 1977). However, the direction of this study has moved into contemporary studies on the leadership and instigated some of the more profound advances in the role of individual learning in overall organisational performance (see Chapters 9 and 10).

In times of certainty and stability, adherence to the authority role of management has become almost ritualistic, but in times of rapid change, leadership requires staff commitment and adherence to shifting strategic goals. This has emphasised the role of management not only at the interpersonal and technical level, but also in the setting and communication of common visions, values and beliefs.
The ‘role approach’ is a broad field of management research that has tended to focus on what constitutes an effective manager. It derives data from the various roles that managers assume when managing. Essentially, the role approach examines what the functions of management are. The approach gained momentum in the early part of the twentieth century when the French industrialist, Henri Fayol, theorised (1949:3) that managers perform five basic functions:

- Planning;
- Organising;
- Commanding;
- Coordinating;
- Controlling.

Fayol's theory was based on his experiences in French industry, rather than on objective analysis. This subjective analysis was common among early theorists. In an analysis of bureaucracy, Max Weber argued that management therein involved the exercise of control on the basis of knowledge:

_Bureaucratic administration means fundamentally the exercise of control on the basis of knowledge. This is the feature of it which makes it specifically rational._ (Weber, 1947:340)

While many have taken issue with Weber about how rational the management of bureaucracy sometimes is, Weber's theory was derived at a time when a rational approach to management was emerging. This approach reached its pinnacle in the work of Frederick Taylor. Taylor referred to his theory as ‘principles of scientific management’. It involved scientific observation in place of what he perceived as a rule-of-thumb approach to the organisation of work. Under scientific management, Taylor argued that the role of the manager:

...is the scientific selection and then the progressive development of the workmen. It becomes the duty of those on the management side to deliberately study the character, the nature and the performance of each workman with a view to finding out the limitations on the one hand, but even more important, his possibilities for development on the other hand; and then, as deliberately and as systematically to train and help and teach this workman, giving him, wherever it is possible, those opportunities for advancement which will finally enable him to do the highest and most interesting and most profitable class of work for which his natural abilities fit him, and which are open to him in the particular company in which he is employed. [sic] The scientific selection of the workman and his development is not a single act; it goes on from year to year and is the subject of continual study on the part of management. (Taylor, 1947:41)

Although Taylor's theory applied to a relatively stable production environment, there is merit in his human relations training and development approach, which still applies in today's work environment of fast and continuous change. Mary Follett (1941) extolled scientific management because it was based on rational enquiry. However, she also promoted a sense of communicating and creating environments where creativity and ‘coming together’ could be achieved between management and staff.
(Follett, 1924). In a 1925 paper titled *The Giving of Orders* (perhaps the title is an indication of the period in which it was written), Follett shifted the role of management from simply giving orders to finding the reason for an order to be given:

> We have here, I think, one of the largest contributions of scientific management: it tends to depersonalise orders... one might call the essence of scientific management the attempt to find the law of the situation... Our [the manager's] job is not how to get people to obey orders, but how to devise methods by which we can best discover the order integral to a particular situation. (Follett, 1941:59)

Chester Barnard also advanced the concept of the role of the manager as maintaining the organisation in operation via a system of cooperative effort involving three major functions:

1. **The maintenance of organisation communication:**
   
   *We have noticed... that, when a complex of more than one unit is in question, centres of communication and corresponding executives are necessary. The need of a definite system of communication creates the first task of the organiser and is the immediate origin of executive organisation. (Barnard, 1938:217)*

2. **The securing of essential services from individuals:**
   
   *The second function of the executive organisation is to promote the securing of the personal services that constitute the material of the organisations. The work divides into two main divisions; (I) the bringing of persons into cooperative relationship with the organisation; (II) the eliciting of the services after such persons have been brought into that relationship. (Barnard, 1938:225)*

3. **The formulation of purpose and objectives:**
   
   *The third executive function is to formulate and define the purposes, objectives, ends, of the organisation... purpose is defined more clearly by the aggregate of action taken than by any formulation in words... purpose is something that must be accepted by all the contributors to the system of efforts. (Barnard, 1938:228)*

Despite the fact that Barnard wrote this more than half a century ago, his emphasis extended beyond the manager’s role of control and attainment of compliance towards set goals. Performance effectiveness was seen as involving a mix of roles encompassing communication, service contracts and alignment of purpose towards objectives, very much still the core roles espoused in modern management practice.

Peter Drucker traverses the various approaches to management theory and in 1969 advocated a reconsideration of the management theory and the role of the executive.

> We have stressed the abilities of the executive, his training, and his knowledge, but not his specific attribute, which is effectiveness. (1969:247)

Drucker advocated management by objectives which developed the outcomes approach and the need for managers to set outcomes and for leadership to establish
processes and communicate in a manner that could enable more dynamic approaches to goal attainment through goal renewal and staff motivation.

In 1973, Henry Mintzberg intensively observed five U.S. chief executives as they worked. This followed a number of similar studies by Mintzberg in the late 1960s. Mintzberg aimed to analyse what executive managers actually do in order to develop a theory of effective management. Mintzberg's observations exploded the notion that managers made decisions after careful planning and reflective thinking. He found that managers had little time for reflective thinking because of the number of interruptions they encountered in their work. Rather, Mintzberg concluded that managers perform ten interrelated roles (or behaviours), which he grouped into three categories: interpersonal, informational and decisional. Mintzberg described managerial roles as follows:

Table 5.2 Mintzberg’s managerial roles

<table>
<thead>
<tr>
<th>INTERPERSONAL ROLES</th>
<th>Role</th>
<th>Description</th>
<th>Identifiable Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figurehead</td>
<td>The symbolic head who is required to perform a number of routine social or legal duties</td>
<td>Ceremony, status requests and solicitations</td>
<td></td>
</tr>
<tr>
<td>Leader</td>
<td>Responsible for motivating and activating subordinates as well as for staffing, training and associated duties</td>
<td>Virtually all managerial activities involving subordinates</td>
<td></td>
</tr>
<tr>
<td>Liaison</td>
<td>Maintains a self-developed network of outsiders and contacts who provide favours and information</td>
<td>Acknowledgments of mail, external board work and other activities involving outsiders</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFORMATIONAL</th>
<th>Role</th>
<th>Description</th>
<th>Identifiable Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor</td>
<td>Seeks and receives wide variety of special and current information to develop a thorough understanding of the organisation and the environment so as to be the nerve centre of internal and external information of the organisation</td>
<td>Handling mail and contracts concerned with receiving information (including periodical news and observational tours)</td>
<td></td>
</tr>
<tr>
<td>Disseminator</td>
<td>Transmits information received from outsiders and subordinates to organisation members some of it being factual, some involving interpretation and integration of diverse value positions of organisational influencers</td>
<td>Forwarding mail into organisation for informational purposes, verbal contracts involving information flow to subordinates (review sessions and instant communication)</td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 5 Capabilities Defined

#### Role Description Identifiable Activities

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Identifiable Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spokesperson</td>
<td>Transmits information to outsiders about organisation plans, policies, actions and results and serves as an expert about the organisation's industry</td>
<td>Board meetings, handling mail and contracts involving the transmission of information to outsiders</td>
</tr>
</tbody>
</table>

**DECISIONAL**

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Identifiable Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneur</td>
<td>Searches internally and externally for opportunities, initiates improvement projects to bring about change and supervises the design of certain projects</td>
<td>Strategy and review sessions involving initiation or design of improvement projects</td>
</tr>
<tr>
<td>Disturbance Handler</td>
<td>Responsible for corrective action when the organisation faces important, unexpected disturbances</td>
<td>Strategy and review sessions involving disturbances and crises</td>
</tr>
<tr>
<td>Resource Allocation</td>
<td>Responsible for the allocation of resources thereby making or approving all significant decisions</td>
<td>Scheduling, requesting authorisation, budget activities, and programming subordinates' work</td>
</tr>
<tr>
<td>Negotiator</td>
<td>Responsible for representing the organisation at major negotiations</td>
<td>Negotiation</td>
</tr>
</tbody>
</table>

(Mintzberg, 1973: 93)

From the early 1970s to the mid-1990s the role of management emphasised the seemingly ‘common’ roles involving planning, organising, supervising and controlling. However, the role approach had become a more sophisticated study searching for a mix of skills to transverse the technical, human and conceptual skill mixes necessary for the given management context. Roles are in effect a basis for organising activity, deploying effort and maximising performance.

**Figure 5.7 Katz’s model for defining a manager**

![Katz's model for defining a manager](image-url)
Up until the mid-1990s a number of studies tested the role theory, and the evidence generally supports the broad sense of management and leadership roles and especially the Mintzberg taxonomy. However, it has been found that the roles shift depending on the hierarchical position of the manager, and especially the distinction as to whether they manage people to complete tasks, or set the direction for task completion. For example, the roles of disseminator, liaison, figurehead, negotiator and spokesperson are practised more at higher levels than at lower level management. This seems to indicate the role of leader is practised more at higher levels than at lower levels. This outcome, however, might be indicative of other factors the role approach was not considering.

Luthans (Luthans, Hodgetts & Rosencrantz, 1988) led a team studying managers’ roles from a different perspective. Luthans and his colleagues observed what managers do and then assessed the percentage of time spent by three different categories of managers in actually performing these observed roles.

Luthans then studied the percentage of time spent by each category of manager on the managerial roles. The results are somewhat surprising.

Table 5.3 Luthans’ categories and roles vis-a-vis successful managers

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average Managers</th>
<th>Successful Managers</th>
<th>Effective Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Management</td>
<td>32</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Communication</td>
<td>29</td>
<td>28</td>
<td>44</td>
</tr>
<tr>
<td>HR Management</td>
<td>20</td>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td>Networking</td>
<td>19</td>
<td>48</td>
<td>11</td>
</tr>
</tbody>
</table>

(Adapted from Luthans et al., 1988)

The role approach provides a valid way to categorise the functions of management and establishes how leadership also has distinct roles, as part of a theory of management, or as a distinct search for what constitutes an effective leader (see early work by Yukl, 1989:95; Mumford, Fleishman, Levin, Korotkin & Hein, 1988). Regardless of the different research methodologies and the end profile of roles these studies revealed a high degree of similarity and consistency. When translated into the wider job context, roles provide a basis to describe outcomes within an organisational or societal setting. This can be accomplished independently of job performance and specific behaviours. Roles also help refine understanding of how individuals define their purpose within an organisational context or when conveying a social identity, i.e. most people want to know what others ‘do’ — butcher, baker, manager, etc. — to assist them to categorise their relationship (Hogg & Terry, 2000:121).

Effectiveness and efficiency in the role approach is presumed to depend on contextual factors such as expectations of peers and community members as to appropriate performance. Expectations as to role relationships influence role performance and overall relationships within the organisation. They also shape interactions between individuals within the organisations, and between internal staff interacting with those external to the organisation. Role approach, therefore, acknowledges that relationships between individuals (leaders, managers, staff, peers and customers) need
to be shaped in order to influence appropriate performance within a given context. It is not just the skills and knowledge that determine role performance, they have to be understood with regard to the different sets of roles that different employees perform and how these roles influence interaction between individuals within a given performance context.

5.4.3 Behaviours and traits

In performing roles, individuals source information and create knowledge. The flow of information and how knowledge is shared influences individual behaviours. Researchers have also uncovered a strong link between organisational identity and employee identification with the organisation’s purpose and behaviours that are beneficial to the organisation (Ashforth & Mael, 1989; Dutton et al., 1994; Van Dyne, Graham & Dienesch, 1994).

Behaviour in this sense is an expression of an individual’s identity within an action context. Whether supportive, defensive or plainly hostile to the prevailing organisational culture, roles and collective identity, the individual expresses meaning and identity through their actions within the organisational context. While identity is certainly less than tangible to most individuals and expressed without specific reference to its existence, the ideas, values, expectations and beliefs held by an individual are expressed through their behaviours, within both the organisation and society, whether as an employee or a customer of the organisation.

Subsequently, self-identity is translated into the action mode through behaviours.

In the previous section it was shown that many theorists focus on the role(s) that employees and managers assume within the organisation. In contrast, the study of behaviour in the management field asks what innate behaviours an effective employee or manager displays and what behaviours an ineffective employee or manager displays. While behavioural research generally covers studies on employees and managers they tend to focus on leadership. Increasingly leadership has been studied using the behaviour approach in an attempt to differentiate the behaviours of leaders and non-leaders. Inevitably, this has led to behavioural-psychological theories examining an individual’s behaviours and personal traits.

In 1960 behaviours emphasising participative, and what Likert termed ‘supportive’, relationships began to appear in the study of leadership:

_The leadership and other processes of the organisation must be such as to ensure a maximum probability that in all interactions and all relationships with the organisation each member will, in the light of his background, values and expectations, view the experience as supportive and one which builds and maintains his sense of personal worth and importance. (Likert, 1961:104)_

A neo-classical theorist, Rensis Likert (1961) sought to validate the behaviours or characteristics that enable leaders to lead and subordinates to perform in a manner that achieved high levels of productivity and employee satisfaction and motivation. He found that those managers (leaders) who placed more emphasis on the ‘human aspects’ rather than production aspects of management benefited from higher production outcomes.
Likert confirmed that higher productivity can be achieved by allowing employees greater autonomy in task management and completion, while the leader focused on goal alignment and attainment. Equally, staff involved in decision-making processes also felt greater 'ownership' of goals. This reinforced the achievement of goals set by an organisation.

The effective leader, therefore, instilled goal ownership through collective decision-making and the treatment of staff as human beings first and productive task-oriented resources as important, but secondary, considerations. Clearly, it was the manager who sought to control tasks and make all decisions who was least able to attain a high degree of leadership effectiveness. An effective leader on the other hand was able to be “unselfish, cooperative, sympathetic, democratic, interested in the agency's success, honest, fair and willing to help when asked” (Likert, 1961).

Likert as much as any management theorist typifies the behavioural approach, but perhaps Douglas McGregor's Theory Y (1960) entrenched the approach in organisational practices. Essentially, McGregor observed that there were two diametrically held assumptions that infiltrated management practice. The assumptions represented what can be viewed as polarised ways to view behaviours in the workplace. Managers and subordinate ‘followers’, he theorised, display behaviours derived from one or the other set of assumptions. The first set of assumptions he called Theory X:

1. The average human being has an inherent dislike of work and will avoid it if he can . . .
2. Because of this human characteristic of dislike of work, most people must be coerced, controlled, directed, threatened with punishment to get them to put forth adequate effort toward the achievement of organisational objectives . . .
3. The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition, wants security above all. (McGregor, 1960:33–34)

The second set of assumptions he called Theory Y:

1. The expenditure of physical and mental effort in work is as natural as play or rest . . .
2. External control and threat of punishment are not the only means for bringing about effort toward organisational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
3. Commitment to objectives is a function of the rewards associated with their achievement . . .
4. The average human being learns, under proper conditions, not only to accept but to seek responsibility . . .
5. The capacity to exercise a relatively high degree of imagination, ingenuity and creativity in the solution of organisational problems is widely, not narrowly distributed in the population.
6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilised. (McGregor, 1960:47–48)
McGregor concluded that the traits that Theory X managers displayed were those of direction and control associated with the exercise of authority, while the traits that Theory Y managers displayed were facilitation and integration. McGregor’s theory had a remarkable impact on management and even today managers are sometimes referred to as X or Y managers.

Perhaps the most important work on balancing a manager’s concern for people or processes was undertaken by Blake and Mouton, who developed a two-dimensional view of leadership style structured in a managerial grid with two axes: concern for people and concern for production. The grid has nine possible positions along each axis creating 81 different positions into which a leader’s style can fall (Blake & Mouton, 1984).

**Figure 5.8  Blake and Mouton’s management grid**

Blake and Mouton identified five key positions on the grid:

**Cell 1:1**  **Impoverished**  The leader exerts minimum effort to accomplish work.

**Cell 9:1**  **Task**  The leader concentrates on task efficiency but shows little concern for the development and morale of subordinates.

**Cell 1:9**  **Country-club**  The leader focuses on being supportive and considerate of subordinates to the exclusion of concern for task efficiency.

**Cell 5:5**  **Middle-of-the-road**  Adequate task efficiency and satisfactory morale are the goals of this style.

**Cell 9:9**  **Team**  The leader facilitates task efficiency and high morale by coordinating and integrating work-related activities.
Blake and Mouton conclude that a manager performs best using behaviours that achieve a 9:9 result (Blake & Mouton, 1984).

The literature and research on the traits approach more generally seeks to isolate even further the characteristics that define effectiveness. In a sense, employee behaviours are almost a subordinate consideration to what a manager or leader needs to do to secure subordinate support, organise for task completion, increase job satisfaction and secure goal attainment. These often give myopic insights into employee behaviours and needs.

The traits approach has often been advanced by academics in a manner that spans behavioural and role approaches. Traits are the characteristics that 'good', or indeed great, leaders display. From his observations, Bennis (1989:126) defined four traits common to every one of 90 managers he studied:

1. Management of attention;
2. Management of meaning;
3. Management of trust; and

William Sandy identified that management requires an emphasis on traits that reinforce the manager's ability to build productivity partnerships between the individual and corporate needs. These traits include:

**Credibility**
Saying what you mean and meaning what you say.

**Confidence**
You know what to do even in the most ambiguous circumstances.

**Consistency**
You work for the sustainable long term and short-term needs fit within this plan or vision.

**Context**
You can make all the separate actions fit into a holistic strategic blueprint (Sandy, 1990:25).

These are very interesting traits because they remove one from the mindset of managers as simply replicating learnt behaviours to highlight that managers must respond to a number of contingencies. In effect, managers build from their personal experiences and develop traits or personal attributes that enable them to respond to change in the performance context or perform effectively.

In 1990 Stephen Covey presented research on findings that he had undertaken over the previous decade (1992). This subsequently well-known and widely read book identified seven habits of highly effective people. The habits were tied to the successful leader (Covey, 1992:40–47). The points were:

1. Be proactive;
2. Begin with the end in mind;
3. Put first things first;
4. Think win–win;
5. Seek to understand, then to be understood;
6. Synergise; and
7. Sharpen the saw (continuous improvement and self-renewal).

These habits occur against a model in which Covey constructs four levels and four key principles for principle-centred leadership.

**Figure 5.9 Covey’s principle-centred leadership levels**

James Kouzes and Barry Posner (1993:13–18) examined the importance of credibility as the single most critical factor in leadership. The study identified not just the characteristics of 'admired' leaders but also four major characteristics, which were universally rated very highly:

- Honesty;
- Forward-looking;
- Inspiring; and
- Competent.

It is rare that organisations today do not identify the importance of reinforcing positive behaviours. Building positive behaviours requires the ability to treat people with integrity and respect while possessing empathy with another individual’s needs. Integrity, respect and empathy all involve one person acting and communicating with regard to the other person’s values, beliefs and expectations. A hierarchy of needs have been isolated that can be used to reinforce how positive behaviours impact identity formation and ‘alignment’ of interpersonal relationships both with internal and external customers. The alignment of these factors and their impact on identity formation are listed in the following table.
Table 5.4 Reinforcing positive behaviours and the impact on identity formation

<table>
<thead>
<tr>
<th>Attribute and Description</th>
<th>Impact on Identity Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Praise</strong> — Avoiding criticism to encourage and reinforce examples of work done incorrectly or recognise where better ways have been devised by others and the organisation can benefit from their adoption.</td>
<td>Confirms expectations and desired behaviours.</td>
</tr>
<tr>
<td><strong>Physical survival</strong> — Individuals seek security and safety; threats to these outcomes increase conflict and disharmony.</td>
<td>Translation of an individual’s identification with an organisation’s purpose to wider social and lifelong needs.</td>
</tr>
<tr>
<td><strong>Recognition</strong> — Individuals need to feel worthwhile, to feel valued and be recognised for their value.</td>
<td>Alignment of purpose between individual endeavour and organisational vision. People with a reason for existence that can be tied to work develop stronger commitment.</td>
</tr>
<tr>
<td><strong>Independent capability</strong> — Individuals need to feel capable.</td>
<td>Sense of self-worth or categorisation. Whether they are a staff member or external to the organisation, people need to feel adequate, strong and, in that sense, independently able to achieve what they want. The more people are asked to trust or undertake tasks they cannot control or understand the greater their loss of independence or perception of threat.</td>
</tr>
<tr>
<td><strong>Affiliation</strong> — Affiliation refers to a connection, a ‘belonging’ in a community where they are accepted.</td>
<td>Collective self-esteem and identification with the organisation. While people seek independence, they also seek a reference for that independence. Their needs are meaningful only in a communal context of relationships. The organisation and their work teams need to provide affiliation with a meaningful frame of reference (the corporate culture) in which they can contribute.</td>
</tr>
<tr>
<td><strong>Purpose</strong> — Individuals need a purpose for their existence, a reason to get up every morning, a reason to continue.</td>
<td>Some people sustain a belief system by which they interpret their life experiences. Others find a purpose in the fulfilment of goals which they set or they more easily move towards task completion when they can understand the purpose clearly.</td>
</tr>
</tbody>
</table>

(Derived from Graham, 1993)
If every action and communication by a manager has a capacity to influence behaviour then management actions and communication impact both culture and identity within and outside the organisation in a positive or negative manner.

In effect, workplace culture and organisational identity formation are strengthened where the purpose embeds values and beliefs that relate to expectations for integrity and credibility.

The uniqueness of an organisation’s culture is due to a mix of factors, as covered in the previous sections. This mix is specific to an organisation’s context. If communication and learning practices ensure that these elements promote effective employee relations and performance, this latter attribute is almost impossible for a competitor to replicate. It is not a machine or a design for a product and service; it is embedded in how people want to work together, in the given situation.

Without cross-referencing research, it can be said that core studies such as those conducted by Bennis (1989), Sandy (1990), Kouzes and Posner (1987) and Covey (1992) highlight how many common aspects emerge when defining the traits required by modern managers trying to effect performance outcomes. These studies also argue traits can be commonly held not only across functions, but across different countries and cultures.
Chapter 5 Capabilities Defined

The above Covey approach suggests that while habits may be classified, the effective leader may be defined using widely different criteria. These habits include values and behaviours, not just traits that can be listed, codified, learnt or transferred to others and nurtured by an organisation or group.

Furnham confirmed the need for trait theory to be seen as part of the mosaic forming human behaviour in the workplace, not the full picture (1992). He stated:

\[
\text{Trait theorists argued that a person’s behaviour was cross-situationally consistent and that in the same situation predictable differences in social behaviour occurred. Supporters of this position would no doubt argue that organizational behaviour was a function of stable traits and abilities of people in organizations. (Furnham, 1992:341)}
\]

The trait approach, however, does have some confirmed weaknesses:

- It does not have a universally agreed set of characteristics;
- It does not provide a basis for weighting particular characteristic vis-a-vis another characteristic;
- It is less able to give predictive emphasis to what leaders may require in future situations;
- It is less able to highlight why behaviours and traits may vary in different cultural contexts; and
- It is often not placed in a context.

The whole sense of context and the individual in a situated role has become an important consideration in the literature on traits since the late 1980s. One field of research into traits, Interactionists, has advanced that once social psychological perspectives were added it could be contended that ‘organizational behaviour was a function of the interaction between traits and organizational culture’ (Furnham, 1992:341).

Once again, some of the research into leadership has reinforced the importance of the individual and their behaviours in a given situation. Perspectives on leaders are built into our psyche by literary classics such Homer's *Achilles*, Machiavelli's *The Prince* and Shakespeare's *Henry V*; by military writers on such figures as Caesar, Charlemagne, Napoleon and Frederick the Great; and by the myriad of authors profiling religious, national, moral, political and current leaders. By the late 1980s and the 1990s the management and personal development sections of book displayed the rampant quest to prescribe the factors that could make the ordinary worker a great leader (e.g. Bennis, 1989; Kotter, 1990; Kouzes & Posner, 1987; Manz & Sims, 1987; Yukl, 1989; Covey, 1992).

This 'great man' view of leadership has raised some questions:

- How do we develop leaders?
- It seems to focus on men; what about women?
- Why do many great leaders have similar behaviours and experiences?
What about collective leadership or shared leadership (collaborative approaches)?

What about the importance of the followers, and the prevailing economic and social factors?

Why have so many great 'men' developed followers who succeeded to the leadership mantle?

Why is it that many great leaders influenced followers more by the rewards received than by personal desire to follow a charismatic individual?

Generally, managers in Western countries (e.g. U.S., U.K., Australia, Canada, New Zealand) have been oriented toward the management of structures. As such, the focus for the executive manager as leaders has been to produce corporate visions that are underpinned with quantifiable and meaningful objectives and for the supervisory manager to translate goals into meaningful outcomes and resolve problems affecting goal attainment.

The changing emphasis to leading has occurred as organisations have had to consider how to support and facilitate process improvement as well as the complex relationships between individuals, technology and processes and between processes and the external environment. Increasingly executives and shareholders are placing organisational operations into a 'customer-driven' environment and challenging staff to respond to client needs. The autonomy and flexibility necessary to achieve these outcomes are enhanced by the formation of teams with 'ownership' of a process and problem-solving capabilities.

Today the quest for a more holistic approach to organisational improvement has also impacted leadership theory. This reality provides insights into how learning and traits for all employees are being revised from static models to ones that are dynamic or transformational.

Researchers and practitioners have begun to examine traits and behaviours of leaders in a given context or situation. The early situational studies of Edwin Hollander (1964; 1978) laid the foundations for placing situational (contingency) models into a dynamic transactional process. This approach focuses on how situations and contingencies change and leadership is bound by how these changes impact the interaction between a particular leader and a particular follower over time.

Avolio and Bass (1995) determined from extensive research (Bass, 1985; Bass, 1990; Avolio & Bass, 1995) that the determinant of effective leaders is their ability to enhance group effectiveness. Avolio and Bass individually and together promoted transformational and transactional leadership theories that draw many parallels from McGregor (1960) and Likert's (1961) earlier work. As stated by Avolio (1995):

Transformational leadership would involve establishing one’s beliefs and values and being consistent with them; determining the course for change in the future and articulating it as a vision; stimulating coworkers and oneself to challenge traditional ways of thinking; and developing oneself and others to the highest level of potential.
Bass’s study of transactional leaders emphasises how transaction or exchange takes place between leaders, colleagues and followers. Leadership is based on using this exchange to achieve specific expectations. The leader uses the exchange process to guide understanding of the followers and shape action by reinforcing what the followers will receive, or not receive, if expectations are respectively satisfied or not satisfied.

Transformational leadership in contrast with transactional leadership emphasises a different approach to leadership. Transformational leaders use 'higher-order' aspects to their relationship with followers to achieve outcomes (Liethwood & Steinbach, 1991). Rather than rely on exchanges, transformational leaders motivate followers to achieve exceptional outcomes by setting and communicating visions for outcomes that extend beyond individual self-interest and to achieve shared outcomes desired by the group. As such it is the manager who controls and coordinates attainment of goals, while it is the leader who helps shape the vision, articulate the direction, set goals and orient the teams to outcomes that transform action into goal attainment (Bennis & Nanus, 1985:21; Bennis, 1989:46).

5.4.4  Identity and capability

Whether culture, roles, traits or behaviours, the situation or context will vary the knowledge capital or capabilities required by both a leader and staff members. The complexity of the change processes within which the individual operates and the individual’s motivation will also significantly vary effective performance (Mant, 1997:100–106).

The research into leadership and management has provided a considerable foundation for appreciating that an individual’s performance is influenced by their identity and disposition to perform. These variables may be understood through an examination of culture, roles, traits or behaviours. Taken together these approaches develop a common foundation and comparable characteristics. Using a grouping of embedded and tacit knowledge attributes under an ‘identity’ construct enables a capability profile that may be contextualised to individuals performing within a situation and resolving contingencies present in that context.

The Investigative Research Report proposes that the merging of culture, roles, traits or behaviours can occur under a concept of ‘identity’ that can be depicted as follows.

**Figure 5.12  Identity and capabilities**
5.5 Elearning and Capability-Based HR Reporting

It is argued that a capabilities-based approach to human resource reporting for learning and performance can help distinguish the parameters for an organisation's capacity and its purpose. Capabilities provide a common ‘currency’ that is portable and comparable across individuals, occupations, jobs, functions, teams or communities, locations and, indeed, cultures. It is also the currency that can be used for reporting outcomes across performance, knowledge, learning, human resource and human capital management systems. The identification and utilisation of capabilities also permit analysis of the effect of learning and the relationship between the individual and the organisation.

For organisations the development of individuals as a knowledge capital resource requires the development of new strategies to capture knowledge resident within the individual. Not all knowledge capital is owned by the organisation or is under their control. Therefore strategies have to be used to enhance an individual’s commitment to the organisational purpose such that they transfer tacit and embodied knowledge to others. It is through these learning exchanges that overall performance capability can be enhanced. All the skills, knowledge, behaviours, roles and cultural attributes that drive performance cannot be defined in a job description set for current applied performance. Nor can elearning target improvement of performance if job descriptions embody only explicit skills descriptions. Skills-based descriptions are simply too inflexible and ignorant of the individual and collective capabilities required to enhance identity or future performance.

Table 5.5 Comparison between skills-based and capability inventories

<table>
<thead>
<tr>
<th>Skills-based Approach</th>
<th>Capability Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>One way that can be defined to 'properly' complete tasks to the required standards</td>
<td>Tasks vary with time and situation and interpretation of data must consider these variables</td>
</tr>
<tr>
<td>Information is based on current performance data and projections</td>
<td>People's perceptions are an important variable to measure</td>
</tr>
<tr>
<td>Reality can be quantified</td>
<td>Actions define current reality</td>
</tr>
<tr>
<td>Logic-based</td>
<td>Value-based</td>
</tr>
<tr>
<td>Performance is real and can be quantified if the correct instruments are used</td>
<td>Individual can adapt to context to complete task</td>
</tr>
<tr>
<td>Training-embedded behaviour</td>
<td>Training continually redefines culture</td>
</tr>
<tr>
<td>Tasks define jobs</td>
<td>Tasks may define multiple purposes and futures</td>
</tr>
<tr>
<td>Individuals need job descriptions to define performance expectations</td>
<td>Job descriptions rarely reflect current performance reality but assist in describing expectations and career pathways</td>
</tr>
<tr>
<td>Skills analysis defines the portability of individual competencies between jobs</td>
<td>Capabilities define multiple futures</td>
</tr>
<tr>
<td>Defines current job roles within organisations</td>
<td>Identifies organisational performance needs</td>
</tr>
<tr>
<td>Provides efficiency</td>
<td>Provides adaptability</td>
</tr>
<tr>
<td>Focus is on job performance</td>
<td>Focus is on organisational outcomes</td>
</tr>
</tbody>
</table>

(Bowles, 1999:106)
As illustrated in Table 5.5 skills-based profiling focuses on functional processes. As such, the processes produce task efficiencies that are one step removed from cross-functional, organisational outcomes. The emphasis is on the competencies involved and not the purpose orienting action now, and in the future. This emphasis diminishes the ability of the organisation to adapt to changes in the operating environment.

An employee needs individual performance targets but the capability approach acknowledges that an individual has stocks of tacit or personal knowledge that can greatly stimulate important outcomes beyond task performance, for instance, innovation and agility. The challenge for managers is to break out of the traditional economically driven cost-benefit ‘frame of reference’ (organisational culture) that has been used in the past and move towards more sustainable and agile approaches.

The emphasis on individual and collective organisational identity broadens the perspective on elearning being able to do much more than just assist with competency acquisition and deployment. Identity is a valuable asset when individuals can align their beliefs and future with the organisation. In effect, the individual self-defining is ‘self-referential’ with the organisation (Pratt, 1998:172). At this point the individual and the organisation have aligned purpose and meaning. Where individual identification occurs with the organisation’s identity this assists the individual to:

a) Focus beliefs;
b) Reinforce their own sense of worth through roles performed within the organisation;
c) Promote attachment to the organisation (‘fit’ between individual and collective purpose); and
d) Build self-concept, beliefs, values and behaviours that match those desired by the organisation.

Blake Ashforth (as cited in Whetten & Godfrey, 1998:214) states:

. . . the process of identification is crucial because the nature of identity and the extant of identification are not determined by the pre-existing nature of the person or the organisation. Individuals, groups, and the organization mutually shape one another over time and become commingled . . . neither static nor discrete, neither independent nor autonomous.

Elearning in such a context not only can build the skills and knowledge necessary to improve productivity and performance, but also enables identity attributes to be enhanced.
5.6 Summary

Increasingly within organisations individuals are seen as a capital resource. The move into the knowledge era has increased the emphasis on organisational agility and organisational knowledge. Both agility and growing an organisation’s knowledge capital are driven by the need to develop an individual’s capabilities and then harness these capabilities, individually or collectively, to achieve competitive advantage for the organisation.

Learning orchestrated by an organisation should no longer be driven just by performance. It also has to be identity dependent. As such, learning has to not just build compliant performance using explicit knowledge; it additionally has to leverage knowledge sharing to promote transfer of tacit knowledge. Effective and efficient elearning needs to develop processes that build collective identity founded on shared meaning and align individual identity with the common purpose in order to promote and attain improved productive capacity.

In such an environment, elearning can be used to harness individual knowledge for productive capacity while acknowledging that some individual knowledge cannot be owned or controlled by the organisation. As individuals trade their knowledge (the knowledge worker concept), organisations and teams must increasingly approach elearning as a strategic activity that can embed certain types of knowledge transfer into the organisation’s context and culture.

Where integrated tasks are carried out, competencies and behaviours alone do not adequately describe the possible contribution that individuals can make towards organisational performance. The identification of an individual’s potential contribution to organisational performance has been defined in this chapter by using the term capability. Capabilities are defined as a combination of the factors included under a study of competence and identity. As Figure 5.13 depicts, each aspect may be related but together they provide a more complete view of the capabilities required to learn and perform: capabilities that elearning can target, transfer, generate and enhance.
The current pace of change within organisations has resulted in a shift in emphasis away from organisational structures or job roles, and renewed emphasis on developing both knowledge within individuals and the mechanisms for orienting these knowledge assets to required outcomes. In the dynamic organisation cohesive organisational identity is essential. This refocus is embodied in the effort to manage human capital. Capabilities have been presented in this chapter as a means to define the constituent parts for not only human capital, but also the broad knowledge assets classified under knowledge capital.

Organisations seeking to enhance their human and knowledge capital can deploy elearning to target capabilities. As represented in the following table, organisations adopting elearning have been classified in three categories. Each of these has different implications for their ability to maximise growth of knowledge capital. The left-hand column lists the three types of capital — infrastructural, human and social. These pools of capital form the basis on which elearning draws to enhance capabilities that impact identity and competent performance. That is, these three forms of capital are inputs to the organisation, and the outputs are efficiency, effectiveness and productivity.
In building and defining capabilities this chapter argues for the identification of both competencies and identity factors. It argues as well that capabilities must include competence, but that competence alone is an insufficient basis for defining capabilities. Capabilities need to define not just performance requirements but also other factors such as commitment and the ability of individuals to learn. Capabilities are defined as:

**COMPETENCE (e.g. skills/knowledge) + IDENTITY (e.g. organisational culture/roles, behaviours and traits)**

To build human capital as part of an overall knowledge capital strategy, elearning must address both explicit and tacit knowledge. This is effected by building both competency and identity capabilities that influence individual, group, community and organisational productive capacity and agility.
Key observations that can be made from research in this chapter include the following.

**Observation 5.1**
Elearning has inherited a workplace education and training debate where reporting and distinguishing skills, knowledge, behaviours, culture and roles still remain less than clear.

**Observation 5.2**
Building identity and relevant skills and knowledge not only provides a more effective way to enhance performance but also enhances the willingness of people to learn, change behaviours and deploy tacit and explicit knowledge in a manner that can benefit the organisation.

**Observation 5.3**
Elearning is a form of exchange that can hold meaning, and positively reinforce identity and performance capabilities.

**Observation 5.4**
Elearning has accelerated the need for learning to target, develop and report learning and performance outcomes in terms that can be linked to value as determined by business outcomes. Increasingly this means reporting contributions to growth in knowledge/intellectual capital.

**Observation 5.5**
Elearning can contribute to human capital management only if human capital management is understood to be a component of knowledge capital, which builds overall productive capacity by enhancing both competency and identity capabilities.

**Observation 5.6**
Capabilities provide a common ‘currency’ that is portable and comparable across individuals, occupations, jobs, functions, teams or communities, locations and, indeed, cultures. It is also the currency for reporting these outcomes across performance, knowledge, learning, human resource and human capital management systems.
5.7 References


Chapter 5 Capabilities Defined


And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the incredulity of men, who do not readily believe in new things until they have had a long experience of them. (Machiavelli, 1537, The Prince)

Abstract
This chapter investigates how elearning can enhance transformation and learning at both individual and organisational levels. As the Information Age advances, agility, adaptiveness and responsiveness have become valuable attributes for organisations seeking to forge sustainable competitive advantage.

Learning can transform organisations. The foundation for organisational transformation and learning is the individual’s capabilities, including the capacity to learn. People become assets not just for their skills but also for their ability to embrace change and enable organisations to meet changing customer and market needs. Adaptiveness or organisational agility is not about knowledge management, it is about the learning processes that enable information to be recalibrated into meaningful knowledge or existing knowledge to meet redefined purposes. It is about the capacity of the organisation to transfer information to individuals and how quickly
it can be absorbed by the workforce and deployed as knowledge that enhances customer outcomes.

The speed of business and supply cycles has accelerated. Cycles of planning and responsiveness to changing customer demands have compressed. In this setting of rapid transformation, elearning is both a solution to enable change and a harbinger of change.

Environmental turbulence requires the development of individual and organisational capabilities that permit realignment whilst maintaining performance targets. To achieve environmental fit through alignment agility is a result of capability development of individuals. Individuals able to acquire new frames of reference denote agile processes. Traditional organisation structures have evidenced poor capacity to produce innovation and sponsor change. Newer concepts for organisation structures promote innovation and provide greater agility, i.e. network organisational structures and workplace community organisations. However, these structures necessitate a revised view on how learning can encompass all levels within the organisation and enhance the transfer of knowledge that is most often implicit. These capabilities are resident in the knowledge workers or their networks of interaction, not in routine, codified tasks well understood and controlled by the organisation.

Increasingly the ‘modern’ organisation cannot be viewed as homogeneous with a common identity and competencies acquired and meaningfully deployed within a single entity. Every organisation has people subsystems made up of a variety of groups. Each group has individuals with their own competencies and identities that are deployed based on individual and collective capacity. These groups are also made up of internal and external stakeholders. Within this context, learning can be not only central to the process of transforming current performance and practices, but also the means to promote interaction and identity building. The larger the organisation, or the more complex and profound the change processes, the greater the need for learning to support transformation processes.

Examination of the concept of change continuums illustrates how a loss of competitive advantage through slow responsiveness affects an organisation. It also highlights the relationship between the Required Responsiveness (time, effort and resource commitment) to achieve new performance outcomes and competitive position. The time delay (lag) in responding to a change imperative may mean that it is simply too late to initiate effective change processes. The reduction of lag requires an understanding of both the organisation’s current competitive position and a real appreciation of changes likely to affect that position.

Since the cycle of change and the speed of major social and economic changes seem to be accelerating, learning cycles also have to become faster and more resource efficient. Elearning offers the promise of new processes and tools able to accelerate interaction between individuals and the transfer of capabilities necessary to effect change. Elearning has come to promise a new means to assist in the management of the organisational transformation process.

Transferring information into knowledge for improved productive outcomes is a strategic organisational endeavour. How quickly an organisation can respond to such change, through the deployment of adaptive and generative learning, is a major
competitive advantage issue. It requires an integration of knowledge management with learning to build competitive advantage. How well and how quickly organisations can translate learning into outcomes ultimately influences their strategic success.

The literature reviewed isolates a concept of organisations that leverages learning by reducing learning cycle times and improving the speed with which they not only enable individual employees to reach performance proficiency, but also undertake change. The research reinforces why elearning can enhance generative learning. Generative learning requires a new mindset and the capacity to create new visions for future realities. Generative learning promotes enhanced strategic readiness by developing a sustainable capacity to learn and change. It transforms capabilities and identity resources.

This chapter advances a sense of elearning as a strategic activity. Strategic elearning is able to influence how individuals interact and transfer knowledge within and outside the organisation's domain of operation.

Transformation is not achieved through interventions but by embedding how people think, act and view their contribution to the organisation. Generative learning is cross-process and strategic and addresses not just how things are done but how people and systems can adapt to change and improve the speed, depth and breadth of learning.

The chapter uncovers research to suggest elearning is following a transformational process that can be analysed using existing research on the evolution of information and communication technology (ICT). An evaluation of an 'S'-curve of Internet-induced ICT and elearning change is used to identify how elearning is entering a second wave of advancement. This second wave has introduced more mature advancements in education and training practices and technologies that refocused on the individualisation of a learning experience. The new wave of change is expected to merge momentum and complexity and produce a remarkable confluence of technology and applications.

Elearning is a catalyst in the convergence of industries, disciplines and whole societies for massive innovation and change. It is suggested that it has taken just over ten years for the combination of Internet, ICT and learning to enter a period where the scope of possible transformations for elearning can be appreciated. The transfer of knowledge between different fields of human endeavour has taken time to evolve. Similarly organisations have had to struggle to evolve elearning as a productive factor integrated with existing business systems. It is only when technology is integrated into known business processes and systems that management is likely to feel that interventions are 'under control'. The presence of control is a critical factor for management sponsorship of elearning implementation and improvement.

The research investigates how technology convergence will impact on society and articulates 18 characteristics of transformation (Gingrich, 2002).

In summary, this chapter confirms that elearning is as much subject to the forces of transformation as it is a mechanism to assist organisations and individuals respond to change.
Chapter Proposition

Proposition 6.1
Sceptical managers have not yet been presented with a cogent argument for understanding how investment in efficient and effective elearning technologies to improve learning outcomes for individuals actually value-adds to an organisation’s capacity to learn and respond to change.

Key Themes
The speed of change and the need for organisational agility; innovation and organisation structure design; environmental turbulence, agility and environmental attunement; learning subsystems and levels; change continuums and competitive advantage; learning cycles and strategic readiness; learning to manage generative and adaptive change; strategic learning and learning capabilities; absorptive capacity and competitive positioning; and elearning, the second wave, as a harbinger of transformation.
Learning can transform individual capabilities
Learning can be viewed as a cycle that can be systematically implemented for an individual, for groups or for an organisation.

Learning can transform organisations
Systematic approaches to elearning can advance not only performance outcomes, but also the knowledge required to learn in a generative manner, rather than in response to skill gaps.

Elearning is also transforming
Elearning is both a mechanism for transformation and subject to the forces impacting the evolution of technologies and major changes. As more businesses deploy elearning effectively the ‘bandwagon’ effect is replaced by adoption and deployment based on enlightened use and real understanding of the available options.

Elearning is only just progressing to a level of rapid deployment and a mature approach to its ability to support business processes and learning practices (a so-called second wave).
6.1 Introduction

A key focus of this chapter is to isolate the concept of how and why individuals, groups and organisations seek to acquire learning through electronic means and how this is translated into transformation of current practices. This approach involves a study of the drivers impelling change and the transformation of current practices. It also necessitates a study of how such drivers and resulting change are sustained. This framework will help refine study in the subsequent chapters.

The first years of the twenty-first century have confirmed that the Industrial Age is dead and that the Information Age and the associated Information Economy have well and truly taken its place. Yet, as much as we may now believe this statement to be true, in the 1990s it was less apparent. Leadership experts in the 1990s noted how leaders performed and how the environments that they operated in had significantly changed from those of the inter-war period (1918–1940). The experts and the long-serving practitioners also could identify how prevailing leadership styles and models had evolved, yet still seemed to maintain traits of an industrialised society that was closer to agrarian revolution than it was to the Knowledge Age. At the start of the twenty-first century, it is apparent that the global need to compete in the Information Economy crystallised the need to re-evaluate how to approach the development of leaders and the definition of effective workplace leadership and management.

Some of the changes immediately apparent in the operational environment for organisation leaders between 1940 and 2001 include (Barham, Fraser & Heath, 1988:37):

♦ Flatter, faster-moving, market-driven, cost-conscious, complex organisational environments;
♦ More organisational 'surface' exposure to environment;
♦ Increasingly decentralised and fragmented organisation;
♦ Integration of business strategy with organisational culture;
♦ Increasing importance of 'horizontal' management relative to 'vertical' management in order to manage quality, service and technological imperatives;
♦ Increasingly international environment; and
♦ Unprecedented emphasis on people as an organisation's most vital resource.

As the Information Age advances, attributes such as agility, adaptiveness and responsiveness have become increasingly valued. People become assets not just for their skills, but also for their ability to embrace change and enable organisations to meet ever-changing customer and market needs. The adaptiveness or organisational agility is not about knowledge management, it is about the learning processes that enable information to be recalibrated into meaningful knowledge or existing knowledge to be re-oriented to meet redefined purposes. It is about the capacity of the workforce to absorb new knowledge (Cohen & Levinthal, 1990:128–152), and how quickly information can be transferred to individuals and deployed into knowledge that enhances customer outcomes.
Table 6.1 Transforming organisations moving from the Industrial Age to the Information Age

<table>
<thead>
<tr>
<th>Industrial Age</th>
<th>Information Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry-wide conformity</td>
<td>Organisation variance</td>
</tr>
<tr>
<td>Mass production</td>
<td>Mass customisation</td>
</tr>
<tr>
<td>Control of people</td>
<td>Control of process</td>
</tr>
<tr>
<td>Functional departmentalisation</td>
<td>Integration (cross-function)</td>
</tr>
<tr>
<td>More of the same (vertical progression)</td>
<td>Continual change (process improvement)</td>
</tr>
<tr>
<td>Logical–deductive thinking</td>
<td>Logical–creative thinking</td>
</tr>
<tr>
<td>Lifelong employment</td>
<td>Contracted (self-) employment</td>
</tr>
<tr>
<td>National industrial awards</td>
<td>Local-enterprise agreements</td>
</tr>
<tr>
<td>Career progression</td>
<td>Career diversification</td>
</tr>
<tr>
<td>Paternalism</td>
<td>Self-determination</td>
</tr>
<tr>
<td>'Them' and 'us' (confrontation)</td>
<td>Partnership (co-operation)</td>
</tr>
<tr>
<td>New merchant class</td>
<td>New information class</td>
</tr>
</tbody>
</table>

(Bowles & Graham, 1994:6)

Another change has been the acceleration of business and supply cycles. Cycles of planning and responsiveness to changing customer demands had all compressed. One of Australia's largest companies, Woolworths (a Forbes 500 company), noted that the average shelf life (before complete re-ordering and renewed production was required) of a non-perishable supermarket product had evolved from:

<table>
<thead>
<tr>
<th>Year</th>
<th>1950</th>
<th>1980</th>
<th>1993</th>
<th>1999</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle</td>
<td>4 years</td>
<td>1 year</td>
<td>40 days</td>
<td>4 days</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

(Based on Bowles, 1998:ii)

In the same period corporate leaders could no longer focus the majority of their efforts on internal issues. Major external factors required constant translation into the organisation's activities and future directions.

It is into this setting of rapid transformation that elearning is thrust both as a solution to enable change and as a harbinger of change that adds further pressure to strained business processes.
6.2 The Need for Organisational Agility

*The company that can identify what technologies are needed, introduce them quickly, and commercialize them will succeed.*  
--- Hiroshi Okuda, President, Toyota Motor Corporation *(Business Week, June 15, 1998)*

Currently, the four major platforms for any organisation seeking to achieve agility are:

1. **Mass customisation:**
   where the organisation can develop specialist products and services and map, manage and respond to an individual customer's changing expectations and needs within a quality framework;

2. **Built-in organisational design and development:**
   where the organisation is able to rapidly transform itself by reconfiguring its structure, systems, business processes and supply chain in response to opportunities or threats;

3. **Generative or transformational learning:**
   in which an organisation instils behaviours and a culture where learning is embraced as part of the continuous search for improvement;

4. **Accelerated change rate:**
   where the speed of responsiveness and change is actually embraced as a means to achieve unique competitive advantage.

*(see Canter, 2000)*

George Stalk and Thomas M. Hout *(1990)* first advanced the concept of time and responsiveness as being at the forefront of any organisation’s quest for competitiveness. However, the adoption of systems and practices reflecting the need for organisational responsiveness has itself been slow:

*Unfortunately, most organizations, and their management, control and strategic planning systems seem relevant to the passing era which rewarded efficiency-driven optimization and prediction of future based on the past trends . . . As the traditional paradigms of concepts such as organizations, industry, and product/service definitions become increasingly blurred, one would see new models of business that defy traditional boundaries of organization structure, industry structure and product/service definitions. Characteristics such as innovation and creativity will be at a premium. There will be increasing realization that sustainable organizational competence depends upon the organization's capacity for creating new knowledge through an ongoing and continuous process of learning and unlearning.*  
--- Dr Yogesh Malhotra, chairman of @Brint.com, L.L.C. *(October 1997)*

6.2.1 Transformation and organisational design

Organisational design, which refers to the way roles are defined within organisations, has a large impact upon organisational agility. Solidified organisational structures
and procedures reduce organisational agility but produce certainty of outcomes for participants and efficiencies in processes.

Organising usually occurs through jobs or roles, with the clustering of organisational tasks into groups within the organisation, for instance, into divisional structures. Coordination is through the decision-making process, or where knowledge and authority can be applied up through the organisational hierarchy. A manager coordinates the work of subordinates through manipulation of the work process, or allocation of information within work activities.

The examination of organisational structures in the last chapter showed some of the dominant organisational forms:

- Functional;
- Divisional;
- Simple;
- Matrix;
- Network.

Traditional organisational structures have shown poor capacity to produce innovation and sponsor agility. This is especially so with the increasing use of technology to perform routinised tasks and knowledge workers being contracted from external sources or non-routine tasks being contracted out.

Some organisational structures promote innovation and provide greater agility than others. Innovation and organisational agility are stifled by stratified organisational structures defined in functional terms, where procedures and processes define work, and where positions are defined in terms of reporting roles and job tasks are linked to processes.

Network organisations provide the most dynamic and adaptable of organisational structures and have been replacing traditional organisational structures. At its extreme, the dynamic network consists of a number of market relationships brokered by a ‘core’ unit. In such a case, conventional notions of organisational boundaries must be discarded. Network forms not only are far more flexible and innovative than traditional structural relationships, they also are more responsive to changing product–market conditions.

Network organisational structures have the capacity to source skills to promote the development of capability sets and take advantage of a wide range of environmental opportunities.

The main concern in the development of network organisations, in comparison to traditional organisational types, is the lack of stability and commitment from individual participants.

### 6.2.2 Agility and environmental attunement

Agility cannot be separated into internal factors and external — environmental — factors. Research into the relationship between the internal and external spheres of planning is still very new; nevertheless, research is confirming that organisational
boundaries are an insufficient basis to limit study of agility (Rigby, Day, Forrester & Burnett, 2001:178). Business relationships, individual and team networks with the community and other organisations, and actions by government and other organisations, all shape the transfer of knowledge and the response an organisation makes (Rigby et al., 2001:180–184). As such, agility must be conceptualised beyond the ‘walls’ of the organisation itself.

Environmental attunement refers to the fit between the organisation and the environment. For an organisation to survive it must be compatible with its environment. Environmental factors such as increased competitiveness, interdependence both within organisations and externally, and increasing complexity of products and services, lead to a need for organisations to have the ability to change.

Changes in the operating environment require realignment of the organisation, and organisation agility generates this capacity to realign. The extent of the need for organisations to develop agility depends on the level of change in the environment and the speed at which it takes place.

The implications of a changing organisational environment, where knowledge, complexity and speed of change have increased, do not apply solely to organisations with inflexible, solidified organisational structures or procedures. Environmental turbulence argues for the development of individual and organisational capabilities that permit re-alignment of the organisation while maintaining performance targets.

For organisations to achieve environmental fit through alignment with the environment, the values, norms, processes, reward systems and performance must inculcate the importance of a people. Agility is achieved through capability development in the individual. Agile processes are denoted by individuals able to acquire new frames of reference while still achieving current performance outcomes. Agility leads organisations invariably towards one of the two models identified as emerging organisational structures, which are:

1. **Network organisations**, where changing a frame of reference to meet environmental needs is developed through enhancing staff capabilities or sourcing knowledge outside the organisation; or

2. Development of a more holistic concept of an organisation into a **workplace community** where the values are community based and therefore can change with organisational needs.

A balance between these two options is achieved where **networks of knowledge** are created. Such knowledge is sourced under strategies that acknowledge the importance of knowledge development within individual employees, or individuals outside the organisation.
6.3 Learning and Transformation in an Organisational Setting

Transformation in any organisation, whether a simple change process or a major re-engineering of core purpose, requires learning. Learning must encompass all levels of the organisation to enhance overall learning capacity. This capacity is not just about acquiring the competence to perform in new ways. It is also about changing organisational culture or identity factors that have to be unlearnt, changed or acquired before the new behaviours and roles can be effectively deployed (Schein, 1993).

Learning within an organisational setting must encompass and be viewed across a number of subsystems and levels. The three core subsystems include:

- Levels of learning and performance;
- Types of learning; and
- Learning capacity (see Marquardt & Alexander, 1999:137–138).

Levels of learning and performance

Levels of performance and learning can be represented as:

- Corporate level;
- Process or group level;
- Individual level.

It is essential that the development of capabilities and learning occur at all three levels.

Figure 6.1 Levels of learning and performance

(Bowles, 1995, presented in 1999:54)

Individual learning concentrates upon individual experience and the development of competency (skills, knowledge, attitudes) and what has previously been classified as identity (behaviours, roles and values held within the organisation’s culture) capabilities.
Collective or team learning concentrates upon capabilities developed, deployed and exchanged between groups.

Organisational learning represents the collective knowledge capital and overall productive capacity developed by the organisation. It is not simply the sum of individual and group learning. It also includes the mental models and institutional capacity to engage in learning and the management of knowledge for current and future needs.

6.3.1 Learning capacity

Without joining the wider debate on organisational learning approaches versus the learning organisation approach, which is covered in Chapter 10 on organisational learning, it can be stated that the capacity of organisations to learn varies. Four key areas are needed to establish, implement and optimise organisational learning capacity.

- **Systems thinking**
  The ability to build an identity and shared meaning that help individual and collective identification with the organisation’s core purpose (co-orientation and attunement);

- **Mental models**
  More deeply ingrained than cognitive perceptions, mental models draw attention to the ingrained values and attitudes that influence how people interact, act and interpret the world;

- **Personal mastery**
  Concentrates on the personal search for expertise and includes lifelong learning and the individual’s commitment to achieve proficiency in a task or vocational discipline;

- **Dialogue**
  Denotes the high level of listening and communication between people (Marquardt & Alexander, 1999:138) and is deeper than listening or communication skills. It is about building a dialogue based on purpose whereby interaction and patterns of visual and symbolic communication are used to shape identification or indeed dis-identification with the organisation. It is about creating a medium for creating individual and collective identity.

An organisation can no longer be considered a collection of homogeneous groups or individuals all sharing a common identity, and with competencies required to meaningfully perform jobs within a single organisation. Every organisation has a different mix of variables, which influence learning capacity. Nevertheless, the largest influence on the learning capacity is the evolution of the organisation’s business systems and its own comparative progress (to its benchmarked competitors) down what may be termed a change continuum.
6.4 Transformation, Change Continuums and Learning

The stage or point in a continuum to which the organisation has progressed impacts how learning may be deployed or used. To understand the role of elearning on organisational transformation, analysis firstly needs to be completed on change continuums. Change continuums map the progress of an organisation along an evolutionary process. As will be shown, the organisation’s progress along a continuum should affect the design and implementation of an elearning intervention.

The following figure depicts an organisation concentrating on a core activity or intent (delineated by the 'A' parabola) to move to a competitive position, herein marked as 'B'. To respond to this change the organisation must ensure that by the time A2 is reached it can transform operations/focus from the 'A' parabola to 'B'. RR represents the required responsiveness (time, effort, resource commitment) to achieve new performance outcomes or a competitive position.

**Figure 6.2 Change continuums**

Loss of competitive advantage through slow responsiveness affects an organisation. Learning can be deployed to accelerate responsiveness or elevate performance to the 'new' requirements.

The next four figures are based upon diagrammatic depictions from the Brain Technologies Corporation illustrating the impact of the lag between identifying the need for change and implementing a response.

Figure 6.3 highlights the short period required to move from the identification of the need for change to the new focus of effort.
Figure 6.3  Change just before the time

Figure 6.4 depicts an organisation initiating change and implementing the transformations as it also completes ‘normal’ operations. In effect, the organisation is running parallel systems to achieve transformation. The lag time is reduced but the effort and resources required increases. In such a case learning can be deployed to support a range of so-called J-curve change processes. These exist when effort is initiated but become so disjointed each change agenda cannot be maintained beyond the initial effort.

Figure 6.4  Responding as change occurs
In the Figure 6.5 scenario the organisation anticipates the need for change and responds early. While completing change before competitors do involves risks, it also enables the organisation to be in a position to move from current to the revised operational state in a timely manner. This scenario enables an organisation to be early to market or become a market leader.

In contrast to the scenario in Figure 6.5, Figure 6.6 shows when organisations wait until they can see the impact of change before responding. They may do this because they did not anticipate the change or to avoid risk. As can be seen they are operating on a declining current operational base/imperative while trying to manage change, late, into the transformed state.

The reduction of lag requires both understanding of the organisation’s current competitive position and a real appreciation of the anticipated changes likely to affect this position. This has to be managed across not just one change scenario, but all the potential change scenarios likely to impact an organisation within the identified planning period.
Figure 6.7  Maintaining competitiveness while implementing changes

The above scenario highlights how the time delay in responding to a change imperative may mean it is simply too late to initiate change. Figure 6.7 depicts the initiation of change unfortunately occurring at A2, not A1. The lag in implementation (dotted line) confirms that introduction of change did not occur until B1. Note not only that the change was implemented late in the evolution of that change cycle, but also that another change cycle, depicted here by 'C', had already commenced. By the time the change is introduced the resources, time and expenses committed to attain the competitive position is well behind the new change initiatives requirements for competitiveness (comparatively C1). If, for instance, B and C are different products and C replaces B, then the organisation has failed to develop a new market while focusing on a product that is in market decline. The difference between B1 and C1 represents not only the difference in utilisation of time, expenses and resources, but also a gap in responsiveness. By the time the change process has been completed B1 is no longer an acceptable position if the organisation wishes/needs to be at C1. Once again, the organisation would initiate change from a position that is late in the response cycle. This places the organisation in danger of repeating past errors. This cycle is repeated as major changes impact operations and the speed of overall change increases, thereby creating a vicious cycle.

Under any one of these scenarios, not only does learning have to play a different role to transfer capabilities necessary to effect change, but also the process and tools used for learning become critical ingredients in the implementation of transformation processes.

Wider changes in the operating environment of an organisation can also impact learning strategies. The following figure depicts how major social and economic changes influence organisations. It also serves to highlight the overall increase in the speed of economic and social evolution.
Organisations, whether public, private or community, are not sheltered from the global impact of major change. The dynamic nature of change and the 'cycle' of change are increasing. How quickly an organisation can respond to such changes through deployment of adaptive or generative learning can be a major competitive advantage.

The above figure indicates the impact as requirements for responsiveness accelerate. For instance the first required responsiveness (RR), moving from A to B, may occur in one 12–month period. However, in the next 12 months three RR points occur, B–C–D. In the next 12 months the RR points include D–E–F–G. As change accelerates, the capacity to respond may decrease. Equally, the volume of changes places pressure
on systems managing responsiveness when they have to deliver four changes rather than two every 12 months. While only a diagrammatic depiction, the above figure highlights how systems can no longer afford to lag behind for even one change imperative as depicted in Figure 6.7.

Failure to respond to A1 may mean a loss of competitiveness in C; however, two years later the same lack of responsiveness may place the company three cycles behind in the change process, i.e. assuming the same tardiness and resource commitments, they may be moving from D to E but once completed, the changes would be in place while the industry/competitors have moved onto G!

All the above figures, which depict scenarios of lags, illustrate the impact of change management on the timing, resource allocation and effort for any elearning initiative. The analysis also illustrates how some companies have developed what has come to be known as change fatigue. Effort seems to be focused on managing change and the processes of moving from A1 to the new B1 or C1, rather than on operational outcomes and core business. As shown in Chapter 10 (Organisational Elearning Variables) organisational agility has become a critical influence on how learning is viewed in organisations undertaking or responding to change. These considerations reinforce the need for organisations not just to be able to respond to change, but to develop the capabilities necessary to sustain this activity as the speed of change increases (Christensen, 1997:254-260).

Building elearning or any learning initiative to accommodate the organisation’s progress down a change continuum can reinforce not only its transformation, but also how well it leverages its ability to accommodate change. Building efficient elearning systems encompasses not just the learning being transferred (content), but also the processes that enable networks of knowledge to be established and information communicated (Christensen, 1997:38-39; Davis & Meyer, 1998). Using learning to change rapidly represents an important competitive advantage.

To support change across all continuums, learning cannot be inflexible. In fact, the more an organisation embraces learning across all subsystems and accepts it as a builder of transformative capacity, the more that learning can support accelerated responsiveness and organisational agility.
6.5 Learning, Strategic Readiness and Agility

Transferring information into knowledge to improve productive outcomes is a critical organisational endeavour. The ability to transfer knowledge and manage knowledge acquisition requires an integration of knowledge management with learning. The capacity to learn in order to meet immediate performance deficiencies is no longer a sufficient base to build unique competitive advantage.

Learning can be conducted in a manner that reinforces meaning. This results in an accelerated capacity to transfer knowledge (Sleigh, 1993:18–21). How well and how quickly companies can translate learning into outcomes ultimately influences their strategic success. This is ultimately a capability that requires a strategic solution able to engender capabilities at individual and group levels, within and outside the organisation. This solution must be framed in terms of both current and future requirements.

In *The Fifth Discipline*, Peter Senge (1992) links the capacity of an enterprise to become a ‘learning organisation’ with its ability to obtain and hold competitive advantage. This publication consolidates earlier work on the learning company and exploration by educators and management theorists on the link between the ability to learn and competitive advantage. Senge depicts an organisation in which individuals continually seek to expand their capacity to create desired results, new patterns of thinking are nurtured and people are continually ‘learning how to learn’ together.

In 1992, Doron Gunzburg identified four characteristics of learning organisations. He isolated these characteristics after returning from an international study of management development where he evidenced organisations and managers 'hotly' debating the virtue of building learning organisations. According to Gunzburg (1992:29) a learning organisation:

1. Has a climate in which individual workers are encouraged to learn and to develop their full potential;
2. Extends this learning culture to include customers and other significant stakeholders wherever possible;
3. Makes human resource development strategy central to business policy; and
4. Is a continuous process of organisational transformation, based on individual learning, and consequential learning assumptions, goals, norms, etc.

Senge (1992) stated:

*Organisations only learn through individuals who learn. Individual learning does not guarantee organizational learning but without it no organisational learning occurs. (Senge, 1992:139)*

This perspective and subsequent research reinforced the need for generative learning, as encapsulated in Argyris's ‘double-loop learning’ (Argyris & Schon, 1978), to translate individual learning into organisational learning.
Generative learning emphasises continuous, double-loop experimentation and feedback. Double-loop learning enhances the continual search for solutions while instilling behaviours and a culture where learning is embraced. Unlike adaptive learning, generative learning requires a new mindset and the capacity to create new visions for future realities. Senge (1992) suggested that generative learning is composed of:

- Systemic thinking;
- Shared vision;
- Personal mastery;
- Team learning; and
- Creative tension between the vision and changing the current reality.

Essentially, generative learning builds in a redesign process based on optimal problem solving. This is in contrast to adaptive learning or single-loop learning where the focus is on solving current problems without examining the root causes of the problem or the learning behaviours that underpin the problem-solving process. As such, adaptive learning reinforces improvement by incremental steps more common to the managerial approach to leadership and problem solving.

Given the need for rapid change or the ability to respond to new operational realities, adaptive organisations are viewed as much less able to use learning to sustain and generate competitive processes, structures, people or systems.

The learning organisation and organisational learning have at their core the translation of information (or data) into business success through individual, team, organisational and wider learning processes. The cycle of learning is addressed by a number of authors.

After more than a decade two of the more influential approaches are those of Redding and Catalanello (1994) and Dixon (1994). Nancy Dixon builds this organisational learning cycle on previous studies detailing how individuals learn. Dixon suggests the organisational learning cycle has four steps as shown in the following diagram.
Figure 6.11 Learning cycle

These learning cycles of Redding and Catalanello, Dixon, or other variations (for example, see Argyris & Schon's double-loop learning, 1978:18–23; Kolb, 1984; Garrat, 1987; Revans, 1982) reinforce the need to view learning as a cycle that extends beyond the benign absorption of information for applied purposes. It can be viewed as a cycle that needs to have components managed to maximise its total impact. This process is never static. It varies with context, the individual and the content of learning.

Enhancing an organisation's learning capability entails accelerating both individual and collective learning cycles. This requires learning to be much more than a contrived response to immediate needs. It must be managed as part of the long-term imperative to be competitive and responsive to changing social and market demands. McGill, Slocum and Lei (1992:5–17) illustrate this point by suggesting it is important to understand the difference between the organisation's ability to adapt (adaptive) and the organisations ability to learn (generative). The ability to learn gives the generative organisation a competitive advantage over the adaptive organisation, which is said to be 'learning disadvantaged' because while adaptive organisations may be able to transfer skills they cannot do so in a manner that enhances their sustainable capacity to change.

Figure 6.12 Managing learning to promote generate or adaptive change

Figure 6.12 illustrates how organisational learning can be used to generate enhanced
depth, speed and breadth of learning (Redding, 1997:485). Adaptive learning (McGill et al., 1992) does provide opportunities for greater focus on process improvement. While McGill, Slocum and Lei illustrate how quality management systems provide for individual, group and organisational learning they also argue such organisations are still ‘learning disadvantaged’ when responding to environmental factors.

Generative learning can be used to enhance strategic organisational readiness. In more stable environments organisations might promote adaptive learning in areas where they undertake a ‘controlled’ change process or need to fill skills gaps across multiple people or jobs. These approaches can still promote continuous process improvement and meet incremental changes. However, this type of learning is more appropriate to change interventions than transformation. As represented in Figure 12 adaptive learning causes ‘spurts of improvement’ or targeted change. Learning does not transform the capabilities and identity resources required to respond to rapid and sustained change.

Generative learning, characterised by ‘double-loop learning’, requires capabilities that go beyond what management theorists have described and categorised as competencies. It needs capabilities associated with aspects central to identity and tacit knowledge that support innovation, openness, responsiveness to new contingencies and creativity (McGill et al., 1992).

Research suggests generative learning is more able to assist organisations to develop through a sustainable capacity to learn and to change. Such learning can be focused at a process or systems level (Redding, 1997:485). However, learning becomes much more than an intervention controlled and targeted towards adapting actions to meet performance ends; it becomes a strategic capability.

For capabilities held by individuals, groups and the organisation, there is a need to identify and reinforce the factors that enhance not only adaptive learning but also generative learning. But it is ‘strategic learning’ that can build the capabilities required to undertake generative learning. It is on this base that greater competitive advantage can be built for those organisations seeking to be agile and responsive. It is the unique ability of individuals to interact and transfer knowledge — within and outside the organisation's domain of operation — that enhances the capital value of knowledge. It is within the identity factors that promote an individual's commitment to transfer knowledge into productive outcomes that the organisation also embeds meaning and continually redefines shared futures.

Transformation is not achieved through interventions that cause spurts of improvement; rather it is embedded in how people think, act and view their contribution to the organisation. Generative learning is cross-process and strategic and addresses not just how ‘things are done’, but how people and systems can adapt to change and improve the speed, depth and breadth of learning.
Table 6.2  Delineation of organisational learning from the learning organisation

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Why organisational learning in preference to the learning organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All organisations learn</td>
<td>Patterns of learning vary between and within enterprises (location, client group, teams, levels within the enterprise) and a theory must embrace not only the learning but also its patterns and processes. This will be unique to the enterprise, so no single 'theory' can provide for variations or differences.</td>
</tr>
<tr>
<td>2. Learning is not an end in itself</td>
<td>Learning goes beyond what individuals can do to examine whether the organisation is skilled at developing new products and able to compete in a complex, changing world.</td>
</tr>
<tr>
<td>3. Organisational learning is more than learning of individuals within the organisation</td>
<td>There is more to translation of learning than managing individual acquisition of skills and knowledge to generate performance improvement. Learning is embedded in interaction, roles of individuals within groups and across all levels — individual, group and organisational.</td>
</tr>
<tr>
<td>4. There are learning processes that link the levels</td>
<td>Learning is a ‘meta-process’ that needs to be managed with a realisation that individuals absorb knowledge and integrate that knowledge into the team level and institutionalise it at the corporate level.</td>
</tr>
<tr>
<td>5. Organisational learning needs to consider the flow of learning amongst the three levels: individual, group and organisational</td>
<td>Any learning process needs to integrate individual learning (competencies, capabilities and motivation) with the group level (group dynamics and development of shared understanding) and organisational level (knowledge assets/capital, systems, structure, procedures and culture in the enterprise).</td>
</tr>
<tr>
<td>6. Individuals within the organisation are the ultimate arbiter of organisational learning</td>
<td>Individual perceptions drive the system of knowledge management, building knowledge assets (or intelligence capital) so that measurement of organisational learning success resides beyond just the organisational goals and strategies to measurement of an individual employee perspective and understanding.</td>
</tr>
</tbody>
</table>

(Table based on Crossan & Hulland, 1997:4–14)

The distinction between learning competence and learning capabilities is subtle, but important. An organisation can pursue strategies to achieve competence to ‘do’. However, sustainable capacity to learn and respond to change requires the organisation to embrace learning and view it as a strategic activity within wider change management systems.

In a study of how learning contributes both to the capacity to change and to competent, compliant and competitive performance for Woolworths Supermarkets in Australia, Bowles and Baker (1998:15) identified three features that delineate organisational learning as a systems approach to the attainment of agility:
1. Differentiate training from development — identify that development of skills, knowledge, values and other attributes not only can contribute to a capability profile that permits attainment of current performance but also can support responses to future needs;

2. Strategic measurement — measurement must extend beyond how individual learning contribute to performance improvement to include the overall expansion of the capabilities (i.e. knowledge capital) available to the organisation and with a value that can be reported to shareholders; and

3. Encourage learning that rewards individual needs — while focus on organisational benefits is necessary, encouraging acquisition of qualifications and involving individuals in sharing or transferring knowledge also significantly improve the ‘absorb’ capacity of the workforce.

The last point introduces the concept of absorptive capacity. Absorptive capacity is about recognising that not all organisations have the same capacity to absorb, hold or transfer learning. Building an agile company by improving learning, while ignoring the company's inherent inability to exploit innovation or translate learning into future action, is ill-conceived. Absorptive capacity is the concept that the ‘organisation needs prior related knowledge to assimilate and use knowledge’ (Cohen & Levinthal, 1990:129).

Effective agility is enabled where the organisation can transfer and apply the knowledge and learning it acquires. The speed with which it can do this indicates how well the organisation has developed the knowledge contextual to the actual process of absorbing knowledge. A metaphor is offered to explain what may appear tautological. Think of absorptive capacity as the ability of the garden to take in water. Given a strong downpour after a sustained period without exposure to water, the soil will actually shed more water than it can absorb. However, as the water seeps in the soil can loosen, change its structure and absorb more water. Too much water and it is detrimental to the soil. Given enough water to survive, plant structures actively grow and develop multiple means to collect more water (such as expanding energy on root systems). Each plant can develop a different way to collect water. Each environment may require the plant to adapt to new conditions for collecting water.

While the metaphor is somewhat simplistic, it serves to illustrate that knowledge, like water, represents survival to organisations. The ability to absorb knowledge is not always constant and must adapt to different contexts and environments. The capabilities required to absorb knowledge are independent of those required to complete productive outcomes. Nevertheless, they are central to any organisation's ability to exploit knowledge and the innovative capacity required to secure new opportunities independent of current performance imperatives (Cohen & Levinthal, 1990:133).

As costs of research and employment of technical experts increase, the motivation to form alliances that reduce financial and planning risk also increases. In technology-based industries or those involving complex processes of service and product delivery, the network of an organisation can deliver capabilities and technology that not only redistribute risk, but also enhance absorptive capacity (Slocum & Lei, 1993:300, Cohen & Levinthal, 1990:141).
Moving out of a core market or domain of expertise requires consideration of the organisation's absorptive capacity. Many an opportunity is lost where the speed of response or attainment of competitive positioning is too slow, not because the organisation is not agile, but because it overestimated how previous experience prepared it to absorb the new knowledge. Herein lies an important lesson. Agility is the constant translation of knowledge acquired from experience and learning into contextual outcomes. While an organisation, by very definition, can value and implement agility (an ongoing activity), the influence of agility on strategic direction is not linear and predictable. If it is to generate new knowledge and maintain its responsiveness an organisation has to continually learn.
6.6 Elearning as a Harbinger of Transformation

Figure 6.13 The S-curve of Internet-induced ICT and learning change

The S-curve is a simple schema used to depict change and the ‘growth stages’ through which technology-induced change may progress (Christensen, 1997:44–47). The schema in Figure 6.13 depicts four basic stages of growth. The so-called Nolan curve is commonly used to depict the evolution of computer use in organisations. While it first appeared in 1973, the Nolan curve became the basis of a seminal article published in 1974 (Gibson & Nolan, 1974). The Nolan curve depicted a relation between the budget for computing and time. The points on this curve were divided into four stages: initiation, contagion, control and integration. Through subsequent research and wider industry use, two more stages were added: data administration and maturity. The main advantage of the Nolan stages in the evolution of information and communication technology (ICT) was the focus on information technology (IT) as a factor of production. The Nolan curve isolated the technical detail of IT from the information managers and investors required to implement technology within an organisation (Mutsaers, van der Zee & Giertz, 1998:115).

The dual impact of the Internet on ICT and then on learning (elearning) is depicted in Figure 6.13. The S-curve as shown symbolically illustrates how both the first ‘wave’ dealing with ICT and the Internet spurred a second wave of change in what is termed elearning. As growth for both waves has progressed, different changes have emerged and then merged.

The two ‘waves’ of change depicted are those spurred by the growth of computer technology and ICT linked to the roll-out of the Internet. Venture capitalists, entrepreneurs and early adopting companies very much held the belief that they ‘owned’ the first major wave of Internet and ICT deployment (dot.coms) and had shaped elearning’s first wave.

Just as ICT and the Internet spun off elearning, so elearning has provided its own ‘second wave’ of advancement, which has in turn spun off its first wave. This second elearning wave introduced more mature advancements in learning stimulated by education and training practices and technologies that moved out of brick-and-mortar
contexts and refocused on the individualisation of a learning experience. Elearning also introduced expectations and ideas from educators, especially those in universities, K–12 schools and vocational, work-based learning.

A review of popular publications and professional journals in late 2002 confirms that the ‘second elearning wave’ will augment the momentum spurred by new Internet applications in elearning. This second major development is also expected to increase the complexity and sophistication of elearning. As the waves of change combine, the resulting confluence of effort and technologies will produce uncertain results. Earlier change sparked by the advent of computers, communication technologies and the Internet has had a ripple effect, generating a concatenation of breakthroughs that affect elearning products, services and content. Similarly, new changes will result in other effects, which may be in unexpected directions.

Merging ICT and Internet developments into the elearning developments brought together huge fields of human endeavour and disciplines of thinking. It has taken just over ten years for the combination of Internet, ICT and learning to enter into a period that fully appreciates the scope of the possible transformations. As interactions between these fields stimulate collaboration, convergence and the intersection of thought, there is an increase in knowledge flow between disciplines. It is accepted that the transfer of ideas occurs most frequently where individuals share common identity — ideas, beliefs, meaning, education, social context and the like; a state known as homophily (Rogers, 1995:18). However, elearning and Internet-induced ICT change involve promoting the confluence of industries, disciplines and whole societies to, in turn, encourage massive innovation and change. Stimulating the exchange of knowledge and ideas has taken time perhaps because the players are marked more by their differences than their established understandings; i.e. they are heterophilous (Rogers, 1995:18).

As we advance into the twenty-first century the evolution of elearning is only just entering a more mature, rapid growth stage. Not only has the transfer of knowledge between different fields of endeavour taken time to evolve, but organisations have had to struggle to evolve elearning as a productive factor integrated with existing business systems. Only when technology is integrated into known business processes and systems is management likely to feel the interventions are ‘under control’.

The presence of control is a critical factor in management sponsoring the development of tools for or improvements to the technology or architecture in order to rapidly evolve what is viewed as efficiency and effectiveness (McMaster, Vidgen & Wastell, 1997; Galliers & Sutherland, 1991; Rosenkopf & Tushman, 1994; Van de Ven & Garud, 1994). The following points provide some examples of discontinuous thinking that highlight some of the discontinuities influencing managers’ perceptions of the possible benefits of elearning. They show how differences in thought and perspective influenced both the development and ultimate evolution of elearning.

**Elearning as distance learning**

Initial use of elearning focused on the Internet as a means to reach more students. Online learning and thence web-based learning came to mean elearning. Yet educators’ early criticisms of online learning centred on its failure to engage students in meaningful learning, its high upfront investment of capital costs related to content development and facilitator training, and the seemingly poor results in terms of
student retention (in fact reports of more than 70 per cent drop-out rates in purely online learning were not uncommon) (Bonk & Cummings, 1998, Johnson, Aragon, Palma-Riva, Shaik & Bilsbury, 1999; Hara & Kling, 2000:2; Simmons, 2000).

On closer analysis a number of points come to light:

- If online learning is a subset of distance learning then why was online learning being applied if students were not satisfied with the existing forms of distance learning?
- Why were classroom teachers decrying online learning when it was a distance learning (dlearning) technology, not a classroom learning (clearning) technology?
- As technologies have advanced to facilitate ‘classroom-type’ levels of interpersonal exchanges and interactions and improved learning methods (simulations, laboratories, virtual classrooms, etc.), is it still appropriate to classify elearning as dlearning, rather than clearning?
- The growth of blended (or hybrid) learning highlights the use of elearning as a transition or innovation based on the known (clearning) to the unknown (elearning);
- If the intent is to improve the human factor in education and move away from the teacher or lecturer ‘tipping’ knowledge into empty receptacles in scheduled sessions of boredom, why is it a surprise to find that elearning as it exists around the globe — without access to the full support of improved transmission capacity (fibre optics and improved bandwidth), better content compression or improved technologies — is still considered a very poor substitute to learning that promotes social exchange where activities enable people to learn together (Horibe, 1999:121)?

While teachers and educators have promoted the effective use of elearning, corporate practitioners decry the absence of ‘C’ speak: the ability to put education and training needs into language appealing to the CEO, COO, CFO, etc. (Nemeth, 2001:6).

**E-assessment (assessment or e-assessment) and etesting (e-testing)**

Elearning can promote assessment. Yet assessment online was first seen purely as an improved means to conduct assessment most commonly associated with distance students. Assessment has become subject to the same sort of criticisms levelled at distance education. For instance what guarantees the assessment has been completed by the nominated student, how to collect and reliably mark responses and how to collect valid assessment of skills and actual workplace performance?

As online learning progressed, new modes of assessment have augmented and improved assessment of distance students (as either tutorials or self-assessment, offering immediate feedback, and as a study aid or revision tool, as well as for marked tests). Realisation began to grow that elearning offered a new means to augment assessment practices in many forms of learning. Most profoundly, electronic assessment methods can deploy testing and assessment tools that can evaluate the processes of learning as well as the learning outcomes. This is a major development for all forms of education. The assessment process not only can enable the learner to
think reflectively and critically assess how they learn and work with others, but also can promote problem-solving. In essence, electronic forms of assessment provide a focus on outcomes as well as the learning and assessment processes. In addition data can be captured, reported and analysed in real time. Further there are even the beginnings of artificial intelligence being deployed to modify assessment based on previous responses or to maximise relevance to individuals or groups.

The characteristics of change waves and the progress of transformation have been covered previously in this chapter. Leveraging the work of numerous influential authors — Boulding’s writing of more than 36 years ago (1964), Drucker’s on discontinuities (1969), Nolan on development of IT (Gibson & Nolan, 1974; Mutsaers et al., 1998) and recent works such as Newt Gingrich’s (2002:48–52) presentation on how technology convergence will impact society — the following 18 key points of transformation can be consolidated:

1. Costs will decline.
2. Systems will be customer-centred and personalised.
3. Convenience will be a high value with anywhere, anytime access: 24–7 to be the reality, not the exception.
4. Customer-driven processes (push) will dominate, not suppliers (pull).
5. Purchasing power will increase as converged technologies expand capabilities and lower distribution costs.
6. Efficiencies of processes will continue to emerge and slack be removed, while operations will downsize and expert systems emerge.
7. Distribution systems will move away from business-to-business to business-to-(directly service the)-consumer (direct without the middle person) and empowering the user.
8. Change will come from everywhere (chaotic, not just planned).
9. Resources will shift rapidly to new opportunities across global markets.
10. Rapid introduction of better, less expensive products will lead to continual replacement.
11. The focus will be on success as entrepreneurs, venture capitalists and early adopters seek innovations based on the known.
12. In the search for breakthrough innovations, tolerance for failure will be embraced in innovation and thinking, but not when it adversely affects customer satisfaction.
13. Real breakthroughs will create new products and new expectations.
14. Speed matters — including responding to market needs with great agility and moving new products and services from inspiration to sale with great rapidity.
15. It is important to start small but think big (convey visions that others can understand and advance).
16. Business-to-business and improvement of existing business processes is the first profit opportunity.
17. Applying quality to those with ‘lean’ thinking, securing market access and efficient processes will promote profitability and sustainable competitive advantage.

18. Partnering with others, focusing on stakeholders and embracing collaboration between individuals all are essential to success.
Chapter 6  Transformation and Elearning

6.7 Summary

Elearning is as much subject to the forces of transformation as it is a mechanism to assist organisations and individual respond to change. To assume that the conceptualisation of elearning should be only as an enabler of more rapid knowledge flow and organisational responsiveness to change is to ignore the fact that the two (enabler of change and subject to change) are very closely linked. Therefore, by examining elearning in-depth one should be prepared not only to draw a close link between its role in enabling change and as a force that is subject to change, but also to identify how the two themes impact individual actions. The failure of many managers to respond to the challenges and ambiguity confronting them does not rest solely with the failure of theories or the manager’s incompetent understanding of elearning. Rather, one significant contributing factor is the failure of management to understand and deploy elearning in a holistic manner. It is through the application of elearning that more flexible systems can be derived to collectively orientate actions and sustain individual and organisational development within a holistic operating environment.

Elearning is not just an isolated business activity conducted at an interpersonal level between individuals within and outside the organisation. Its true significance lies in its use as a flexible strategic tool for the manager and the organisation to orientate and motivate employees towards long-term productive ends while also promoting the individual’s capacity to learn. It is this capacity in conjunction with competent performance that increases the organisation’s capacity to respond flexibly to change while harnessing and orienting staff commitment.

Agility is enabled when the organisation is conscious of its capability to learn and seize new opportunities. This applies to external customers as much as it does to exchanges between individual employees. The capacity to be agile encompasses how organisations learn and how well they can encourage individuals to learn and to rapidly capture and transfer knowledge to staff, and indeed, customers.

Fundamental to the concept of agility is the ability to understand the readiness of the organisation’s elearning capacity to be aligned to support changing customer needs and expectations. Being able to align effectively seems to require the capacity to develop elearning strategies that can dynamically evolve. Just as operational strategies are not static, so elearning strategies cannot be seen as fixed. Elearning requires instructors and managers who not only can model and coach others through the change process, but also can harness electronic environments to instil the behaviours and competencies necessary for individuals to undertake change as part of their everyday activities.

Organisations, communities and individuals completing elearning learn from their experiences and translate acquired knowledge into outcomes within their applied situation. Where companies can obtain competitive advantage through product differentiation or manufacturing processes, elearning can enhance competitive advantage by building capabilities that reside in their people and how they interact, within and outside the organisation. For such organisations the speed with which elearning can accelerate the translation of knowledge into new or improved operational outcomes often marks their unique competitive advantage. Where adaptive organisations respond to skill deficiencies evidenced through performance gaps, agile organisations learn from their experiences and become better at learning.
They learn the knowledge required to perform, while becoming better at how they learn and increasing the speed at which they translate learning into productive applications.

Key observations that can be made from research in this chapter include the following.

**Observation 6.1**
Elearning is an enabler of change while subject to stages of evolution evidenced in the progress of information and communication technologies. The efficiency and effectiveness of elearning therefore depend on accurately aligning the organisation’s own evolution to the capacity of the proposed elearning strategy to accelerate learning cycle times that generate improved business results — most importantly the individual’s capacity to learn and overall organisational performance and agility.
6.8 References


Chapter 6  Transformation and Elearning


Abstract

As social activities both communication and learning are omnipresent in how humans complete interactions with each other and service providers. It is logical then that a study of issues being resolved by elearning may have real relevance for the design and implementation of eservice systems. As a result many of the barriers to servicing customers in an electronic environment can be addressed through the same strategies deployed for elearning.

In the New Economy, speed is a critical sustainable competitive advantage. Learning is an enabler for performance improvement and competitive advantage resides in how quickly organisations can develop capabilities of their staff to deliver the core value proposition. Measuring the cycle time to proficiency is a good indicator of performance capacity. The concept reinforces the importance of moving learning beyond skills transfer for performance to learning as a process to enable and sustain rapid change. Competitive organisations also have to embrace the concept of learning from customers and respond rapidly to changing needs and preferences.

While a very new area of analysis, initial examination of available research suggests eservice proficiency and improved service can be stimulated through elearning. In turn, elearning is a transaction impacting both staff and customers.

The research goes on to look at the conceptual framework of organisations as transaction structures and the relevance to eservice effectiveness and efficiency. It examines how individuals are organised to orient individual and collective effort toward agreed outcomes.

Boisot (1995) presents a conceptual tool for understanding the production and exchange of information in social systems. He expresses the view that "social and
economic transactions provide the impetus for the production and exchange of information' and that if money drives economic transactions, it is information that drives transactions in general. Factors surrounding these information transactions give rise to various 'transaction structures' that may crystallise into organisations and institutions. The process has been labelled a structuration process (after Giddens). Drawing the Giddens and Boisot theories together, transactions between individuals are the medium and outcome of actions that give rise to a 'transaction structure' or organisation. Transaction structures can exist at various levels and so an organisation can be viewed as containing transaction structures, being a transaction structure and existing within a transaction structure.

This research on transactions and transaction structures has identified some profound insights that have implications for learning and the design and provision of services. The implications of these insights will be considered in later chapters.

The principles of how individuals learn in an electronic environment apply both to internal service transactions and to external customers accessing the organisation. The principles of effective and efficient elearning promote an understanding of service within an electronic environment. The elearning process is also part of the eservice value chain linking content and technology vendors with training staff and service staff to customers.

The electronic process has the advantage of being able to provide a useful means of collecting and retaining information for organisational and individual learning processes. These processes can be deployed to enhance the capabilities of employees and customers. The eservice transaction provides an opportunity to capture data during the electronic exchange to learn about customer needs and preferences.

Integral to eservice is the development of brand value. Brand is an intrinsic part of the product or service. Customer perceptions of brand impact on the value of a product or service. Brand allows for product or service differentiation. It is also an information trigger to reflect customer-held assumptions and expectations so that customers can avoid time-consuming processes associated with information analysis, product comparison and decision making. Strong brand recognition and a value proposition that is known attracts customers.

The primary aim of brand positioning is to foster customer loyalty. This may involve the promotion of brand values to enhance awareness and trust for the product or service. Alternatively, it may change attitudes by stimulating changes in behaviour and by showing the brand offers a value proposition that has utility, the offer is authentic and reliable and the offer and relationship holds value and is worth completing. Online services permit unique features for brand leverage.

Whatever the strategy, the aim is to encourage a customer relationship marked by loyalty and trust. Only through learning of new attributes or adopting changed behaviours can customer loyalty be achieved. Learning to improve a brand in an eservice context involves communication. It is a two-way process but in the first instance the brand strategy is shaped by the customer. To foster loyalty and reinforce an appealing value proposition means the communication strategy has to 'listen' to customer responses to the brand. This involves elearning.
It seems logical that elearning and eservice constructs are considered in parallel. Both constructs encompass consideration as to how organisations maintain brand agility and positioning of the brand with customers to achieve a competitive advantage. When considered together elearning and eservice can leverage new opportunities or influence customer behaviours, respond to the attributes customers seek and build brand loyalty.

The chapter summary advances a model for embedding elearning as part of the eservice transaction. It illustrates the importance of a purposeful relationship where performance equals satisfied needs and shared identity. Elearning supports learning exchanges and orients efforts to maximise efficiency and relationship effectiveness.

**Chapter Proposition**

Proposition 7.1  
Elearning is a form of eservice transaction that can maximise service excellence by using learning to assist humans to interact more effectively within an electronic environment.

**Key Themes**

Elearning, eservice proficiency and the speed of change; organisations as transaction structures; individual concepts and actions and the organisation; transactions and transaction structures and learning and service design insights; transactions and human computer interface (HCI) design; the fundamentals of ebusiness and eservice; eservice value chain and the principles of learning; elearning and customer needs and preferences; information collection for alignment of products and service; the six parallel lessons of elearning and eservice; benchmarking competitor activities; brand management to build online customer loyalty; using elearning to enhance eservice transactions; the need for external online customers to learn how to transact; and embedding elearning into eservice transactions.
Explicit knowledge/Capability assets (ability to do)
- Skills and knowledge (competencies)
- Warranties, tangible rewards
- Compliance requirements

Tacit knowledge assets (desire to do)
- Who am I? (culture, learning styles, mental models, communication style, etc.)
- Personal motivation
- Brand value (i.e. identification with 'promise')
- Needs and preferences (i.e. speed, personalisation)
- Behaviours (i.e. navigation, ease of use)
- Cultural context

Needs and preferences filter: Helps design, develop and present content to the user's needs and preferences. It also acts to map personal characteristics and how best knowledge requirements can be met within the individual’s immediate learning and performance context (i.e. I am this type of learner, requiring this form of outcome, in this context, so I should access this supplier or source learning that does this).

An entry-level common entry point is designed to permit all individuals to profile who they are, how they learn and what knowledge assets they possess. As they pass this entry point, all individuals can exit with a common ability to engage in elearning. A generic capability/mapping process can profile all employees, target learning and inform personnel, training, HR and human capital
7.1 Introduction

This chapter examines the synergies between effective and efficient elearning and the provision of service in an electronic environment (eservice or e-service). The main focus is on the opportunities that have arisen through use of the Internet to complete service transactions.

The Internet has provided a new channel to interact with and sell to consumers. In its most typical form, electronic interaction with customers via the Internet involves a business presenting information and services on its website, and potential customers accessing the information and services using a computer or handheld device able to connect to the Internet.

Internal staff, that is, customers of elearning (elearners), share features with external customers accessing a business online to source products and services. Because online customers do not meet staff face to face, providing them with effective electronic information, services and feedback mechanisms is crucial. A potential online customer can cancel a transaction or exit a website with the click of a mouse button, so a well designed electronic service strategy that meets customer needs and expectations is a prerequisite rather than an option.

Both communication and learning are omnipresent in how humans complete interactions with each other and service providers. Therefore principles addressed by elearning also have real relevance to how eservice systems are designed and implemented. Many of the barriers to servicing customers can be addressed by the same strategies deployed for elearning. These barriers include how electronic transactions, whether for learning or service, focus on:

1. Customers’ needs and preferences;
2. Satisfying customers;
3. Moving beyond traditional business processes;
4. Accommodating technical limitations;
5. Building customer relationships;
6. Stimulating customer loyalty;
7. Building shared identities and brand.

By considering the relationship between eservice and elearning it is possible for the business to:

♦ Learn from its customers;
♦ Capture and respond to customer needs and preferences as part of a formal organisational design and learning process;
♦ Link staff training to internal and external service experience (based on analysed data capture);
♦ Use the same data capture and reporting systems for service, learning and people management;
◆ Improve efficiency across the business;
◆ Detail and target customer service excellence;
◆ Establish the internal human and systems capacity to extend service to penetrate new customers that may exist in national, overseas or niched market segments;
◆ Streamline the efficiency of sales processes;
◆ Increase sales through product and compliance information (real-time learning);
◆ Achieve greater efficiency and integration with suppliers; and
◆ Reduce selling and inventory costs
◆ Improve brand proposition.
7.2 Elearning, Eservice Proficiency and the Speed of Change

In the New Economy speed is touted as one of the most critical sustainable competitive advantages a business can acquire. It has also been presented as a value proposition that online customers seek over price (Meyer & Davis, 1998; Lemberg, 2000; Fred, 2002). It is against this backdrop that learning becomes an enabler of not just performance improvement but also the speed with which organisations can develop staff capabilities to deliver their core value proposition. This emphasis has placed people at the heart of modern service organisations. As stated by Charles Fred (2002:36), a new metric has emerged; this centres on the cycle time to achieve performance proficiency, which:

... helps redefine the development of people in the context of the delivery of value and of time — in this case the time it takes for individuals to prepare themselves to perform.

Figure 7.1 S-curve of learning and implementation of eservice

As depicted above, speed and competitiveness are realised by advancing individuals rapidly along the learning curve to the point of proficiency (Fred, 2002:95). Figure 1 also emphasises how the learning curve extends beyond the point where proficiency is achieved to build the mental models that promote continuous learning and the acquisition of skills and knowledge necessary to assimilate new information, to transfer knowledge or to accumulate the experience necessary to deal with unexpected contingencies (Fred, 2002:67).

To accelerate the cycle time to proficiency, businesses have to:

♦ Establish the proficiency threshold;
♦ Accelerate the accumulation of experience; and
♦ Measure the cycle time to threshold proficiency (Fred, 2002:34).
According to Fred, these activities present a very good indicator of the performance capacity of an organisation and set apart agile, responsive and competitive organisations. The concept of a cycle time to proficiency also reinforces the importance of moving learning beyond skills transfer for performance to use learning as a process that enables and sustains rapid change. To do this, individual learning has to maximise both current learning and retention of learning in a way that promotes the accumulation of experience and the transfer of knowledge. The requirement for balancing skills transfer with work-based experience re-emphasises the importance of not just elearning for performance, but also learning that promotes interactivity and high levels of cognitive development.

**Figure 7.2  Cognition learning and knowledge retention and transfer**

![Cognition learning and knowledge retention and transfer](image)

(Chi, Bassock, Lewis, Reinmann & Glaser, 1989:148)

The acceleration of learning is also a ‘speed’-based issue. Elearning is viewed as a means to shorten the total time to reach threshold proficiency. This can be achieved by permitting learning to occur in an electronic mode that removes the restrictions imposed by classroom or instructor-led training. As illustrated in Figure 7.3, real value to the organisation and its direct capacity to achieve service proficiency can occur by deploying elearning to reduce cycle times.

**Figure 7.3  Reducing cycle time in traditional training and development**

![Reducing cycle time in traditional training and development](image)

(Fred, 2002:81)
Fred also reinforces that the changing nature of staff expectations in relation to online learning is consistent with changing customer expectations. Younger staff and those now familiar with online service and shopping expect learning to be on time, anytime, anywhere (content, information and methodology), and to fit their needs (Fred, 2002:125). This ‘digitally literate’ generation accepts lifelong learning and online transaction as part of everyday life.

The principles of elearning as a means to respond to staff who demand rapid access to information and knowledge also apply to customers. In terms of competitiveness, organisations have to embrace the concept of learning from customers and rapidly responding to any changing needs. Data on external customers’ needs and preferences can be conveyed to staff in real time as packages of online ‘educative’ information. Procedures for servicing customers or customer service information can be updated and embedded in electronic manuals (emanuals or e-manuals) available to staff electronically, in real time. Online experts and mentors can also be available to exchange information with staff and others. All such strategies build stocks of experience and assist staff to transfer both the explicit and tacit knowledge on what customers want and expect. This information has high value in an organisation seeking to improve eservice by proficiently delivering their core value proposition.

In the context of speed and organisational competitiveness, elearning enables:

♦ Shortening the time taken to raise an individual’s performance to the point of proficiency;
♦ Transferring the mental models and sense of identity that facilitate assimilation of new information, transfer of knowledge or accumulation of experience;
♦ Providing real-time capability for individuals to control when, where and how they can rapidly acquire learning relevant to immediate work performance;
♦ Providing ‘episodes’ of short, concise information on any aspect relating to changing customer expectations or behaviours;
♦ Enabling collaboration, interaction and knowledge transfer with others; and
♦ Supporting change processes (communication of timely and accurate knowledge).

Eservice proficiency can be stimulated through elearning. However, elearning enables improved eservice beyond simply accelerating learning curves and proficiency cycle times. Elearning is a transaction that impacts both the staff and the customer. The next section in this chapter examines the parallels between improvements to elearning and eservice from both the internal and external customer perspectives.
7.3 Organisations as Transaction Structures: A Conceptual Framework

Organisations are composed of individuals who also have customer relationships with each other and with others who transact with the organisation. How organisations undertake their purpose and seek to satisfy external customers is influenced by how they train their staff and organise to achieve an agreed purpose.

This section examines how organisations are organised to orient individual and collective effort to complete transactions that deliver agreed outcomes. The literature offers a high-level perspective on the key components. The key components include how elearning is both a form of service transaction and a by-product of an electronic service transaction by which organisations and individuals can learn how to improve service excellence.

7.3.1 Organisations and individuals

As evidenced in many of the previous chapters in this Investigative Research Report, the topic of human organisation lies at the heart of many studies on the organisation. This focus pervades a number of fields of science, and most particularly the fields of economics, management and sociology. In seeking to understand organisations, a number of scientific fields have started to converge on the issues relating to individual and individual-to-individual interactions. This convergence focuses on the role of individual motivations and behaviours as the building blocks of organisations.

Organisations are not merely collections of individuals, yet there is not an organisation without such collections. (Argyris & Schon, 1974:9)

In the shorthand of everyday life and thinking, it is typical and easy to regard an organisation as a thing — something that can be observed, changed, improved, and in certain circumstances, bought. However, in order to understand and improve organisations, various fields of scientific and management thinking have found it useful to move away from this view, and look at organisations as resulting from the aggregated activities of many individuals. This more organic approach reveals the pitfalls, hurdles and practical limitations of the ‘organisation as thing’ perspective and opens the doors to some more useful ways of understanding ‘organisations’.

The following explanation outlines key elements of this view by primarily drawing upon foundation works from three areas: organisational behaviour (Argyris & Schon, 1974), sociology (Giddens, 1984) and economics (Boisot, 1995). Eservice has been studied primarily from the technology and knowledge transfer perspective or where these intersect, in customer relationship management (see for example, Tiwana, 2000; Chen-Burger, 2002). The concept has been addressed as an electronic transaction within a social setting by only one major work (Rust & Kannan, 2002). All of these works — and particularly Giddens (1984) and Boisot (1995) — cover a vast field of existing thinking, and it is perhaps inappropriate to study them in a ‘reductionist’ way. However, these works offer an important foundation for research in this field. They particularly convey how different fields of thinking have been converging on a set of related ideas about the ways that individual behaviours and actions give rise to organisational effectiveness.
7.3.2 Individual concepts and actions, and the organisation

An organisation is like an organism each of whose cells contain a particular, partial, changing image of itself in relation to the whole. And like such an organism, the organisation’s practice stems from those very images . . . Individual members are continually engaged in attempting to know the organisation, and to know themselves in the context of the organisation. (Argyris & Schon, 1974:17)

In essence, one view is that individuals act in a way that simultaneously expresses and informs their concept of the organisation and their role within it. Argyris and Schon (1974) suggest that individuals are continually engaged in interactions that express and inform their mental models (or maps) of their organisation, and that as ‘. . . musicians perform their scores, members of an organisation perform their maps’. This view is echoed by Giddens’ (1984:5) explanation that ‘actors . . . maintain a continuing “theoretical understanding” of the grounds of their activity’, and this is reflected in that ‘. . . the main criterion of competence applied in day-to-day conduct [is] that actors will usually be able to explain most of what they do, if asked’. More particularly, ‘actors employ typified schemes (formulae) in the course of their daily activities to negotiate routinely the situations of social life’ (Giddens, 1984:22).

Giddens (1984:335) also states that all social actors ‘are social theorists who alter their theories in the light of experience’.

From these perspectives, then, individual actors are behaving on the basis of their ‘theoretical understanding’ of their circumstances, and in an organisation context, on the basis of their ‘theoretical understanding’ of the organisation. How does an individual develop and/or change this ‘theoretical understanding’? Boisot (1995:179) suggests that social interaction plays an important role:

The largest part of an individual’s stock of concrete and abstract knowledge is not built up . . . by himself alone . . . It is acquired, more often than not, off the shelf through a process of social interaction, internalised by force or repetition, and gradually embedded into an individual’s world view.

Within and beyond this interaction, as is implicit in Boisot’s comments above, the individual is actively involved in sensemaking (see also Chapter 4) — in elaborating and testing their ‘theoretical understanding’. Importantly, Argyris and Schon (1974:16) convey that this theoretical understanding is always incomplete, and that organisation members ‘try to describe themselves and their own performance insofar as they interact with others [and] as conditions change, they test and modify that description’.

This is not to say that it is possible to change an organisation simply by changing each individual’s understanding of the organisation. Many writers discount this possibility based on research that indicates learning to respond to change can cause anxiety and this is poorly understood because organisations neither know how to learn nor understand how individuals learn (Schein as cited in Coutu, 2002:109). Both Giddens (1984) and Argyris and Schon (1974:7) draw attention to the divergence between explanation and action. Argyris and Schon explain this divergence in terms of
‘espoused theory’ (explanations/mental model) and ‘theory in action’ (substance of action):

When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action to which he gives allegiance and which, upon request, he communicates to others. However, the theory that actually governs his actions is his theory-in-use, which may or may not be compatible with his espoused theory; furthermore, the individual may or may not be aware of the incompatibility of the two theories.

While not intended, one source of this (apparent) incompatibility between ‘espoused theory’ and ‘theory in action’ is the limitation of language to express a mental state. Giddens (1984:22) suggests that:

Most of the rules implicated in the production and reproduction of social practices are only tacitly grasped by actors: they know how to ‘go on’. The discursive formulation of a rule is already an interpretation of it . . .

This view aligns with Stafford Beer’s (1984:11; 1985) concepts of variety and variety attenuation. In essence, the richness of detail and tacit understandings (variety of information) within the individual’s mental state cannot be adequately communicated by language; the act of translating the mental state into language attenuates the message to be communicated. In this way, ‘espoused theory’ represents a largely incomplete sketch of the individual’s mental state.

The second discrepancy between ‘espoused theory’ and ‘theory-in-action’ — and the one to which Argyris and Schon directly allude — is inconsistency in the underlying theoretical understanding of the individual. In essence, the individual is not self-aware that they are saying one thing and doing another. It can be seen that the occurrences of these contradictions are almost a consequence of the dynamic nature of life; Giddens (1984:3) comments that:

Human action occurs as a duree, a continuous flow of conduct, as does cognition. Purposive action is not composed of an aggregate or series of separate intentions, reasons and motives.

Further, Giddens (1984:6) suggests that different levels of thinking (unconscious motives/cognition, practical consciousness, discursive consciousness) have different levels of involvement in our day-to-day activities:

If reasons refer to the grounds of action, motives refer to the wants which prompt it. However, motivation is not as directly bound up with the continuity of action as are its reflexive monitoring or rationalisation. Motivation refers to potential for action rather than to the mode in which action is chronically carried out . . . For the most part motives supply overall plans or programmes . . . within which a range of conduct is enacted. Much of our day-to-day conduct is not directly motivated.

And, as a consequence (Giddens, 1984:6):
While competent actors can nearly always report discursively about their intentions in, and reasons for, acting as they do, they cannot necessarily do so of their motives.

In these circumstances, the existence of incompatibility between an individual’s ‘espoused theory’ and ‘theory in action’ could be regarded as an inconsistency that has escaped the theoretical sensemaking attention of the individual.

Drawing together these threads, it seems apparent that limits of effective conceptualisation and communication place constraints on using an individual’s espoused description as evidence of understanding intention. This difficulty can be compounded by individuals being deliberately deceptive or consciously unaware of a divergence between their ‘espoused theory’ and ‘theory in use’.

The result is that people either deny that they do not know something, or avoid situations that they cannot make sense of with their ‘espoused theory’ or mental models.

7.3.3 Transactions and transaction structures

The previous section consolidated concepts surrounding individuals and their mental models of themselves and their organisations. In the material that follows, these concepts of individual behaviour provide a basis for understanding organisations of individuals.

Boisot (1995) presents a conceptual tool for understanding the production and exchange of information in social systems. He expresses the view that 'social and economic transactions provide the impetus for the production and exchange of information' (1995:232), and that if money drives economic transactions, it is information that drives transactions in general. In essence, the factors underlying these information transactions give rise to various ‘transactional structures’ that are expressed in organisations and institutions. Boisot (1995:6) explains:

Recurrent information flows give rise to transactional patterns which under certain circumstances crystallize into organisations and institutions . . . Where this happens, the resulting structures exert a reciprocal influence on the flows, and subsequently help to shape them. We thus obtain an information based version of what Anthony Giddens has labelled a structuration process.

The concepts here need further elaboration. As Boisot indicates (as above, 1995), his work represents an information-focused version of Giddens’ theory of structuration. Giddens approach is concerned with the way that people’s actions produce and are reproduced in societal systems; Giddens (1984:24) states that ‘it is always the case that the day-to-day activity of social actors draws upon and reproduces structural features of wider societal systems’. The substance of these structures exists ‘only as memory traces, the organic basis of human knowledgableness, and as instantiated in action’ (Giddens, 1984: 377). Thus:
The concept of structuration involves that of the duality of structure which relates to the fundamentally recursive character of social life, and expresses the mutual dependence of structure and agency. By the duality of structure I mean that the structural properties of social systems are both the medium and the outcome of the practices that constitute these systems. (Giddens, 1986: 69)

Drawing together Giddens’ theory of structuration and Boisot’s information-focused theory, transactions between individuals are the medium and outcome of actions that give rise to an organisation (or ‘transaction structure’, using Boisot’s terminology). These ‘transaction structures’ exist at various levels and so an organisation can be viewed as containing transaction structures (e.g. branches, communities of interest), being a transaction structure (i.e. ‘the organisation’) and existing within a transaction structure (e.g. society, culture). The terms ‘transaction’ and ‘transaction structures’ can therefore be defined as follows.

### 7.3.4 Transactions and transaction structures

Individuals engage in social and economic transactions with other individuals; these activities are based on the individual’s theoretical understanding of themself and their situation. Each individual’s theoretical understanding encompasses implicit concepts of the ‘rules and resources’ (Giddens) that both define and give rise to the transaction structures in which they participate. Transactions are concerned with the exchange of information.

This reconfirms how social structures, including organisations, are both the medium and the outcome of transactions between individuals. These transaction structures can extend from a set of behaviours between a small set of people such as a couple or family, to behaviours that encompass regional or global society.

These concepts and their implications are explored further in other later chapters in the Research Report, particularly Chapters 8, 9 and 10, which respectively consider elearning as a transaction impacting and being impacted by individuals, groups or communities, and the organisation. It is worthwhile now to briefly address the implications of transaction within a learning and service context.

Individuals’ transactions form actions. Their actions and transactions also involve learning.

*Just as individuals are the agents of organisational action, so they are the agents for organisational learning. (Argyris & Schon, 1974:19)*

Analysis of original research on transactions and transaction structures provides some profound insights that have implications for learning, including the following:

- Individual learning involves assisting people to come to new ‘theories of action’; however, this may not be usefully tested or evaluated by ‘espoused theories’;
- Every interaction involves some degree of learning, and individuals can learn as much about the organisation and expectations of their behaviour by having a coffee with a colleague as they do in a meeting with management or a learning course;
Organisational learning could be conceptualised as a shift in multiple individuals’ ‘theories in action’, thus giving rise to a shift in the business processes enacted within the organisation;

Individual learning needs to take into account and perhaps leverage existing transaction structures — culture, subculture, etc. — that the individual may already participate in;

Individual learning can involve creating opportunities to evaluate the different levels of thinking about motivation/practical action, and any inconsistencies that may have inadvertently emerged in their approach;

In a technology context, individuals already have concepts about the nature and procedure of technology-based transactions; these also need to be leveraged and understood;

In an organisational context, the value of learning (if it considered important) needs to be included in the rules that define and express the organisation. This would be supported by management conceptualisation of learning importance, focal area responsible for learning, and the receptiveness of individuals to seek and participate in learning activities;

Regarding learning as a ubiquitous activity opens the door to opportunities and the importance of concepts such as adaptiveness.

Analysis of original research on transactions and transaction structures also generates insights into the design and provision of services. Such insights include the following.

Customer alienation — what limitations does the perception of the customer as separate from the organisation place on the opportunities for organisational change and development?

Customer transactions are directly comparable to the transactions that occur within an organisation, and with other organisational stakeholders. Common methods, learnings and frameworks could be commonly applied;

Individuals inside an organisation engage in significantly more transactions in the organisation ‘transaction structure’ than do external customers; this means there is an information disparity that may inhibit or complicate customer transactions. Internal interactions regarding customers almost inevitably lead to a degree of group-think that could potentially be problematic;

Technological interactions, such as language, dramatically reduce the variety of information exchanged between individuals. Decisions to transfer services online need to consider strategies and adequacy of channels that remain for transactions across the organisational boundary. Responsiveness to divergence of service needs may be reduced. More importantly, the degree to which individuals participate in the organisation ‘transaction structure’ are changed, and clients could be more easily persuaded towards relationships with other organisations. It therefore seems useful to encourage clients to perceive
(and achieve) some level of personal value and involvement in the organisation ‘transaction structure’;

♦ Perhaps in an online context, the ‘transaction structure’ centre of gravity shifts from the organisation to the individual, and the best online service (and learning) systems are directed toward understanding the individual’s personal ‘transaction structure’/identity/relationships from their own perspective; there seem to be two strongly diverging strategic opportunities.

These concepts have implications for learning that supports service provision by individuals, groups and organisations. The implications for learning are considered further in Chapters 8 through 10. The remainder of this chapter addresses these concepts as they relate to human use of computer technologies.

### 7.3.5 Transactions and the technology interface

While it is beyond the scope of this section to review this topic in full, both elearning and eservice transactions occur in an electronic, technology-mediated environment. As such, it is important to note that the mental model and anxiety an individual feels in entering such transactions is influenced by the technology interface. The style and form of web interface or technology used to access electronic learning and services affect use by an individual (Hong, Tam & Yim, 2002:108–110).

Computer technology has changed significantly since its inception. The most important progress to date, however, has been in the way that people interact with computers. Illustrating the changing relationship, Tesler (1991) comments that the early ‘priesthood of programmers . . . [has] vanished to be replaced by a single user . . . for whom the computer [is] a tool, not a calling’. Planning and designing how human computer interaction takes place is now recognised as being of central importance in the development of computer systems.

In physical terms, the 'human computer interface' consists of the devices that facilitate communication between a user and a computer system (i.e. making it ‘user friendly’).

The adequacy of a human computer interface (HCI) design is a determining factor in the success of a computer development project. Consequently, much academic and professional research work has been undertaken with a view to establishing approaches for good HCI design.

How individuals interface with online providers continues to evolve. Not only will needs and preferences of online customer change, but also the technologies for interaction will evolve. For instance the employee and customer interface for eservice or elearning in the future will not necessarily be a fixed computer or browser based, as evidenced by the emergence of mobile devices such as PDAs. Contemplating the future of computer technology, Weiser (1991: 94) observes:
The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it . . . Such a disappearance is a fundamental consequence not of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it . . . only when things disappear in this way are we freed to use them without thinking and so focus beyond them on new goals.

In essence, the purpose of HCI design is to facilitate this ‘disappearance’ or invisibility. The principles and guidelines of HCI design discussed following reflect this purpose, and it is an important starting point for consideration of HCI design issues.

Before moving to the next section and the focus on online transactions, it is important to note that the design of the technology interface impacts an individual’s engagement in all forms of exchange in an electronic environment.
7.4 Online Learning and Service Transactions

Online customers are those who interact and/or transact with a business electronically. While other existing and emerging technologies provide ways of conducting business electronically, this section focuses on Internet-based service provision (eservice). Some examples of the ways businesses can reach and interact with customers electronically via the Internet are by:

- Sending personalised emails or email newsletters to potential customers, very quickly and at almost no cost;
- Providing an Internet website that displays information about the business, its products and services, enabling potential customers to find and select what they want without leaving their home or office;
- Allowing customers to order and pay for goods electronically from anywhere in the world, with goods delivered by post or courier; and
- Allowing customers to access information and make purchases 24 hours a day, 7 days a week, 365 days a year.

For many businesses, building a web presence merely to increase the numbers of available customers has proven to be a costly mistake. Often the Internet is totally misunderstood as a vehicle for acquiring and satisfying customers.

Figure 7.4 New channel to close sales and provide services

As depicted above, the fundamentals of any electronic business (ebusiness) — the sales and service strategy — must deliver a value proposition to the external customer*. This remains constant for the Internet. The value must be superior to that currently available, enhance channels to reach the desired market segments and appeal to the customer. To be worth doing, the derived value must also be sustainable and represent a viable investment.

The Internet certainly provides an important new channel for selling to consumers. Peterson, Balasubramanian and Bronnenberg (1999) suggest that, as a marketing channel, the Internet has the following characteristics:

- The ability to inexpensively store vast amounts of information at different virtual locations;

*NB: Customer is used herein to denote the same as client, those actually being serviced, but is distinct to consumers that represents the total number of potential customers in the market.
♦ Powerful and inexpensive means of searching, organising, and disseminating such information;
♦ Interactivity and the ability to provide information on demand;
♦ The ability to provide perceptual experiences that are far superior to the printed medium, although not as rich as personal inspection;
♦ The capability to serve as a transaction medium;
♦ The ability to serve as a physical distribution medium for certain goods (e.g. software);
♦ Relatively low entry and establishment costs for sellers;
♦ Uniqueness of tool (no other existing marketing channel possesses all of these characteristics).

The following table outlines some possible elements of an electronic sales strategy, which emerge after consideration of the balance between electronic and traditional sales processes.

Table 7.1  Electronic services: cost, sales and customer considerations

<table>
<thead>
<tr>
<th>Relative Cost of Electronic Versus Traditional Processes</th>
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<th></th>
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<tbody>
<tr>
<td><strong>Traditional Costs &gt; Electronic Costs</strong></td>
<td>Costs about the Same</td>
<td><strong>Traditional Costs &lt; Electronic Costs</strong></td>
</tr>
<tr>
<td>Employ strategies that encourage customers to use online services rather than more costly traditional services. For example, encourage ordering via a website or electronic mail.</td>
<td>(Look to other factors to determine strategy.)</td>
<td>Employ strategies that provide online services only to customers that regard access to online services as a key buying reason. For example, providing high-value customers with 'login' access to electronic catalogue and ordering systems, or not providing certain electronic services (e.g. ordering by phone only).</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Relative Amount of Total Sales Achieved via Electronic Versus Traditional Processes</th>
<th></th>
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<tbody>
<tr>
<td><strong>Traditional Sales &gt; Electronic Sales</strong></td>
<td>Sales about the Same</td>
<td><strong>Traditional Sales &lt; Electronic Sales</strong></td>
</tr>
<tr>
<td>Consider employing strategies that support and 'value-add' the services that traditional customers tend to use, and/or, be experimental and actively seek new markets and customers for electronic sales.</td>
<td>(Look to other factors to determine strategy.)</td>
<td>Consider employing strategies that focus on maintaining and deepening relationships with online customers in order to identify and adapt to emerging needs and preferences of online customers.</td>
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<table>
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<tr>
<th>Value to Customer of Electronic Versus Traditional Services</th>
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<tbody>
<tr>
<td><strong>Traditional Service Value &gt; Electronic Service Value</strong></td>
<td>Value about the Same</td>
<td><strong>Traditional Service Value &lt; Electronic Service Value</strong></td>
</tr>
<tr>
<td>Consider differentiating electronic services by offering them at a cheaper price (or increase the traditional services price). This can help manage demand between the two types of service. This may also indicate that the electronic services are not meeting the needs of target customers — investigation and further development of electronic services may be required.</td>
<td>(Look to other factors to determine strategy.)</td>
<td>Actively make traditional customers aware of the existence and benefits of the electronic sales services that the business offers. Also investigate improvement of traditional services as not all customers will necessarily want to use the electronic services.</td>
</tr>
</tbody>
</table>
Electronic Versus Traditional Customers

<table>
<thead>
<tr>
<th>Customers Seem Different</th>
<th>Customers Seem Similar</th>
</tr>
</thead>
<tbody>
<tr>
<td>If ‘electronic’ customers are different from traditional customers, then different approaches will be required to categorise and meet their needs and preferences. This may mean that higher costs are incurred meeting different electronic and traditional market segments. It may also mean that newly identified electronic/traditional market segments can be experimented with in the traditional/electronic sales processes.</td>
<td>Utilise the similarity between the electronic and traditional customer groups to drive continual learning and development of strategies between each of these groups.</td>
</tr>
</tbody>
</table>

7.4.1  Eservice — an internal customer perspective

The principles of effective and efficient elearning promote an understanding of service within an electronic environment. The principles of individual learning in this environment apply both to internal service transactions as well as external customers accessing an organisation.

Figure 7.5  Eservice value chain — individuals and groups as customers

The eservice process commences well before the service delivery to the end customer. A focus on efficiency and effectiveness of eservice is therefore a focus on the entire service chain. The figure above depicts the service chain from commencement with a supplier and finalisation with a customer or end consumer. The internal service chain occurs within an organisation with individuals or groups acting as supplier to the end-service provider. There may be multiple service exchanges prior to the service provider.

Figure 7.5 also depicts how the elearning process is a part of a service value chain. The bottom of the figure depicts how vendors of content and technology (software
and hardware) may supply trainers who then provide elearning in a form that enables service staff to better provide service to the end customer.

Unlike traditional approaches the electronic sales and service process can be more dynamic and used as a learning process. One advantage of the electronic process is that it can provide a useful means of collecting and relating the information for the organisation and individuals involved. In this process, useful activities include:

- Collecting and analysing sales and customer information using databases;
- Streamlining steps and internal service exchanges required to service the end consumer;
- Seeking and capturing real-time feedback from customers about the services provided;
- Seeking and processing real-time feedback from those servicing customers;
- Capturing ‘invisible’ data on how customers use the electronic environment (navigation sequences, duration viewing the site, average spend per customer by segment, sites visited before and after visiting the online presences, etc.).

Figure 7.6 Internal staff capabilities to complete eservice transactions

Elearning can be deployed to enhance the capabilities of the individual employee to service customers in an electronic environment. The focus is threefold:

- Improving the elearning to enhance performance capabilities;
- Improving learning process to shape elearning to the needs and preferences of the learner, thereby improving ability to deploy capabilities; and
- Improving how staff members, individually and collectively, transform electronic data on customer use into learning that can improve eservice delivery.
Eservice — An external customer perspective

Any organisation’s staff are also customers, not only within the organisation (internal service) but also when they visit other organisations. The principles of what a business’s staff seek when accessing elearning in a service exchange also apply to external customers accessing an organisation for services and products.

Peter Kearney (2000) suggests that the typical Internet user can be motivated to buy from a website by targeting the following ’hot buttons’:

- The product/service must suit their needs — a business must have a quality product and focus its marketing on attracting targeted traffic to its site;
- The online presence must be fast and easy to navigate;
- The online presence must be easy to read and get to the point quickly;
- The eservice exchange must offer extra convenience for the customer;
- The site must have secure order payment options;
- The site must provide a reason for the customer to visit the online presence regularly as first-time customer visits rarely are converted into opportunities for income generation;
- The business must do everything it can to engender credibility, trust and a relationship with its visitors and customers;
- Freebies should be built into the online presence; and
- Pricing should have bargain appeal and be time sensitive.

A consumer’s decision to buy from an online site is influenced by a combination of technology issues and behaviours. Research points to key factors such as:

- Levels of interaction;
- Speed of loading (broadband sensitivity);
- Payment security and systems;
- Information availability that enables informed buying decisions;
- Post-sales and service support (i.e. shipment tracking);
- Cross-promotion of web presence;
- Services/value-add;
- Access to sales support and follow-up contacts — by phone or email;
- Offers to send catalogues; and
- Overall site design and ease of use (Bowles & Wilson, 2003:37).

The factors influencing an individual customer’s capability to complete an eservice transaction is therefore a combination of learnt competencies, behaviours and motivational attributes, and the enabling technology. These factors mirror those influencing internal capabilities for completing an eservice transaction.
7.4.3 Learning customer needs and preferences

The eservice transaction provides an opportunity for service providers (individually and collectively in teams or the total organisation) to capture data during the electronic exchange to learn about customer needs and preferences. The literature spanning the five years to 2003 (Peppers & Rogers, 1997; Reichheld & Schefter, 2000; Seybold, 2001b; Singh, 2002; Wilson, 2002) highlights a consolidation towards three broad strategies an organisation can use to learn the needs and preferences of online customers; these are:

1. Observing the behaviour of online customers;
2. Using or initiating interaction with online customers to gain feedback; and,
3. Learning from the online customer’s experience and knowledge.

Strategy 1: Observing the behaviour of online customers

The first of these strategies, observing the behaviour of online customers, can be achieved in the following ways:

Reviewing website statistics reports

It is possible to arrange for website statistics reports to be generated that detail information about what people do when they visit a business’s website. This system can be established by the website developer or website hosts/Internet Service Provider (ISP). These reports, which are typically prepared monthly, can reveal information such as how many visits a website has had, what days and times these occurred, how long visitors spent on a specific website, the typical paths they took through the website and where they came from — including which search engines and search terms they used, and from which pages they exited the website. All of this information can provide valuable insights into how well a website is meeting customer needs and preferences. For example, very brief visits to a home page may indicate that visitors are not finding anything of interest and are quickly leaving the site. Alternatively, analysis might find that customers progress through a site to the order page, but never order — perhaps indicating a problem with the function of the site or the price of a product.
Smart design of an Internet web presence and email

Another way to observe the behaviour of online customers is to design the Internet presence to reveal details of customer needs and preferences. For example, rather than having all products and their details listed on one page, these can be separated into groups or kept on separate web pages so that it is possible to collect statistics that report how customers visit one product, but rarely visit another product. Similarly, an Internet presence can be designed around the customers categorising themselves or their needs. For example, asking visitors to select buttons that take them places or to fill out forms and confirm ‘a budget’ or whether a product is ‘robust and reliable’; or asking them to select between products for ‘primary school students’ or ‘high school students’. In this way, the paths that people take through a website help to reveal their typical needs and preferences.

A further way to observe behaviour is by coupling email marketing with an Internet presence. This may involve sending emails to a specific customer segment and encouraging them to visit a website or, in emails to another customer segment, asking them to visit an Internet presence specifically designed to meet their needs. This means can provide the web statistics necessary to gauge the effectiveness of an email campaign.

Strategy 2: Using or initiating interaction with online customers

Unless they have a specific need, online customers often take their business elsewhere rather than report a problem with a website or ask questions about a product. For this reason, it is very important to make the most of any contact a customer has directly with a business.

A customer complaint or enquiry for information is a means for rapidly learning whether the electronic environment is satisfying their needs. Other means of initiating interaction with online customers include:

**Simple one-question surveys**

Many websites ask their visitors single ‘survey’ questions. These tend to be ‘interest’ items about their opinions and people will often respond just to see what the survey results indicate about what other people think. This is a simple way of initiating interaction with website visitors, and gauging their interest in different topics (i.e. if nobody responds, perhaps nobody is interested in the topic).

**More detailed surveys**

Some online businesses occasionally ask website visitors to respond to an online survey. If this is the route taken, it is important to keep it simple — otherwise when people see the survey, they may decide it looks long or complex and elect not to respond. Look for a way to build a benefit into the process for the website visitor — for example, ‘help us to help you’ or a ‘complete our survey and receive a free report on maintaining your lawnmower’ (i.e. something directly relevant to them).

**Offering a ‘freebee’ to register**

Another method used by many online businesses is to offer something of value in return for the customer registering their details. For example, the website of a hardware store might offer a visitor a free report on ‘101 handy hints for your garden’ in return for registering their name, contact details and interests. These offers typically
include a question along the lines of ‘Would you like us to email you about new products?’.

**Strategy 3: Learning from the online customer experience and knowledge of other businesses**

This is a key source of customer intelligence. There are countless books, articles and reports on the needs and preferences of online customers. For example, Zemke and Connellan (2001) write on ‘ways to keep your customers when the competition is just a click away’; their suggestions include the following:

1. Be useful.
2. Don’t waste a customer’s time.
5. Keep it simple.
6. Show them what they’ve bought.
7. Give them lots of search options.
8. Encourage customers to make contact if they want help.
9. Give consumers access to help on their own terms.
10. Answer every email in less than a day.
11. Don’t ever tell them you’re too busy to respond.
12. Make it easy to navigate (‘easy to navigate’ means you can get to any page regardless of where you are in the site).
13. Put a price with every product.
14. Have simple beneficial registration processes.
15. Tell them what the shipping costs will be long before they get to the checkout.
16. Tell customers how they can return items and make it simple.
17. In the business-to-consumer (B2C) space, make the check-out process fast and painless.
18. Deliver products on time.
19. Unless your primary audience is eight-year-olds, get rid of anything that blinks, spins or otherwise moves erratically.

For elearning these broad strategies provide an important series of insights. Elearning, as an electronic service, can usefully align to the findings listed above. The findings also provide a reminder that an electronic environment enables the capture of data and gaining of immediate feedback from customers. This data and feedback can be used to design more effective elearning, in effect making it an eservice that learns from the customers using it (elearners). As such, it is designed to continually improve to meet changing customer needs and preferences.
The use of elearning to enhance effective eservice transactions is shaped by the same factors and realities that determine effective and efficient eservice.
7.5 Parallel Lessons — Eservice and Elearning Transactions

A number of realities impact both elearning and eservice. This section isolates six lessons that have been extracted from the literature examining eservice and elearning transactions.

7.5.1 Lesson 1: Customers’ needs and preferences should drive the learning and service transaction

One of the main characteristics of modern society is the vast amount of information to which individuals are exposed. This is the reason some business strategists talk in terms of customer ‘mindshare’ and the ‘attention economy’. In designing any transaction in an online context, it is useful to regard the online presence as being in competition for customers’ business, and also in competition for the individual’s attention. Being attractive to target customers means capturing and maintaining their attention. This involves two main things:

♦ Gaining the attention of customers; and
♦ Not giving customers reasons to divert their attention elsewhere — for example, an online environment that is not well presented, does not function properly, takes too long to load, or does not meet the expectations it has generated.

At the heart of successful eservice, as with elearning, is the need to change individual behaviours originally shaped by transactions in physical environments. Attracting customers to a web presence and encouraging them to complete an electronic transaction requires language and visual communication that will keep the customer returning. When seeking to influence behaviours (for changing online viewing patterns), the literature emphasises six key features that should be considered (Singh, 2002; Bowles & Wilson, 2003:77–78):

1. Analysis and planning (market research, target audience, content)
   All communication requires strategic planning — what shall we communicate, to whom, when and how? The planned service must also meet the needs and preferences of users. Equally, the capacity of the customer to access online services and complete transactions must also be established (i.e. whether they have the appropriate bandwidth, hardware, software, etc.).

2. Access and distinguishing features
   When interacting online, individuals must be able to firstly access and find the relevant site or information. One suggested weakness of Australian retailers when communicating online has been the failure to distinguish improved information flow and to use the Internet to simplify how a person can complete a purchase. Little has been done to educate users on why the Internet holds great value over physical options, and hence why connecting and learning to use web browsers and technology can be to the customer’s advantage.
3. **Outcomes and reasons**

Most customers do not perceive the urgency to change the way they access and complete online transactions, so calls to change how they use technology do not diminish the advantages in making technology operate the way users want. If organisations wish to attract and ‘sell’ more goods and services online, then outcomes (results) that appeal to the business should not be assumed to shape the customer’s needs and preferences. In effect, online strategies should be demand led (pull), not supply driven (push) (i.e. what the customer wants, not what the business wants).

4. **Help and directions**

Simple directions of what to do or where to start must be provided. To implement online transactions an organisation must provide a logical way for the first-time visitor to an online site to secure directions, sort current information needs, and immediately be engaged in the service exchange.

5. **Control of distribution**

In the online world choice abounds. Comparisons between products, prices and features can be made in timeframes virtually impossible in the real world. This can occur across multiple different distributors or retailers of the same product or service. Eservice providers have to acknowledge that online consumers can now access a huge range of sources for the identification, capture and transferral of information relevant to service providers.

6. **Personalisation and cognitive appeal**

Many eservice transactions are aimed at too broad a market. In attempting to appeal to a broad range of cognitive capacities (thinking, experience, mental models), translation of information into actionable knowledge fails to appeal to the target customer group. Communication of actionable information must be pitched to identifiable needs within the different market segments and customer groups.

7.5.2 **Lesson 2: The focus is on satisfying customers**

Acquiring and retaining customers online is even more critical than for most brick-and-mortar establishments. Consider the following observations by Red Sheriff (2002) for Australian online businesses:

- There are high costs to acquire new customers;
- Retained loyal customers are more profitable;
- Knowing more about current customers leads to more profitable acquisition strategies;
- Customers who are dissatisfied with a site leave quickly and return rarely; and
Customers satisfied with a site return more frequently to that site and shop around less.

Value propositions become critical when seeking to retain online customers. Just as the physical marketplace may have too many stores in a location or have a market segment saturated by large and small retail companies all vying for dominance, so too can the online marketplace. Value propositions are required that appeal to the customer. This can often be achieved online by being more dynamic and actively anticipating, targeting and responding to the shifting needs and preferences of individual customers or segments.

Seybold (2001a) highlights three principles of the ‘service’ or ‘customer economy’ that provide an additional rationale for satisfying customers online:

1. **Customers are in control**
   Customers are reshaping businesses and transforming industries.

2. **Customer relationships count**
   The value of current customer relationships determines the value of the business.

3. **Customer experience matters**
   The feeling that customers have when they interact with the brand and business determines their loyalty.

In these circumstances, improving customer satisfaction means two things:

- Using electronic systems to help customers to meet a business’s own needs and derive satisfaction via the Internet; and
- Using electronic systems (and direct customer feedback) to continually refine the capabilities of a business’s online web presence to meet customer needs and preferences.

However, satisfying each segment or individual customer varies over time. To move with changing customer expectations, the eservice provider has one major advantage: data capture. Gianforte (2002) presents the following checklist for organisations seeking to determine how well their eservice is satisfying or exceeding current and future customer expectations. Capturing all this information is possible and can be reported and analysed in real time by an organisation, large or small.

- **Capture customer feedback** — As with all communication, listening is crucial. Does the website ‘listen’ to needs and capture feedback?
- **Respond rapidly** — Speed is everything in the online world. Does the online presence permit the customer to rapidly find what they want using their own hardware and connection (not what you may necessarily want them to use)? Does the company automate processes and streamline routine tasks to provide rapid electronic processing?
- **Anticipate needs** — Sites need to be designed from the customer’s perspective, not the business’s. Can customers access resources, find answers to queries or locate other information quickly?
- **Manage the channels** — How do customers get to the site? Where do they go after leaving the site? This tells the eservice provider where
customers have been and other ways to improve channels to market or eservice strategies that make the providers’ offerings a cornerstone of a customer segment’s overall online needs and behaviours.

- **Measure individual satisfaction** — The Web permits the online business to capture data on how individuals rate their experience. This data, far from being threatening to the customer, can have real value. Does a site permit customers to provide feedback and rate the site?

- **Value the knowledge of customers** — In the global information economy, knowing customers’ needs and preferences is often as valuable as the products and services offered. Many eservice providers are finding that their sale of information is becoming their primary source of income/business. Equally, intelligence on customer expectations, present and future, has a knowledge value that can be reported on the bottom line.

- **Forge partnerships** — Today the eservice provider does not have to do it all themselves. They may outsource functions to other companies expert in the provision of services (i.e. a portal to sell to a market, or an information technology vendor to supply and maintain hardware or applications), or work with affiliates to improve cross-selling and supply.

All of the above need to be considered together, not just in isolation. Failure to do this leads to the common situation where the elearning service provider places content online and produces a site that looks good and is easy to navigate; then when the visitor needs assistance they have to download a form and fax it to the respective help desk or facilitator. The student/customer need is captured only on the fax form (at best, re-keyed by a staff member), and the capacity to learn from this experience is most likely lost. Another example of a shortfall is using evaluation tools to capture user feedback on completion of components in a course but not evaluating the overall satisfaction with the entire course.

### 7.5.3 Lesson 3: Electronic transactions do not hold direct parity with traditional business processes

Businesses moving online that expect improved customer acquisition and retention to parallel their investment are often confronted with a new set of realities. These include:

- It often costs more to acquire an online customer than to acquire a physical customer;
- What look like fixed costs for completing e-commerce (process, technology and people) that scale to meet any number of customers, become less ‘fixed’ as customer numbers increase;
- Margins on eservices vary by categories, customer segments and market areas (i.e. from the low margins of high-volume low-price segments to the larger margins on lower-volume high-quality items);
- Customer volumes (number of visits) are often less a determinant of success than attracting the right customer (number of purchases);
Online customers are often targeted with certain products and services
that create real problems for inventory management, suppliers and
distribution management;

While technology is at the core of online sales, eservice providers still
have to remember to ‘service the customer’ by providing access to
‘real’ people;

Order fulfilment is a critical determinant of success (Bowles & Wilson,
2003:58).

‘Build the site and they will come’ is the catchphrase of eservice providers that have
not understood all the dimensions of satisfying online customers. The key issue
above is the underestimation of the costs and the overestimation of how many
customers will be acquired.

Many providers of elearning services to internal staff or the public market are under
the illusion that the investment is once-off and fixed. This ignores the rules of
investment in technology and business processes. The increased complexity of the
electronic supply chain results in new problems for business processes to resolve. For
instance, as businesses become more advanced in their elearning strategies,
weaknesses in content delivery and management, and interface with technologies
deployed by the student or business unit, all come to the fore. As elearning requires
even more rapid responsiveness in processes, people and systems, existing
weaknesses are exacerbated. As a result the cost of servicing customers accessing
elearning is far from fixed. Costs actually escalate, spilling over into improving
inferior processes and systems. As numbers of users increase, so does the required
investment.

7.5.4 Lesson 4: Electronic transactions must match technical
limitations

Infrastructure limits the types of eservices available. The types of infrastructure and
especially the bandwidth available to Australian and Asian customers are lagging
behind those available in North America and Europe. As depicted following,
eservice, as with elearning, is a form of transaction occurring in an electronic context.
As such it is limited by the available technology and infrastructure.

Figure 7.8 Bandwidth and consumer services
Just as bandwidth influences what services and products can be offered, so it influences the customer’s decision to purchase. Figure 9 indicates customers’ patterns of Internet use and how interactivity impacts the conversion of customer appeal into commercial use (based on Kierzkowski, McQuade, Waitman & Zeisser, 1996:12; Bowles & Wilson, 2003:49). It can be seen that some categories do not need higher bandwidth or levels of interactivity to be successful. Others, such as providers of video streaming or videos on demand, require more bandwidth. For some services, change to bandwidth may have only marginal impact. Changes in interactivity, however, may improve the appeal of some existing online products and service; for instance, real estate. Rather than just viewing static images, higher bandwidth may permit virtual tours and on-demand video capture.

Figure 7.9 Categories, levels of interactivity and influence on eservice purchase decisions

7.5.5 Lesson 5: Building customer relationships is vital

Customer Relationship Management (CRM) integrates processes, people and technology to improve how an organisation can build service relationships with customers. According to Thompson (2002:1) CRM is:

... a business strategy to select and manage the most valuable customer relationships. CRM requires a customer-centric business philosophy and culture to support effective marketing, sales, and service processes. CRM applications can enable effective customer relationship management, provided that an enterprise has the right leadership, strategy, and culture.

In CRM the real value in collecting data about customers is the ability to translate this data into knowledge that the organisation can uniquely use to reinforce relationships and thus gain competitive advantage.
CRM is intended to assist in gathering the data necessary to:

- Undertake accurate and dynamic business plans;
- More accurately forecast accurate demand;
- Assess and enter new markets;
- Assess competition;
- Assess sales channel requirements;
- Assess current resource returns;
- Decrease time to market;
- Monitor market share;
- Consolidate and assess organisational intelligence; and
- Monitor risks and target attainment.

CRM systems focus on capturing and using customer information to harness and create value in customer relationships. Birch, Gerbert and Schneider (2000) identify four steps to build relationships with online customers that lead to loyalty.

**Know and understand the customer**

Businesses need to collect data on the customer as an individual and as a member of a specific segment and market. The strongest advantage that brick-and-mortar organisations have when moving online is their existing list of customers and a strong (one would hope) basis for collecting data on the customers and their needs and preferences. They may also have relationships with mail order companies that have distribution databases.

Often a service provider learns details about customers only once they begin a purchase, at which time personal details are collected. This is often too late. For most online exchanges only three per cent of visitors to a site convert into sales. To get to know customers better requires some smart ways of managing the relationship.

Web technologies and applications also permit the business to track data on the customer’s use of the technology. They can track where a customer has been and indeed which site or advertising (banner) directed the customer to the retailer’s
website (click streams), data on the customer’s computer type and configuration and previous user history (if the user of the same computer had visited before, ever attempted a purchase, etc.), and, as suggested previously in this section, influence how customers find the site.

It is also important for a business to know its customers to ensure that it is servicing the right ones. While a business may have customers, they may not be the right group, segment or even desirable. It is as important in the online context as in the physical context to attract customers a business wants. They may be high value or fit profiles and priorities that have been matched by the design of the online environment or transaction process.

**Personalise all service**

The fact that eservice transactions can be delivered to the individual’s specific needs and preferences is a major strength of the Internet. Personalising the service can apply to various stages and methods. Initially it may be language and visual layout set by the customer as they log on. Later it may take the form of the customer’s name appearing on the web page and their preferences and needs orienting how information is presented. Personalised emails with offers reflecting previous purchase preferences or nominated areas of interest may be sent.

Personalised strategies also indicate tighter control of costs. Costs are associated with marketing and business activities that fail to convert into sales, support and services that do not meet demands and result in more expensive call/service centre follow-up or direct site visits (Birch et al., 2000:179).

Applications now allow online businesses to personalise automated services. Some of the more marginal or ethically questionable approaches send email for instance from a ‘staff member’ to a customer using a personal name to give the illusion of personal interaction. However, these emails are generated by computers and permit the business to service far more people that an individual customer service centre could handle by 'phone or direct mail. These emails or contacts can appear to come from a single ‘person’ to promote a sense of liaison and caring. The customer may then interact (using 'phone, email or online chats) with staff who all pose as the individual staff member named on the original communiqué.

Personalised service has also moved beyond features associated with the content or environment. It is reflected in the need for technology to enable the customer to access services when and where they want.

**Give the customers control**

Surveys of Australian online consumers continue to highlight their desire to be in control. Most customers leave sites because they either are reluctant to disclose personal details (more than 40%) or do not trust payment security (20%) (Budde, 2002:60). One of the mechanisms to address this is to create sites that can be customised by each customer according to their preferences. They can nominate what products they wish to see, what recommendations they receive, how they wish to pay for items, and if they wish to see specials and ‘discounted’ options.
Promote customer communities

Wanting to have a sense of belonging is human nature. One of the online strategies to achieve this sense of belonging is to promote collaboration across customers. This can be achieved through interactivity. The simplest forms of interaction are usually through one-way communications such as email management systems and applications that promote email exchanges. The online strategy can also include a hosted chat room, document exchanges or other forms of online interactivity. These sessions can be monitored and data captured that may prove very useful to the business. The business can also promote interaction between customers with similar interests.

Many suppliers of Customer Relationship Management packages for eservice providers now provide applications that promote the formation of customer communities (eCRM). Elearning applications providers are building CRM interfaces in the form of user evaluation into content management and learning management systems (Chapman, 2002). By building in this functionality, providers are ensuring how data is collected and the customer relationship is managed.

Studies of website metrics such as visits, pages viewed, return visits, duration to navigate (dwell time and time to load or move through site), levels of spending and visits-to-order conversion rates consistently show positive improvement where online communities promote relationships between customers (Wang, Head & Archer, 2000:374).

Another reason to create virtual communities is to increase the customer’s connection with the site, the brand and the organisation. This is more than just promoting loyalty. It is building online behaviours to the point the organisation can shape expectations and satisfy them in a manner others cannot match.

7.5.6 Lesson 6: Perceptions of responsiveness to personal needs underpins customer loyalty

A major theme in customer-focused business strategies is establishing relationships with customers that extend beyond fulfilment of an immediate need, towards building a mutually value-creating relationship. Wood (2002:3) suggests that optimising customer loyalty requires a progression of business systems and customer relationship management towards this level:

*Customer relationships are not developed through upsell or cross-sell campaigns, but by offering new services that anticipate customers’ needs and create a unique bond. This allows the engaged business to provide exceptional levels of personalized service — just what the customer wants when he wants it — necessary to strengthen these relationships and ultimately maximise return on relationships.*

Wood depicts the stages of progress towards this ‘engagement’ in the following diagram, which is designed to apply to all customers completing transactions online.
Figure 7.11  Evolution of business to fully engaged online service provider

Optimising loyalty is dependent on eservice systems evolving. Capturing and focusing data on customer outcomes can also drive business process improvement. Data from a CRM or other technologies that can be used to capture data on customers and Internet metrics can help determine and advance the:

- Real value of the online/electronic sales and service strategies to core business;
- Return on investment (ROI) (a topic followed through at some depth in Chapter 10)
- Business policies, processes and procedures;
- Market intelligence;
- Strategic decision making;
- Enhanced supply chain management and partnerships.
7.6 Learning Online About Competitor Services

The Internet offers businesses an opportunity to informally or formally learn by benchmarking competitor activities. The nature of the Internet means that it is possible to visit tens of businesses an hour, see what they offer as products and services, and learn about their electronic sales strategies. Spending time on the Internet ‘researching’ other businesses can be extremely valuable. (We’ve moved from the jingle [in North America] popular in the 1970s, ‘Let your fingers do the walking through the Yellow Pages’ to browsing the Web pages … illustrating that people are moving faster and further.)

Observers of Internet businesses often talk about an ‘Internet year’ as being six months or less, implying that business activities on the Internet change much more quickly that in the traditional business world. Spending time on the Internet is the only good way to get a real sense of what businesses are offering and doing right now. In particular, common sources of organisational learning about competitor online service activities include looking for the following:

♦ Learn from current competitors:
  Viewing the eservice strategies competitors may already be using. Businesses can learn about the customers that these businesses are targeting and evaluate how the electronic strategies being developed might be able to match, differentiate from, or surpass their own efforts.

♦ Learn from similar businesses:
  Regard it as given: there are likely to be similar businesses out there that have already developed eservice strategies and a web presence. It is likely these companies deal with slightly different products, or be in another country, but they are already doing what a new entrant needs to do. They may also have developed features and strategies that make them better than their competitors. This provides a ‘baseline’ point of competitive entry into the online marketplace.

♦ Learn how target customers behave online:
  A business can adopt the perspective of a customer group that seeks to buy goods of the type the business sells. It can try to find out where customers could go to buy the product online. Product reviews, testimonials, media reviews, newsgroups, and special interest websites can provide insights into customer behaviour and expectations. This tactic also provides insights into how a potential customer find out about the types of products the business sells prior to visiting the web presence.

♦ Learn from being the customer:
As with any service process it helps to take the customer’s perspective. When visiting competitors’ sites a business can do some comparison shopping to find the ‘cheapest’ or ‘best’ product on offer. It is easy to find websites that are poorly designed, incomplete, non-functional or otherwise apparently designed for customer frustration. There are also stand-out examples of effective design, which can be a goldmine of ideas for a business’s own online sales strategy. Once built the business can also test its processes and tools by taking the customer perspective.

♦ **Technology processes/sales process issues:**

As electronic sales strategies become more refined, a business may try searching for sites that use the types of electronic processes that they are planning. By investigating how these work (or don’t work) improvements can be incorporated into their own electronic strategy.
7.7 Building Shared Identity and Brand Value Through Online Service and Learning

Integral to eservice is the development of brand value. Brand value can be immediately impacted by how well a business builds online learning and service transactions.

While no research was uncovered on the relationship between eservice, brand and elearning, there are some important factors in the management of online brands that suggest the relationship is one for further research. This section outlines the causal relationship.

7.7.1 Brand and online services

Brand is an intrinsic part of the product or service. Brand represents the values and information one customer and customer group can discover and then identify with to a sufficient extent that they can differentiate one product from another. Brand impacts the value of a product or service, mainly due to the customer’s perspective on a brand.

A brand may be a term, sign, symbol or design, or a combination of these and may have a number of important ingredients.

### Brand Name
Written or ascribed name that can be verbally conveyed. For instance Coke, IBM, Nike, Commonwealth Bank of Australia, Harvey Norman, Freedom Furniture.

### Brand Mark
That part of the brand that is non-verbal and ascribed a colour, design, logo, impression or distinctive visual appearance. ‘Nike’s ubiquitous swoosh emblem has become one of the best-known corporate symbols on the globe’ (Business Week, May 24, 1997).

### Trademark
Any part of the brand that is protected by law as it is exclusively owned and controlled by an owner. Often the value of a brand and a product is in the ability to control who can use or sell a branded product or service (i.e. Things go better with Coke™, Make it Happen™).

### Copyright
The legal protection ceded to protect consistent use and particularly who can reproduce, publish, transmit and sell materials — physical, verbal and visual.
Brand is an information trigger; it should reflect customer-held assumptions and expectations and make unnecessary the time-consuming processes associated with decision making, information analysis and product comparison.

Attracting customers, particularly in low-spending but high-volume market segments, requires a strong brand recognition and value proposition that are known to online customers. This is especially important for service providers that are moving from traditional transactions (physical environment) to an online strategy. Attitudes of customers in a physical environment may not necessarily translate into the brand value they seek in an electronic environment.

Attitudes are expressions of identity and represent personal beliefs and values that influence behaviours. If a business can track these attitudes then they can shape brands to represent these values and beliefs. Building customer relationships on qualities as complex as trust, commitment and alleviation of anxiety is connected to how well the retailer can track shopper attitudes.

Attitudes of online customers can change and those associated with physical transactions to new ones learnt through programs and processes that align customer expectations with online service offerings (i.e. moving over-the-counter banking customers to online banking). The online experience has to reinforce brand attributes that focus on:

- Product and service features;
- Functionality of the web presence and the ease of access, navigation and payment methods; and
- Personal emotions including trust and belief that the transaction is secure and supported by competent staff.

As presented previously in this chapter, the eservice and learning provider can adopt an online strategy that uses technology and tools that permit the brand and the value proposition to be offered to customers using very new methods. This can extend the market reach of a brand, or enable the eservice provider to extend their sustainable competitive advantage.

### 7.7.2 Learning to position brands and build loyalty

When positioning the brand online the primary aim of the product’s owner is usually to make existing customers more loyal. This may involve promoting more awareness and trust in the branded product and service. The brand must therefore change attitudes by:

- **Stimulating** changes in behaviour;
- Showing the brand as offering a *value proposition that has utility*;
- Demonstrating that the offer is **authentic and reliable**; and
- Convincing that the offer — as well as the relationship — **holds value** and is worth accepting.

At the business level the provision of online services permits brand leverage on features unique to the Internet such as:
Always on (24/7);
Global reach;
Anywhere, anytime access across mobile, wireless and other emerging
technologies;
Two-way communication (chat, interactive online, etc.);
Proactive reach to customer with packaged information on brand and
product offer;
Sales and distribution channels that can take data/information;
Dynamic and easy to update;
Advertising that can track ‘click-through’ traffic and customer data;
Animation and interactivity; and
Personalising appearance to the customer’s individual preferences.

Whatever the brand strategy, the aim is to change the customer relationship to one
marked by loyalty and trust. Only by learning new attributes or changed behaviours
can loyalty be achieved (Ceaparu, Demner, Hung, Zhao & Shneiderman, 2002:107).

Learning to improve brand in an eservice context involves communication. Eservice
permits businesses to collect, analyse and report communication of customers’
attitudes on their brand. As in all forms of communication the process of
communicating a brand is two-way. In the first instance the communication strategy
for a brand is shaped by the customer. The ability to foster loyalty and reinforce a
value proposition that is appealing to the customer means the communication strategy
has to continuously ‘listen’ to customer responses to a brand.

The process of communicating a brand promise to online customers at different levels
of loyalty, as depicted above, involves learning. This learning occurs predominantly
in an electronic environment.

Ultimately the online service provider must also learn through data capture the
customer’s level of satisfaction. Building brand equity, therefore, involves aspects of
elearning that are associated with capturing and evaluating a customer’s level of
satisfaction with the brand value proposition.
By providing appropriate communication channels an eservice provider can also learn to respond to different levels of brand loyalty expressed by individual online customers or segments. The provider can educate online customers to adopt certain behaviours that encourage brand loyalty. Communication and learning strategies that build brand position and brand value are therefore tightly interwoven.

**Brand positioning** deals with constructing a brand proposition (its attributes and quality features) and offering it to a targeted customer. The **brand value** is then determined by the perceived value that customers have for that brand over time. Eservices can enhance the available means to position a brand and build value.

This chapter argues that elearning and eservice constructs should be considered in parallel. This seems logical given that both constructs consider how an organisation maintains brand agility and positions a brand with a customer to achieve competitive advantage. Organisations can use electronic service and learning to leverage new opportunities or influence customer behaviours. This enables them to build brand loyalty whilst learning to respond to the attributes that customers seek from a branded product or service.
7.8 In Summary

Any online service should communicate clearly how the organisation intends to meet a customer’s needs and preferences. Failure to shape customer expectations on what will be delivered can only result in high levels of customer dissatisfaction, no matter the ‘churn rate’ (customers visiting the online site).

Out of this refocus on what customers want has emerged a rethink on, some would say a re-engineering of, how organisations provide eservices. Going online has forced a review of business-to-business transactions and supply chain management. In addition, business-to-business and internal processes have been streamlined through better systems integration, use of computerisation to undertake routine tasks, and improved coordination and packaging of information and data flow. Finally there has been the re-emergence of the value of accurate knowledge: knowledge not just as codified information, but insights on customer needs and preferences provided by experienced service personnel.

This chapter reinforces the synergy between the principles of effective and efficient elearning and eservice provision. While elearning can accelerate the movement of individuals and organisations to performance proficiency it has a role beyond supporting service delivery. Elearning is embedded in the capacity of both the individual providing the eservice and the online customer seeking service. Both need the capabilities to effect a transaction without anxiety. Both need to be sure of the expectations guiding the customer’s needs and preferences.

The following figure overlays the concept of elearning within the service provider context.

**Figure 7.14 Using elearning to enhance electronic service transactions**
Elearning as depicted is chartered with not only building performance proficiency, but also supplying service excellence by the service provider to continually meet customer needs and preferences. This involves a learning process whereby the organisation learns how each customer and segment’s needs change or their brand proposition has to evolve.

External as well as internal customers also have to learn to transact in an electronic environment. This involves not only the explicit knowledge associated with transacting online but also the tacit knowledge associated with why they should seek to transact with a given online provider. Customers need to learn how to:

- Communicate with the online provider;
- Gain access and distinguish the brand and service features;
- Undertake the initial visit and have a reason to revisit the online presence;
- Seek help and avoid anxiety;
- Take control of their transaction;
- Customise the transaction and environment to maximise their personal needs and preferences.

**Figure 7.15 External customers engage in elearning during service exchanges**

The above representation illustrates how elearning could overlay an eservice transaction for individuals external to the organisation.
Figure 7.16  Embedding elearning as part of the eservice transaction

The above figure illustrates the relationship between elearning and the eservice transaction. Elearning can build performance proficiency to accelerate satisfaction of customer needs. It can also work with individuals both internal and external to the organisation to provide an environment for communication, collaboration and transaction that reinforces behaviours and identity attributes (i.e. brand) that align mental models. This means competent service delivery can be augmented through a means to reinforce why the customer will want to return to the service relationship.

To be satisfied, customers require certainty. Certainty is developed when the factors that cause uncertainty (security of payment systems, accuracy of information, follow-up support, etc.) are addressed. Certainty reflects a customer’s personal expectations being met. Shaping expectations and being able to meet these expectations with a degree of certainty influences service provision in both the physical and electronic environment. Organisations providing eservices don’t want to have to continually re-engage the online customers’ attention or make them identify with the value proposition. They want to develop a degree of comfort and brand identification that encourage the customer to return to their site and engage in a service exchange.

Figure 7.17  Forging online customer satisfaction through certainty
Used correctly, the electronic environment and eservice exchange can stimulate levels of satisfaction beyond any the customer can experience with any other provider. A service not only has to be competently provided but also ‘fit’ the behaviours and mental model adopted by the customer. To achieve the same level of satisfaction the customer has to return to the environment where competent delivery is embedded within a given context. This makes for loyal customers, in effect the ultimate target of any service excellence strategy.

Key observations derived through this chapter’s examination of literature and research includes the following:

**Observation 7.1**
Elearning can at the very minimum accelerate progress of an organisation along a learning curve and shorten the cycle time for individuals new to a job to reach the required performance proficiency threshold.

**Observation 7.2**
How individuals interface with eservice providers continues to evolve. Not only will needs and preferences of online customer change, but also the technologies for interaction will evolve. For instance the employee and customer interface for eservice or elearning in the future will not necessarily be a fixed computer or browser based, as evidenced by the emergence of mobile devices such as PDAs.

**Observation 7.3**
Elearning is a two-way process. If it is understood as a human transaction it has to be accepted that elearning can convey information as well as collect information from individuals within and outside the organisations.

**Observation 7.4**
Elearning should be seen as an activity enabling both employees and those external to the organisation to participate in an effective and efficient eservice transaction. While scant real research has been done on this relationship, a case can be made for brand positioning and value to be usefully considered within this construct.
7.9 References


Chapter Overview

Abstract

This chapter examines learning as a form of interpersonal transaction. While it covers a large array of research and authors, it takes a commonsense approach. The focus is on variables impacting on how individuals learn and how learning can cultivate capabilities (skills, knowledge and identity) necessary for improving individual and organisational performance. The study centres on individuals in an organisational setting including internal and external subsystems engaging in transactions.

The dimensions to individual learning within an organisational context are individual performance, organisational performance, collaborative factors and personal factors.

The study highlights how individual perceptions and capabilities prior to a learning exchange strongly influence not only completion, but also future learning. Understanding the concept of self-efficacy is important for this examination. Self-efficacy refers to an individual's disposition or perception about their abilities to mobilise cognitive, motivational and behavioural facilities to successfully execute a specific task within a given context. Research has confirmed that the determinants of self-efficacy — physiological state, psychological arousal, emotional arousal, concept of own capability and task dimensions and risk — are relevant to learners engaging in an elearning environment.

Self-efficacy can help explain why some learners succeed in elearning but not necessarily elucidate how the learning could be done better. Self-efficacy is an important consideration in how individuals approach and complete elearning but it should not be the sole basis for constructing learning processes, content and environments. As meta-analysis research has confirmed, efforts to address self-efficacy in relation to elearning directly translate into improvements in organisational learning and performance.
Building cognitive and metacognitive capabilities can accelerate self-efficacy. Elearning can be designed to build these capabilities.

Self-efficacy is critical to engagement in technology use.

An effective means to build cognitive capacity is to view an individual as a social theorist: an active player that holds experiences, social networks and beliefs that can be drawn on to guide actions and interactions. As agents of their own future, people can choose or undertake actions that are intentional, planned, reflective of personal judgements and beliefs and that regulate effort.

Social cognitive theory, encompassing individuals and groups, pulls in the previous study of dispositional perspective and self-efficacy. The theory suggests that the relationship between self-efficacy and the environment is reciprocal. Knowledge is socially imbedded and learning occurs from socially mediated, collaborative transaction.

This leads to a discussion of cognition and constructivist theories. From a constructivist epistemology, learning is about making meaning. Individual learning, therefore, is not about cognition in isolation, it is a process of making meaning of the social situation and context in which the individual lives, works and plays. Learning is a matter of engagement, is the ability to negotiate new meaning and is fundamentally social (Wenger, 1998). Sociocultural perspectives emphasise the social setting in which cognition takes place and include social cognition, situated activity, distributed cognition and activity theory.

Sociocultural constructionist theories emphasise the relations between individuals, the tools they use and their environment and downplay the role of individual cognition. In contrast, cognitivist theories highlight the role of individual cognition and downplay the role of interaction with others, the environment and mediated artefacts.

Online learning designed on constructivist principles has benefits and barriers for learning experiences. The tensions between the benefits and barriers need monitoring and a table is provided to guide this process. Oliver and Omari (2001) state that design influenced by principles of situated learning, using constructivist pedagogies that encourage students to construct their own meanings and emphasise the importance of interaction and socialisation among learners, can increase problem solving, critical thinking and metacognition.

Every individual learns differently. The variables that impact how individuals learn and process knowledge are critical, not just for the design of elearning but also for how elearning meets individual needs. This impinges directly on how learning is transferred and how the learning process builds cognitive capacity and metacognitive skills necessary for the individual to enhance their thinking and learning capacity.

While cognition and metacognition are linked and interrelated, they need to be considered separately. For example, an individual may understand how to engage in a learning process to acquire knowledge (cognitive) but may not be able to monitor their own progress or personal acquisition of the required knowledge or how to modify their learning to better acquire knowledge (metacognitive) (Livingston, 1997).
The researchers have found that to develop an individual's learning and thinking capacity, consideration is needed of metacognition and how to use learning processes to encourage self-efficacy, self-reliance, flexibility, reflective practices, strategic thinking and so on. This means the design, delivery and evaluation of any learning process must include individual and collective insights from the users of the content and the process. It must include the transfer of capabilities to achieve desired learning and performance outcomes and the individual's improved learning and thinking capacity.

As individuals interact with their environments they generate and use knowledge. Absorbing this knowledge and turning it into a capacity to more rapidly meet new contingencies is an important capability. A critical aspect is the sensemaking process: a process whereby an individual undertakes conscious, rational reflection on previous experiences to bring order to current unexpected, new or surprise situations. This aspect re-emphasises the importance of cognitive and metacognitive capacity. Sensemaking is individual, situational and locked in the present as a move is made in a trajectory from past experiences to a desired future consistent state.

Building sensemaking into learning and the development process can, therefore, go beyond the individual to influence collective thinking and performance. Sensemaking is an ongoing dynamic process that evolves and responds to change. Encouraging sensemaking recognises individuals can guide their actions and create outcomes that avoid the constraints imposed by explicit knowledge structures. Ultimately the aim is to encourage self-direction to the point where the individuals make sense of their own learning while reflecting on the experience. This enables individuals to adjust their perceptions and make conscious the learning and capacity outcomes achieved.

How an individual undertakes learning and makes sense of the process and outcomes varies depending on personal attributes and learning styles.

A considerable body of literature focuses on learning styles. While there is recognition that differences in learning styles need to be accommodated in online learning there is little research to indicate how that can be done. Further, Wang, Hinn and Kanfer (2001) suggest that computer-supported collaborative learning enables success for learners with different learning styles. The researchers also posit that computer-supported collaborative learning has the potential for improving team performance by enhanced peer communication, structuring group dialogue and decision making, recording rationales for choices and facilitating collective activities.

This research evaluated Gardner's construct of eight multiple intelligences — logical/mathematical, linguistic, musical, bodily/kinaesthetic, spatial, interpersonal, intrapersonal and naturalistic. He defines intelligence as 'a biophysical potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture' (1999). He noted each culture emphasises particular intelligences. Vincent and Ross (2001) provide a set of strategies for teaching learners drawing on multiple intelligences.

The theory of multiple intelligences supports the need for collaboration and use of multiple strategies and mediums in designing online learning experiences.

A concept stemming from Gardner's theory is that of emotional intelligence. The topic has been researched and discussed since 1983 from different perspectives.
Differences in perspective have not been resolved. A growing number of writers suggest emotional intelligence is an equal or more powerful predictor of success than IQ. According to popular opinion and anecdotal evidence, emotional intelligence can increase performance and productivity (Thi Lam & Kirby, 2002).

Van der Zee, Thijs and Schakel (2002) define emotional intelligence as 'the ability to perceive one's own and others’ emotions, to interpret one's own and others’ emotions and to cope with emotions of self and others effectively'. They explain that the concept of intelligence is a general ability to transform information into new concepts and skills. Though emotional intelligence can be learnt, the ability is inherited.

Studies have found that emotional intelligence has a stronger relationship with organisational commitment than does job satisfaction. The social skill component of emotional intelligence ‘led to the building of strong networks with the work group and possibly with supervisors' (Abraham, 2000). Investigations of the link between emotional intelligence and cognitive-based performance found overall perceiving emotions and regulating emotions (emotional intelligence) contributed positively to individual cognitive-based performance.

It is reasonable to assume there is a useful connection between emotional intelligence and elearning. Learning is enhanced when students are engaged in the metacognitive activities of self-assessment, self-explanation, monitoring or revising (Lin, 2001). One approach to building metacognitive abilities is to create a supportive social environment where for example, work is compared or multiple perspectives are contributed. Having the necessary emotional intelligence to accept feedback, to give feedback, to empathise with others and to listen are components of building metacognitive abilities (Goleman, 1998). The skills involved in emotional and social competence, particularly coping with stress and frustration, social problem solving and decision making, communicating effectively both verbally and non-verbally and working cooperatively with others, are aspects of emotional intelligence that enhance learning in any environment.

For elearning to be effective, it must integrate the necessary components and incorporate cultural, linguistic and literacy differences into the overall learning dynamic. Current research is very narrow and does not address this extensively.

Leu (2001) points out that new forms of information and communication technology (ICT) actually generate new literacies as people exploit them. ICT also requires new instructional practices to assist the acquisition of new literacies. Oliver and Towers (2000) saw ITC literacy as consisting of an integrated set of broad generic skills — resource/socio-structural, research, communications, problem solving and technological literacies. According to Leu (2001), new literacies complement and build on traditional literacies.

Cross-cultural issues related to elearning delivery go well beyond social convention and are many and complex.

McLaughlin (2001) argues for elearning environments that are culturally responsive by providing for constructivist activities; promoting shared understandings and situating cognition in the student's contexts; accommodating flexibility in thinking; and emphasising active, collaborative, conversational, contextual, reflective learning.
Learning in cross-cultural settings, ideally, would be a 'conversation' within a community of enquiry wherein cross-cultural understanding would be developed by seeing problems from many perspectives. (McLaughlin, 2001). Just as any team needs to be nurtured through appropriate group development processes, so too there is a need for conscious development of an elearning community of inquiry. The instructor must be the facilitator of this (Gunawardena, Nolla, Wilson, Lopez-Islas, Ramirez-Angel & Megchun-Alpizar, 2001).

This review and analysis of individual variables concludes that elearning can best account for appropriate collaborative learning considerations by adhering to the principles of effective elearning intervention design and responsiveness to the differences of individual learners.

Elearning interventions must factor in variations related to differences in cultural background, learning styles and individual trajectories. Technology and environmental factors need to accommodate individual variations in an integrated elearning design. Elearning’s presentation and process of transfer of knowledge must accommodate individual learning styles and mental models referred to as emotional intelligence and multiple intelligences.

**Chapter Proposition**

**Proposition 8.1**

Improving how individuals acquire, transfer and generate knowledge is at the heart of effective and efficient elearning.

**Key Themes**

Understanding individual variables in a learning exchange; self-efficacy and dispositional perspective on motivation to learn; cognitive and metacognitive skills; cognition and constructivism; benefits and barriers for online learning environments and processes; learner skills — cognition, metacognition and sensemaking; learning styles and the role of multiple intelligences and emotional intelligence; issues of accommodating differences in culture, language, literacy and numeracy; and elearning design based on individual variations.
Addressing barriers to individual learning prior to a learning transaction can help alleviate anxiety and raise levels of motivation, confidence and commitment. Research demonstrates that addressing these issues and raising elearning effectiveness directly translates into a person’s capacity to learn and future performance.
8.1 Introduction

Much of this chapter deals with matters that can be grouped under a commonsense approach to any form of learning. Unfortunately the old adage ‘common sense is not so common’ can be taken as a tenet for what is covered. When dealing with elearning it is amazing how one loses sight of the variables that impact individuals. Addressing these variables makes common sense; both from the perspective of the individual student and the perspective of the learning providers.

This chapter may be viewed as a linchpin of the overall research report. This study adopts a perspective on research that is investigative and focused on understanding variables from the individual viewpoint. Following this epistemology, whether examining an organisation or a group of individuals interacting in a learning exchange, the variables impacting individuals must be understood; this understanding is the focus of this chapter.

This chapter examines learning as a form of interpersonal transaction. From this viewpoint it builds on the previous chapters; that is, knowledge is seen as an individual and organisational asset that can be deconstructed into what have been classified as capabilities. Such capabilities are not just composed of competencies; they also include the identity aspects that permit knowledge and skills to be deployed. This can occur at the individual, group (internal or external to an organisation or learning context) or organisational level. Classically, organisations deploy capabilities to achieve improved performance and competitive outcomes. The competence to ‘do things’ is matched by the need to be agile and responsive to customers and the operating environment across all functions. Knowledge embodied in capabilities is also seen as residing not just within but also outside the organisation; for instance, with customers or in interactions that staff may undertake outside the parameters of the organisation’s sphere of influence.

Figure 8.1 Epistemological shift implicit in viewing individual learning within an individual and collective viewpoint

<table>
<thead>
<tr>
<th>Individual View:</th>
<th>Knowledge Structure</th>
<th>Knowledge Asset</th>
<th>Knowledge Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual employees learn in order to perform and attain goals set by the organisation</td>
<td>Codified, explicit and embedded, relating to task performance, systems or processes of delivering products and services</td>
<td>The person’s competence related to performance of tasks required at a level of employment</td>
<td>Learning skills and knowledge to perform — emphasis on training</td>
</tr>
<tr>
<td>Transaction View:</td>
<td>Knowledge is more than stored and transferable facts and experiences or codified skills; it includes tacit knowledge and the construct of knowledge that occurs through interactions between individuals and between individuals and their environment, technology or processes</td>
<td>Competence and behavioural roles and cultural attributes that the individual and team possess that can respond to current and future purpose</td>
<td>Individual and collective process evident in all interpersonal exchanges; cognitive as well as competence driven</td>
</tr>
</tbody>
</table>

Learn to Elearn Project                                      Page 341                                      © UNITAS Company Ltd. 2003
This chapter examines learning as both occurring with every transaction and being a distinct form of transaction. Such transactions may be purpose driven with explicit rules, or, where transformation is expected, transactions may involve learning that changes existing rules and generates new knowledge. As will be uncovered, the latter capability is intrinsic to an organisation seeking to build sustainable competitive advantage through its responsiveness and agility in meeting emerging customer expectations. Through improving the process of transaction, elearning can profoundly affect how individuals learn and respond to change.

While this chapter focuses on the individual, its overall intent is to understand individuals as part of interactions and transactions that can be for both personal and collective purposes. The individual may be a staff member, partner or customer, a student or a teacher. What determines the success of an electronic learning transaction for each can be better understood if the variables that impact individuals engaging in an elearning transaction are clarified.

Variables impacting how individuals learn are not the sole focus of this chapter. The focus is also on how learning can cultivate the capabilities (skills, knowledge and identity factors, including behaviours) necessary to improve individual and thence organisational performance. In surveying the literature, this report has sought to isolate those variables that determine how learning impacts the acquisition and transfer of individuals’ capabilities. This study centres on individuals within the organisational setting. This study includes the so-called people subsystems identified in Chapter 7; for instance, those internal to the organisation (i.e. employees, managers, leaders) and external people who engage in transactions with the organisation (i.e. customers, shareholders, supply chain partners or representatives from industry, community or regulatory groups).

The most immediately apparent dimensions to the study in this chapter are represented as Figure 8.2’s two axes and four dimensions.

**Figure 8.2  Dimensions to individual learning within an organisational context**

![Dimensions to individual learning within an organisational context](image)

**Individual performance** refers to those factors directly related to the individual generating outcomes that they hold important for the individual’s own purpose.
Organisational performance refers to actions undertaken now, in the past (history) or in the future to achieve collective outcomes that are considered important to underscore the strategic and system purpose ascribed to a defined organisational entity.

Collaborative factors in this chapter are used to delineate those factors tied to the situation within which learning and performance occur.

Personal factors, as distinct from the context factors, relate to those attributes that distinguish ‘how learners vary as individuals’ (Holton & Naquin, 1999:649).

These four dimensions embrace the variables that suggest how learning, whether completed in an electronic or physical environment, is subject to contextual and individual differences that influence the attainment of outcomes.
8.2 Self-Efficacy and Individual Emotional Disposition to Learn and Perform

Self-efficacy refers to an individual’s disposition or perception about their abilities to mobilise cognitive, motivational and behavioural facilities necessary to successfully execute a specific task within a given context. This study concentrates on individuals’ ability to successfully engage in learning within an electronic context, or specific learning or performance setting.

Self-efficacy is an important focus for this examination. Research has confirmed which factors raise self-efficacy and has isolated those actions that can build self-efficacy in learners engaging in learning within an electronic environment.

**Figure 8.3 Determinants of self-efficacy**

As depicted above, psychologists have used self-efficacy to reinforce the process people go through when entering into any new activity or making choices. People generally want to know and weigh their options, determine ‘what is in it for them’ (personal benefits and rewards) and determine the effort required to gain the rewards for their optimal choice (Brown, Collins & Duguid, 1989; Bandura, 1986, 2001; Schunk, 1981).
8.2.1 Dispositional perspective and the motivation to learn

Elwood Holton and Sharon Naquin (1999) researched and created a conceptual model for explaining the dispositional perspective on the motivation of an individual to learn. The dispositional approach emphasises individual differences and the effect of motivation on learning outcomes. They determined that dispositional variables fell under three major domains (1999:650–651):

**Personality traits**
This deals mainly with research using the five-factor model (FFM) and the means to generate comparative data on a respondent’s personality.

**Affect**
This isolates an individual’s positive affect (PA) or negative affect (NA) in both worldview and attitudes towards a learning experience.

**Values**
The more abstract domain of values was studied as it relates to an individual’s work ethic, and perceptions of social, economic and environmental well-being.

The research illustrated that personality traits were a reliable and measurable factor to indicate motivation to learn and successful learning transfer. Drawing on previous studies (Costa & McCrae, 1995, 1992; Ferguson & Patterson, 1998; Barrick & Mount, 1991), Holton and Naquin found that personality traits had a direct relationship to the successful completion of certain styles of learning. For instance, extroverts with a high level of conscientiousness scored well with educational achievement, especially where it involved interactive training (1999:651).

Research has uncovered that people with strong positive affect (PA) who score either as a predisposition to life (i.e. approach to life such as enthusiastic, vigorous, sociable) or as a measured perception about a learning program prior to its commencement also indicate a strong motivation to learn and the subsequent likelihood of successful learning transfer. Reviewing all available research, a relationship was found to exist between the personality and the affect traits. Extroverts with a strong PA exhibited motivation to learn and strong work-related behaviours and values (Levin & Stokes, 1989; McFatter, 1994; George & Brief, 1992, all cited in Holton & Naquin, 1999:651).

While harder to quantify and qualify, research on values has evidenced that work ethic in particular can be characterised and investigated using a number of different techniques. The dispositional nature of an individual’s values was found to influence learning. Holton and Naquin concluded that research indicates this occurred irrespective of the definitional foundations used to define work ethic or values such as a personality construct (Greenburg, 1977), personal values (Morrow, 1983), a person’s acquired responsibilities and accountabilities (Cherrington, 1980) or constructs that consciously guide conduct and are manifest in an individual’s attitudes and behaviours (Siegel, 1983:28).

The conclusions of Holton and Naquin on non-situational personality traits, affect and values are important to note. They concluded that research has sufficiently evidenced that dispositional variables did impact attitudes. The relationship between attitudes
and motivation were already well established. Based on these findings, they posited a conceptual model as follows (1999:650).

**Figure 8.4 A conceptual model of the dispositional perspective on motivation to learn**

Yet how are such conclusions translated into what motivates individuals to develop attitudes that result in behaviours promoting learning transfer and performance? Current research in the area of personality disposition and its impact on motivation and learning lacks substantive research (Holton & Naquin, 1999:649 & 654). The study of personality disposition has also been strongly behaviourally oriented, rather than focusing on how behaviour impacts individual and thence organisational performance. To attain this organisational perspective the study needs to shift to the research and literature on self-efficacy and related areas.

**8.2.2 Improved self-efficacy translates into learning and performance improvement**

It is known that employees who perceive themselves as highly efficacious have a dispositional perspective described previously as positive affect (PA). Their level of motivation permits them to better embrace different ways to learn and indeed, if deployed well, engage in more successful learning transfer. Employees who perceive themselves as having low self-efficacy are likely to have increased negative affect (NA). This increases their anxiety, promotes disjointed efforts and often causes premature failure or non-completion of learning, or results in the poor deployment of behaviours necessary to adopt new learning methods (e.g. shift from facilitated to elearning).

An understanding of self-efficacy can help to explain why some learners succeed in elearning and others do not. However, it does not necessarily explain how learners can improve. Self-efficacy should not be given such pre-eminence that it forms the sole basis for constructing learning processes, content or environments. It can be a double-edged sword.
The development of these skills is centred on one’s ability to make mindful navigational selections. While the ability to control one’s instructional sequence can enhance learning and heighten attitudes and self-efficacy, unrestricted control and lack of learning goals can dampen the power of learning in such an environment. (Lawless & Brown, 1997:127)

The key issue seems to be the ability to quantify learning in terms whereby the individual can understand the purpose of learning and the magnitude of both task difficulty and its impact upon them. In the case of shifting people to engage in electronic transactions, especially elearning, the greater the anxiety prior to engagement in a process, the less the ability to successfully use the process to transfer the skill and dispositional perspective necessary for meaning to be built, behaviours to change and thence, capabilities acquired to complete elearning in future. Without the basis of meaning and capabilities, individuals disengage from the process and feel threatened by the acquisition of learning necessary to engage in elearning. In effect, they resist learning to elearn.

In psychological terms the initial engagement must eliminate the factors most strongly promoting NA and diminished self-efficacy. These must either be overcome, or translated into weak resistors because rewards or the perceived benefits are much more appealing.

Self-efficacy then is an important consideration in how individuals approach and complete elearning. More importantly, efforts that successfully address self-efficacy in relation to elearning directly translate into improvements in learning and performance within an organisational setting.

Research into self-efficacy, and especially Bandura's research and work (1986, 1997; see the following section for details on social cognitive theory), has subsequently confirmed the importance of self-efficacy on individual performance. Stajkovic and Luthans (1998) undertook some seminal research that, for the first time, provided the empirical validation that self-efficacy could be used as a construct to explain and manage human performance in organisational settings. Stemming from the work on social cognitive theory, Stajkovic and Luthans undertook a meta-analysis to confirm the strong relationship between self-efficacy and work-related performance, that is,

\[(G \tau^+) = .38.\]

By focusing on human intelligence and the importance of increasing self-efficacy in people, organisations evidenced higher work-related performance. This was achieved by simply refocusing existing approaches to learning but also by using standard approaches and techniques for communication, planning goals and appraisal processes (Stajkovic & Luthans, 1998:260–61).

Motivators for promoting self-efficacy or overcoming NA include:

- Drawing on historical precedent and having known benefits or holding continuity and leading to an agreed future outcome (what Etienne Wenger labels a known learning trajectory, 1998:153–155);
- Translating learning into performance that is judged as beneficial at both the personal and organisational level;
♦ Co-orientation to a purpose that holds meaning for the individual and the collective group above the anxiety over immediate learning and performance requirements;

♦ Providing the information enabling the individual to build efficacy beliefs; and

♦ Assisting in the formation of a ‘social concept’ of identity and making more accurate judgments on what is efficacious for the individual now and in future collaboration with others (Wenger, 1998:190).

It is also important to know that self-efficacy is driven by personal perception and is more subjective than objective about the context or wider organisational needs. Whether internal or external to the organisation, individual perceptions shape their reality. Hence the cognitive capacity of the individual greatly influences their ability to make judgments and build self-efficacy.

This means elearning is both a practice requiring new cognitive and metacognitive capabilities and a means to accelerate self-efficacy through improved ways of building cognitive and metacognitive capabilities.

While students experienced in classroom-facilitated learning may have the skills for engaging in elearning, this mode is completely insufficient for students without higher-order metacognitive and cognitive skills (Beer, 2000:33; Horton, 2002:15–16; Chung & Reigeluth, 1992:14). Nevertheless, elearning can be designed to build the metacognitive and cognitive skills necessary for an individual to identify with the purpose of learning (i.e. construct their own meaning), and interact with others in a collaborative elearning activity or resolve problems associated with learning in an electronic environment (Kilpatrick & Bound, 2002:22; Ross, Powell & Elias, 2002; Wang, Hinn & Kanfer, 2001).
8.3 Cognitive and Metacognitive Skills

8.3.1 Cognition and the use of technology

The study of how different individuals respond to elearning requires an exploration of the cognitive aspects of the topic. Previous sections have examined some of the behavioural and affective reactions of individuals to learning and thence elearning. This section examines cognitive influences.

Without entering into the convoluted study of cognition and the diverse viewpoints of cognitive scientists, psychologists, educationalists and the like, the emphasis of this section is to draw attention to research that:

- Links individual cognition, mental models and thinking with learning and performance;
- Ties individual learning to a social context for the activity (situated);
- Shows that knowledge is more than stored and transferable facts and experiences or codified skills, and also must include the construct of knowledge that occurs through everyday interactions between individuals and their environment and non-prescriptive processes that reconceptualise what is ‘known’; and
- Looks beyond explicit skills and knowledge to examine the factors that cannot be codified and objectively studied, but are known to affect individuals undertaking elearning.

Figure 8.5 Cognition and confusion of its study

(Clancey, 1995:12)
Clancey (1995) re-emphasised that in terms of cognition individual learning and doing are not the same activity. Knowing how to do something is not the same as transferring that knowledge into an actionable outcome, the ‘know what’ as opposed to the ‘know how’ (Brown, Collins & Duguid, 1989:32). In addition, what one perceives to be true may not align with what is experienced. Beliefs developed through learning that are conceptual, abstract and isolated from practice, no matter how well formulated and understood, may still be inconsistent with the ‘realities’ of a situation.

Brown, Collins and Duguid argued for the distinction between types of learners. They distinguished how just plain folks (JPF), students and practitioners completed reasoning, acted on resolutions and produced actions based on what was meaningful (1989:38–42). Building on Lave’s earlier work (1988), Brown, Collins and Duguid stressed that ‘authentic activity’ was planned, completed and reviewed in conjunction with the environment and was quite distinct from a thinking or learning process that may have been embodied in an education or training process. Every person possesses cognitive capabilities which vary and each individual may possess knowledge that cannot be codified or placed into rules. Yet individual cognitive capabilities may also hold value to the organisation.

Research on the cognitive aspects of learning moved in the late 1980s beyond descriptive mechanisms that mapped individual learning and its transfer into performance outcomes (Lave, 1988:70), which all sat within objectively described and studied parameters (Clancey, 1995:12).

Study on ‘cognition’ evolved towards models that distinguished between knowledge and skills to ‘do things’ and cognitive or intellectual capabilities. Further research completed from the mid- to late 1990s indicated that there may in fact be no important physical aspect to conceptualisation. Newell (1990) made these assumptions explicit in describing ‘the total cognitive system’ as depicted in the following.

**Figure 8.6  Total cognitive system**

![Diagram of Total cognitive system](image)

As interpreted by Clancey (1995:14), the previous figure stresses that perceptual and motor systems are independent from the deliberation process (P→E, C, and D→M are disjoint during performance). How individuals view tasks and segment the world are learned independently from production (P, E→C-D, and M are disjoint). Under this model performance is once again distinguished from learning.

In effect, knowledge is socially embedded, and learning occurs from socially mediated collaborative transaction. Each transaction is conceptually integrated with the person's identity, either as part of the wider society, as part of their personal activities or as a member of a group. Fundamentals such as the person’s language influence identity and shape learning processes that involve knowledge transfer. During the learning transaction, individual perceptions, beliefs and behaviours are modified and coordinated. Pre-formulation of what an individual may think and do ultimately promotes linear responses but hinders cognitive growth and flexibility.

More effective means to build cognitive capacity is now seen to involve an individual deliberately and purposefully accessing learning, processing information and making judgments, choices and evaluating consequences of their actions or choices. Making choices, aligning the personal identity with the required tasks and conscious reflection all build purpose and hold meaning. In this way, cognition and the study of cognitive processes are moved away from the prescriptive studies to a point where an individual is not an instrument of the environment or an organisation, but an active player. They are what Bandura termed social theorists. Their experiences, social networks and beliefs can be directed and drawn upon to guide actions and interactions (Bandura, 2001:3). As agents of their own future, people can choose or undertake actions that are intentional, planned and reflective of personal judgments and beliefs and regulate effort (Bandura, 2001:5–9).

Just as individuals hold beliefs and experiences that guide action, so do groups. One approach, social cognitive theory, incorporates the previous study of dispositional perspective and self-efficacy. Unlike some behavioural and cognitive theories, social cognitive theory encompasses beliefs and factors that individuals hold prior to learning that might influence behavior, independent of desired learning and performance outcomes. Group attainments may extend beyond the individual beliefs and self-efficacy. As Bandura (2001:12) succinctly states:

Because the collective performance of a social system involves transactional dynamics, perceived collective efficacy is an emergent group-level property, not simply the sum of the efficacy beliefs of individual members.

Social cognitive theory encompasses that self-efficacy and an individual’s beliefs about their ability to learn and expectations of positive personal or organisational performance outcomes hold greater meaning if the individual can identify positive affect before commencing learning. Strong evidence for the link between self-efficacy and the use of technology in learning has been reinforced mainly through research on individual reactions to computing technology, both in terms of adoption and use of computers (Compeau & Higgins, 1995b; Hill, Smith & Mann, 1986, 1987; Taylor & Todd, 1995), and in terms of learning to use computers, computer software and undertaking computer-supported collaborative learning (Compeau & Higgins, 1995a; Gist, Schwoerer & Rosen, 1989; Webster & Martocchio, 1993; Weller, 2000; Wang et al., 2001).
People’s beliefs about their capabilities to use technology successfully are related to their decisions about whether and how much to use technology, and the degree to which they are able to learn from training.

Compeau, Higgins and Huff (1999:1) reported that in relation to individual adoption and use of technology, research on perceived behavioural control and self-efficacy beliefs confirmed:

... that adoption is not just about convincing people of the benefits to be derived from a technology (selling the technology). It must also be about coaching, teaching, and encouraging individuals to ensure that they have the requisite skills and confidence in their skills to be successful in their use.

Self-efficacy is critical to engagement in technology use. Social cognitive theory suggests that the relationship between self-efficacy and the environment is reciprocal. While self-efficacy is important to accelerate and encourage use, the environment can influence cognitive beliefs, which in turn influence attitudes and behaviours (Compeau et al., 1999:1). The more successful the individual’s satisfaction of outcome expectations, the greater the increase in positive affect and improved capacity to make judgments on self-efficacy. Over time the distinction between acquiring capabilities and the confidence to deploy them becomes less rigid. Conceptual models that enhance how an individual learns and cognitive models that permit learning to be deployed through performance can be positively linked. Equally, the negative affect could occur where poor understanding or a failure to reinforce positive affect through poor learning processes may in fact generate reciprocal interactions that embed spirals of anxiety and dispositional perspectives that magnify learning difficulties on an individual and collective level (Lindsley, Brass & Thomas, 1995). The alignment of self-efficacy hypothesis and supporting research work is outlined in Table 8.1.

### Table 8.1 Self-efficacy hypothesis and supporting proponents

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Supporting References</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. The higher the individual's computer self-efficacy, the higher their performance-related outcome expectations.</td>
<td>Bandura et al., 1977; Betz and Hackett, 1981; Compeau and Higgins, 1995b; Stumpf et al., 1987</td>
</tr>
<tr>
<td>H2. The higher the individual's computer self-efficacy, the higher their personal outcome expectations.</td>
<td>Bandura et al., 1977; Betz and Hackett, 1981; Compeau &amp; Higgins, 1995b; Stumpf et al., 1987</td>
</tr>
<tr>
<td>H3. The higher the individual's computer self-efficacy, the higher their affect (or liking) of computer use.</td>
<td>Bandura et al., 1977; Betz and Hackett, 1981; Compeau and Higgins, 1995b; Stumpf et al., 1987</td>
</tr>
<tr>
<td>H4. The higher the individual's computer self-efficacy, the lower their computer anxiety.</td>
<td>Betz and Hackett, 1981; Bandura et al., 1977; Compeau and Higgins, 1995b; Stumpf et al., 1987</td>
</tr>
<tr>
<td>H5. The higher the individual's computer self-efficacy, the higher their use of computers.</td>
<td>Burkhardt and Brass, 1990; Compeau and Higgins, 1995a; Hill et al., 1987</td>
</tr>
<tr>
<td>H6. The higher the individual's performance-</td>
<td>Bandura, 1986</td>
</tr>
</tbody>
</table>
Hypothesis | Supporting References
--- | ---
related outcome expectations, the higher their affect (or liking) for the behavior. |  
H7. The higher the individual's personal outcome expectations, the higher their affect (or liking) for the behavior. | Bandura, 1986
H8. The higher the individual's performance-related outcome expectations, the higher their use of computers. | Compeau and Higgins, 1995b; Davis, Bagozzi and Warshaw, 1989; Hill et al., 1987; Thompson et al., 1991
H9. The higher the individual's personal outcome expectations, the higher their use of computers. | Compeau and Higgins, 1995b; Davis, 1989; Hill et. al., 1987; Thompson et al., 1991
H10. The higher the individual's affect for computer use, the higher their use of computers. | Bandura, 1986; Compeau and Higgins, 1995b; Engle et al., 1986
H11. The higher the individual's computer anxiety, the lower their use of computers. | Compeau and Higgins, 1995b; Igbaria et al., 1989; Webster et al., 1990

This table tested hypotheses originally proposed by Compeau and Higgins (1995b). According to the model, self-efficacy influences both personal and performance-related outcome expectations (H1 and H2), since it is often difficult for individuals to separate the anticipated consequences of the behavior from their expectations of performance attainments (Bandura, 1986). That is, if I believe I will be able to use a computer with great skill, I am more likely to expect positive outcomes from my computer use than if I doubt my capabilities. Similarly, I am more likely to derive enjoyment (H3) and less likely to experience anxiety (H4) from activities that I feel confident in performing, since feelings of confidence influence emotional responses. Outcome expectations (professional and personal) are expected to influence affect (H6 and H7) and usage (H8 and H9). Such affects are central to both social cognitive theory and other theories of individual adoption. Finally, affect and anxiety are each expected to influence usage (H10 and H11), since individuals tend to seek out activities they enjoy and avoid those that are anxiety producing.

(Compeau, Higgins & Huff, 1999:2–3)

In testing social cognitive theory and self-efficacy and the impact over time on use of computer technology, Compeau, Higgins and Huff (1999) found:

- Self-efficacy was shown to exert a significant positive influence on both performance-related (H1) and personal (H2) outcome expectations, a significant positive influence on affect (H3), a significant negative influence on anxiety (H4) and a significant positive influence on use (H5);
- Performance outcome expectations exerted a significant positive influence on both affect (H6) and use (H7);
- A significant relationship between personal outcome expectations and affect was not supported (H8);
- A significant relationship between personal outcome expectations and use was observed, but this relationship was negative, contrary to the hypothesised relation (H9); and
Affect for computer use was found to exert a significant positive influence on usage (H10).

As a result of their research, the path from anxiety to use was not significant and H11 was not supported.

8.3.2 Cognition and constructivism

A cognitive orientation to learning holds that learning takes place within the individual mind; the approach sees learners as 'sources of plans, intentions, goals, ideas, memories, and emotions actively used to attend to, select, and construct meaning from stimuli and knowledge from experience' (Wittrock as cited in Woolfolk, 1993:237). Cognitive theorists believe that learning is the result of people's attempts to make sense of the world by using all the mental tools at their disposal. Learning is influenced by the ways people think about situations, and their knowledge, expectations and feelings. People are understood as active processors of information who initiate experiences, seek out information to solve problems and reorganise what they already know to achieve new learning (Woolfolk, 1993:237–9). Woolfolk claims that knowledge is the outcome of learning; further, that knowledge is more than the end product of previous learning, it guides new learning, as what people bring to a learning situation, what they already know largely determines what they will learn, remember and forget.

Jean Piaget’s theory of cognitive development has been an important one for teachers and other professionals concerned with learning. His theory has two perspectives — structuralism and constructivism. The structuralist perspective posits that children move through stages of development characterised by discrete cognitive structures. The constructivist perspective posits that children construct their own understanding through interaction with the environment (McInerney & McInerney, 2002:26). Within Piaget’s structuralist perspective, cognitive development involves the assimilation of new facts with old knowledge. This involves a period of adjustment where there is often tension, a period he refers to as cognitive conflict, leading to successful adaptation, or equilibrium (Piaget, 1947; McInerney & McInerney, 2002:27).

In response to criticisms of Piaget’s theory, neo-Piagetian theories have been advanced. An important aspect of the neo-Piagetian theories is the increasing emphasis on constructivism, and on the social elements in which social interactions function to promote cognitive, affective and moral development (McInerney & McInerney, 2002:43).

8.3.3 Constructivist theories

Constructivism has drawn heavily on the work of Vygotsky, a contemporary of Piaget. Vygotsky claimed that the learning process was not a solitary process as suggested by Piaget’s constructivist theory, but a process of appropriation by the child of culturally relevant behaviour (McInerney & McInerney, 2002:45). To Vygotsky development was a complex dialectical process characterised by periodicity, unevenness in the development of different functions, metamorphosis or qualitative transformation of form into another, intertwining of external and internal factors and adaptive processes (Vygotsky as cited in Cole, John-Steiner, Scribner & Souberman,1978:122).

Brown, Collins and Duguid (1989:34) posit that:
learning is a process of enculturation... the activities of a domain are framed by its culture. Their meaning and purpose are socially constructed through negotiations among present and past members.

The use of cultural artefacts such as tools, social structures and language provide the means through which to interact with and act on the world and which reciprocally interact with and on the learner. Socialisation is critical to the development of higher cognitive functions.

Every function in the child’s cultural development appears twice, on two levels. First, on the social, and later on the psychological level: first, between people as an interpsychological category, and then inside the child, as an intrapsychological category. This applies equally to voluntary attention, to logical memory and to the formation of concepts. The actual relations between human individuals underlie all the higher functions (Vygotsky as cited in Cole et al., 1978:128).

From a constructivist epistemology, learning is about making meaning. Individual learning therefore is not about cognition in isolation, it is the process of making meaning of the social situation and context in which the individual lives, works and plays. Wenger (1998:226) states learning is a matter of engagement, of the ability to negotiate new meaning, and is fundamentally social. Sociocultural perspectives emphasise the social setting in which cognition takes place and include social cognition, situated activity and distributed cognition and activity theory.

Social cognition suggests that the way people think and reason is a result of the interactions they have with others. Through interaction over time people come to share common ways of thinking and using language. In situated activity, knowledge is understood to be inseparable from the contexts and activities in which it develops. This approach challenges the assumption that learning automatically occurs from one context to another; rather, it states that the activity in which knowledge is developed and used is inseparable from learning. Distributed cognition posits that cognition is distributed to the individual, others and the environment. No one person may have the necessary knowledge and skill to complete complex tasks (Owen, 1999:32–33).

Sociocultural constructivist theories emphasise the relations between individuals, the tools they use and their environment, downplaying the role of individual cognition, whereas cognitivist theories highlight the role of individual cognition and downplay the role of interaction with others and the environment and mediated artefacts.

8.3.4 Online learning environments

There is an assumption (albeit an unfounded one) in much of the literature that learning online is interactive, dialogic, democratic and collaborative (see for example, James, 1999:206; Nowak, 1998:118; Lally & Barrett, 1999:153); that is, learning is constructivist where students are given the opportunity to construct meaning within a sociocultural context. However, these processes must be designed into online learning programs and experiences if learning processes and skills are to be enhanced. Learning to learn, for example, involves the explicit and conscious application of learning strategies and related cognitive processes in extracting meaning and transferring it to other settings. This involves both inductive and deductive thinking and thinking in systems (Moy, 1999:9). Teachers and students require skills different to or in addition to those used in face-to-face interaction (Cahoon, 1998).
Where online learning is designed on constructivist principles there are benefits to learning experiences. There are also barriers which must be addressed for this learning to realise its potential. There are inevitable tensions between benefits and barriers, which require constant monitoring. These benefits and barriers are outlined in Table 8.2. Given that learning is a dynamic, constantly evolving process, simply attending to barriers as though learning is static does not automatically address all issues, contradictions and tensions.

Table 8.2 Online learning processes and skills: benefits and barriers

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Barriers</th>
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<tbody>
<tr>
<td>If online learning is interactive it can reduce the isolation of distance learners (Lally &amp; Barrett, 1999; Harper, Hedburg, Bennett &amp; Lockyer, 2000)</td>
<td>Interaction must be designed in (Snewin, 1999)</td>
</tr>
<tr>
<td>It has the potential to provide additional skills for learners in collaboration, cooperation (Oliver &amp; Omari, 2001; Schrum 1998) and additional information technology skills (Make, Maki, Patterson &amp; Whittaker, 2000)</td>
<td>Students may not have adequate literacy and computer literacy skills (Harper, Hedburg, Bennett, &amp; Lockyer, 2000)</td>
</tr>
<tr>
<td>It can lead to greater control and responsibility towards learning (Schrum 1998), challenging learners to develop new skills and reconceptualise their identity as a learner (Harper, Hedburg, Bennett, &amp; Lockyer, 2000:25)</td>
<td>Observation and intervention is more difficult than in a face-to-face context (Chen, Ou, Liu &amp; Liu, 2001)</td>
</tr>
<tr>
<td>An interactive, well-facilitated online environment can assist in the development of critical, reflective thinking (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998)</td>
<td>Requires appropriate hardware and software skill development for staff and students. Students and teachers may not be familiar with online learning environments (Lally &amp; Barrett, 1999; Eastmond, 1995)</td>
</tr>
<tr>
<td>Online learning can facilitate the development of metacognitive skills (Frederico, 1999; Oliver &amp; Omari, 2001)</td>
<td>Students may not have the necessary metacognitive skills (Frederico, 1999)</td>
</tr>
<tr>
<td>Learners have time to formulate responses and may therefore participate more than in a face-to-face environment (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998:49)</td>
<td>Silent (‘lurking’) participants remain invisible to the group (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998)</td>
</tr>
<tr>
<td>Everyone can see everyone else’s contributions and build on them (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998)</td>
<td>Coping with the volume of online data may be overwhelming (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998)</td>
</tr>
<tr>
<td>Learning styles and orientations influence positive or negative responses to online learning</td>
<td>Loss of face-to-face interaction affects development of group identity (Holt, Kleiber, Swenson, Rees &amp; Milton, 1998)</td>
</tr>
</tbody>
</table>

(From: Kilpatrick & Bound, 2002)

8.3.5 Online learning processes

Online learning is most appropriate when employed within a framework of ‘co-operative goal structure’ (Lally & Barrett, 1999:153–154). This structure exists when students can obtain their goal only if their fellow students also can obtain their goal. In this environment student interaction becomes an integral part of learning. Lally and
Barrett also suggest that because the development of each individual in an online learning community may be more dependent upon the community as a whole, learning in an electronic environment may depend significantly upon group processes and, in particular, ‘notions of social cohesion and co-operation’.

In their study of 16 first-year medical students using email accounts, asynchronous computer discussion facilities and readings on the server, Lally and Barrett (1999) also reported passive participants. They conjecture that this may have been due to ‘communication anxiety’ referring to technical anxieties and fears about the appropriateness of style, tone and content of the message. Cognitive maturity, or being unfamiliar with the co-operative approach to learning, were additional explanations put forward. Lally and Barrett’s suggestion for gainful participation is that there must be some degree of commitment to the group and to the cooperative principles of learning, and there is a need for the community to accommodate such anxieties and provide a ‘safe’ framework. Online groups were not supportive of all participants and discussions sometimes became more competitive than collaborative. It appears necessary for students to develop strategies for managing peer behaviour and meta-context. Eastmond (1995) also reported that some students found these conversations time consuming, disjointed, time delayed and intimidating. Eastmond further reported that students experienced little interactivity when they did not keep up with or contribute actively to discussions.

Barrett and Lally (1999), using the same database as Eastmond, found that there were gender differences in participation and collaboration. Although women’s participation increased as a result of formal events, men contributed more messages and longer messages. They suggest that men and women may assume different roles in online processes; for example, men’s messages included greater levels of social exchange whereas women’s messages were more ‘interactive’ as they included implicit or explicit references to previous contributions (Barrett & Lally, 1999:52).

Participant reflection in a web conference may be greater because of the ability to read an entire sequence of postings before composing a response. In a study of online learning conducted by Holt, Kleiber, Swenson, Rees and Milton (1998, using discourse analysis in a journalism course), it was found that students had time to reflect on their responses and through reading the responses of others evaluated their own beliefs and feelings.

### 8.3.6 Learner skills

Skills that serve experienced students well in the classroom are inadequate for learning via the World Wide Web (Carlson, Downs, Repman & Clark, 1998:144). Individuals must develop and employ necessary cognitive skills, in addition to those typically applied in ordinary instructional settings, for properly exercising learner control in multimedia environments (Frederico, 1999:665). Lawless and Brown (1997:127) emphasised that not all students possess the capacity to control all aspects of their online learning experience.
The development of these skills is centered around one’s ability to make mindful navigational selections. While the ability to control one’s instructional sequence can enhance learning and heighten attitudes and self-efficacy, unrestricted control and lack of learning goals can dampen the power of learning in such an environment.

The question of how much control can be shifted to the student has obvious implications for students who do not have the necessary metacognitive and cognitive skills. Many students, particularly low achievers, lack the knowledge and motivation to make appropriate decisions regarding such conditions as pacing, sequencing of content, use of learning aids and amount of practice (Chung & Reigeluth, 1992:14). Frederico believed:

... students who do not possess the required cognitive and metacognitive characteristics will likely need guidance or coaching in order to exercise effective and efficient learner control for navigating multimedia subject matter. (1999:666)

Therefore there is a need to feedback information on learning performance and make suggestions for routes to take to aid students in developing these skills.

Even when online communication tools are available and accessible they are not necessarily used unless there is a requirement to do so. Harper, Hedburg, Bennett and Lockyer (2000:22) found there was a lack of structured activity or facilitation to focus discussion. This resulted in a lack of interest because students did not see a need to communicate when tasks were not required for assessment.

Online learning offers a number of important advantages when students have the necessary skills and the learning experience is designed for challenge and interaction. In a quasi-experimental design comparing an online psychology course with the traditional lecture courses, Make, Maki, Patterson and Whittaker (2000:237–238) found that students in online courses reported higher increases in computer use and greater decreases in computer anxiety. Online students undertook more interactive learning with the computerised exercises and claimed they had to work harder in this than other courses. Oliver and Omari (2001) state that design influenced by principles of situated learning, using constructivist pedagogies that encourage students to construct their own meanings and emphasise the importance of interaction and socialisation among learners, can improve problem solving, critical thinking and metacognition (Holt et al., 1998).

### 8.3.7 Teacher skills for delivering learning online

The creation of and teaching in online learning environments requires specific skills and knowledge. Teachers and other staff involved in online development need support in developing the necessary skills and knowledge to design in (Eastmond, 1998; Khan, 1997) interactivity, dialogue, reflectivity, student control and collaborative learning as well as to facilitate these processes online. Some aspects of online learning that teachers need to be aware of and have the skills to work with and through include:

* Time is needed for a sense of group identity to emerge (Lally & Barrett, 1999:155);
Social and interactive contributions increase with increased contact over time (Barrett & Lally, 1999);

Participation in chat rooms is slow to start and requires formal structures to encourage participation (Snewin, 1999);

Meaningful feedback using the Web is especially problematic (Khan, 1997:319);

Some students prefer one-to-one contact (Khan, 1997);

Students value interaction with ‘instructors’ particularly when they respond quickly, keep the class discussion on track and are readily available for individual attention (Eastmond, 1998:37);

The teacher needs to take an active role to keep dialogue alive and provide discussion points which assist in the creation of a socially cohesive group (Weller, 2000); and

Assessment is best integrated into online activities (see for example University of Illinois, 1999; Vogel & Klassen, 2001) so that learning is assessed as it is happening.

Oliver, Omari and Herrington (1997) recommend that pedagogical strategies for the design of online learning include carefully planning group composition, requiring learners to provide feedback on their outcomes in order to maintain focus and ensure completion of learning activities, introducing learning activities after learners become familiar with the World Wide Web environment and employing more adaptive forms of scaffolding for selective assistance.

The role of the teacher and tutor in fully online environments has been described as that of a ‘moderator’ (Feenburg, 1989). The role can be summarised into three parts: contextualising functions, monitoring functions and meta-functions. The role of the first two functions is to compensate for the absence of any physical cues. For example, students’ comments may be monitored to ensure that all are participating and they understand the meeting mode. Metacognition is needed to resolve problems and comments are needed to summarise the state of a discussion and provide a sense of accomplishment and direction. Teachers require considerable skills to develop learning tools and processes and to facilitate the development of generic skills, as well as to assist students to develop skills to successfully negotiate their learning in and through online environments.

Group participation is enhanced by making the role of group members explicit. In their study Oliver and Omari (2001) suggest it is necessary to define intermediary steps in the problem-solving process and relate these to defined roles, provide a private bulletin board for each group within the whole group and provide a means for students to record the roles and activities of each group member. Other sources recommend the use of some form of face-to-face or at least ‘phone contact early in the course for students to ‘get to know each other’. This has a positive impact on participation (Snewin, 1999:321).

Technological expertise is also required of those teaching in online environments. For example, it is far more difficult in an online environment to observe and intervene appropriately than in face-to-face learning situations. It is difficult to know when students are not participating, and what cognitive strategies are being used. Chen, Ou,
Liu and Liu (2001) suggest that using a data-mining tool provided by database management systems can assist teachers to identify learning behaviours. Such an in-depth knowledge of information technology suggests that the development of teams of teachers, those with content expertise and technological expertise, and administration and support staff (Harper, Hedburg, Bennett & Lockyer, 2000:23; Schrum, 1998:60) is desirable. The advent of threaded discussions, which can produce statistics, email, and assignment tools and tracking, have made interaction easier for some more proficient teachers and facilitators.

8.3.8 Metacognition

One of the important concepts that needs to be appreciated in this study of elearning is metacognition. While educational psychologists have promoted the term and study, the field is both new and of significance to anyone studying the design, delivery and maintenance of successful learning. Metacognition has classically been described as ‘thinking about thinking’, or in even more tautological terms, ‘knowing what you know’ (Livingston, 1997:1). This distinction is important because it clarifies how people complete higher-order thinking, which involves not just control over cognitive processes, but also an awareness of how they learn and what they need to do to control their learning and thinking processes.

Every individual learns differently. The variables that impact how individuals learn and process knowledge are critical not just for the design of learning or elearning, but also for how learning meets different individuals’ needs. Knowing that every individual learns differently and that these preconditions affect learning even before the learning exchange should directly influence how learning is transferred. It should also influence how the learning process builds cognitive capacity and metacognitive skills necessary for the individual to enhance their thinking and learning capacity.

The value of improving metacognitive skills is apparent if it is even tacitly accepted that organisations, especially in technology and service areas, work in an environment and context that is so complex that the job and performance requirements ‘require a command of a body of knowledge that exceeds the average person’s mental capacity’ (Wiig & Wiig, 1999:2). Preparing workers with the required depth and breadth of knowledge and skills requires not just improved learning, but also the capacity for learning. This preparation is centred on building conceptual learning and metacognitive capacity.

Initial study of metacognition is generally attributed to John Flavell (1979, 1987). Flavell divides metacognitive knowledge into three categories (summarised in Livingston, 1997:1):

**Knowledge of personal variables**
how people learn and process information

**Knowledge of task variables**
what people know about the task, demands likely to be placed upon the individual and options available

**Knowledge of strategic variables**
awareness of how to use the knowledge and its likely impact on those involved, the context and the individual.
Metacognitive knowledge may involve regulation knowledge (Livingston, 1997:1). This is akin to what is now more commonly called ‘trajectory’ experience or learning (Wenger, 1998:51–53), where an individual’s previous experiences guide current learning and thinking models (i.e. understandings, interpretation and cognitive processes).

Cognition and metacognition are related, and have been used interchangeably. Nevertheless, while they are linked and related, there are some significant distinctions. For example, an individual may understand how to engage in a learning process to acquire knowledge (cognitive), but not be able to monitor their own progress or personal acquisition of the required knowledge or modify their learning to better acquire knowledge (metacognitive) (Livingston, 1997:2–3).

Individuals perform mental tasks in everyday activities. They need to do this when making informed decisions, choosing options or completing non-routine activities. The model they develop to use knowledge may be drawn from many sources. Typically individuals need different forms of knowledge, which may include (Dufresne, Leonard & Gerace, 1995:1–2):

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual</td>
<td>i.e. the concept of gravity</td>
</tr>
<tr>
<td>Factual</td>
<td>i.e. the value of the distance from New York to London</td>
</tr>
<tr>
<td>Representational</td>
<td>i.e. how to draw a circle</td>
</tr>
<tr>
<td>Strategic</td>
<td>i.e. ability to know how knowledge can be used</td>
</tr>
<tr>
<td>Metacognitive</td>
<td>i.e. awareness of underpinning assumptions and how to check whether knowledge is correct</td>
</tr>
<tr>
<td>Self</td>
<td>i.e. insight into one’s own likes and dislikes</td>
</tr>
<tr>
<td>Operational</td>
<td>i.e. how to complete routine tasks at work (sequence and how to complete)</td>
</tr>
<tr>
<td>Procedural</td>
<td>i.e. relationships between components and how one action impacts the subsequent action</td>
</tr>
<tr>
<td>Problem–state</td>
<td>i.e. knowing what factors impact the problem in a given state or context.</td>
</tr>
</tbody>
</table>

Given these types of knowledge, it is important that learning processes accommodate how knowledge informs action or problem solving, and what cognitive (thinking) processes are involved (Dufresne et al., 1995:1). Wiig and Wiig (1999) suggest that improvement of cognitive learning and thinking capacity occurs when both are used to reinforce how the person develops a model for:

- Using knowledge; and
- Acquiring knowledge.
Everyone acquires, uses and transfers knowledge differently. Moreover, experts and novices acquire, use and deploy knowledge differently. Obvious? Then why do people develop learning programs involving different forms of highly complex knowledge that do not recognise the cognitive and metacognitive limitations of some individuals or the novice?

If the aim is to develop an individual’s learning and thinking capacity, then metacognition and how to use learning processes to encourage self-efficacy, self-reliance, flexibility, reflective practices, strategic thinking and so on must be considered. This means the design, delivery and evaluation of any learning process must include individual and collective insights from the users of the content and the process. It must consider not only the transfer of capabilities to achieve the desired learning and performance outcomes, but also the individual’s potential learning and thinking capacity.

### 8.3.9 Sensemaking

Making sense of situations and problems confronts individuals every day. In order to respond to new situations or contingencies that arise, individuals draw on previous experience and their repositories of explicit and tacit knowledge. As part of the study of this occurrence, the term ‘sensemaking’ was coined. Sensemaking is a process whereby an individual undertakes conscious, rational reflection on previous experiences to bring order to current unexpected, new or surprise situations. The reflection seeks consistency and interprets discrepancies ‘... as an output of the sense-making process, rather than arising concurrently with the perception or detection of differences’ (Louis, 1980:241).

As individuals interact with their environments they generate and use knowledge. Absorbing this knowledge and transforming it into a capacity to more rapidly meet new contingencies is an important capability: a critical aspect is the sensemaking process. This process in effect requires individuals to make sense of the non-routine or unknown by making tacit knowledge explicit to that context. This re-emphasises the importance of cognitive and metacognitive capacity because the ability to reflect and draw upon knowledge repositories means an individual must know what they know (Davenport & Prusak, 1998).

Sensemaking is not presented as a predictive or anticipatory influence in behaviour or performance. It is a more reflective approach and arises as the individual seeks meaning and purpose from their current environment or situation. Weik (1995:20) suggests:

*The sensemaker is himself of herself an ongoing puzzle undergoing continual redefinition, coincident with presenting some self to others and trying to decide which ‘self’ is appropriate. Depending on who I am my definition of what is ‘out there’ will also change.*

Sensemaking is both individual, situational and locked in the present as one moves in a trajectory from past experiences into a desired future.

In his examination of sensemaking Louis established four inputs that shaped an individual’s sensemaking process:
Using these four sensemaking inputs in Figure 7, individuals formulate a basis for sensemaking. While sensemaking is focused on the individual, it is a social construct that is applied to the sense of coherence and purpose that groups, organisations and societies develop (Weik, 1995, 2000; Lave & Wenger, 1991; Werkman & Boonstra, 2002). It can also be used to study the organisational management of innovation, transformation, cultural change and, indeed, learning (Gioia & Chittipeddi, 1991; Harris & Moran, 1991). Building sensemaking into learning and development processes can therefore extend beyond the individual scale to influence collective thinking and performance.

Generating positive emotions related to transfer of current learning and experience into future situations or during change processes has a positive relationship to the effectiveness of individual or team task completion when under pressure or facing large-scale change (Weik, 1995:229). The more negative the stimuli, the less opportunity the individual has to learn from experience; also, the more inconsistent the trajectory of the planned change process, the more likely individual sensemaking will fail. The sense of continuity or accuracy of relationships and plans that shape sensemaking tend to be influenced by the chaos confronting modern organisations. Sensemaking is expected to be inaccurate at some point. Sensemaking is an ongoing process that evolves and responds to change (Weik, 1995:15, 153). More dangerous is to try and orient the stimulation of an individual’s awareness of personal knowledge and learning into explicit knowledge frameworks that are imposed by an organisation. What is collectively held to be meaningful may not be so for an individual. While individual sensemaking can inform collective thinking and performance, sensemaking is a dynamic process influenced by random and unpredictable factors that vary both in time and in place.

The success of sensemaking is often the result of conscious effort to discard the ‘baggage’ of cultural and work-based perspectives that hinder consideration of the current situation. Encouraging individuals to recognise sensemaking can guide their actions and create outcomes that escape the constraints imposed by explicit knowledge structures (i.e. conducting a brainstorming exercise to record responses may be a secondary imperative to actually have individuals solve a complex problem using processes they collectively want to use). Change may in fact be effected through continual redefinition of the ‘self’ and the collective ‘self’ as appropriate.
This may be encouraged by forms of learning that promote self-reflection and metacognition. Learning can also use metaphors where the individual or a group of individuals must interpret and make observations about the relevance of the metaphor (for example, poetry). Ultimately, the aim seems to be to encourage self-direction to the point where they make sense of their own learning while reflecting on the experience. This enables individuals to adjust their perceptions and make conscious the learning and capability outcomes achieved.

How an individual undertakes learning and makes sense of the process and outcomes varies with their personal attributes and learning styles.
8.4 Learning Styles

There is a considerable body of literature on learning styles. Kolb’s learning style inventory, the Gregorc style delineator, the Myers-Briggs inventory and Soloman’s inventory of learning styles are some well known frameworks used to identify learning styles. Keefe (1979) defined learning style as:

...the characteristic behaviours of learners that serve as relatively stable indicators of how they perceive, interact with, and respond to the learning environment.

Awareness of a student’s learning style provides the opportunity for teachers and instructional designers to design, develop and deliver individualised learning experiences. When students are aware of their own learning style it provides them with a tool with which to manage their learning experiences and to better understand their strengths and weaknesses.

While there is recognition that differences in learning styles need to be accommodated in online learning (see for example, Brennan, McFadden & Law, 2001:31), there appears to be limited research into how the range of learning styles can best be accommodated. As Brennan, McFadden and Law state, the range of interactions at the interface between user and technology is as broad as the range of learners and their preferences themselves. The following section discusses in more detail the available literature as it relates to learning styles and learning in computer-mediated environments.

8.4.1 Kolb’s learning style inventory

Kolb’s learning style inventory measures four learning modes: concrete experience, reflective observation, abstract conceptualisation and active experimentation. Concrete experience is ‘learning from feeling and specific experiences, relating to people, being sensitive to feelings and people’. Reflective observation is ‘learning by watching and listening, carefully observing before making judgements, viewing issues from different perspectives, looking for meaning of things’. Abstract conceptualisation is ‘learning by thinking, logically analysing ideas, systematic planning, acting on an intellectual understanding of a situation’. Active experimentation is ‘learning by doing, ability to get things done, risk-taking, influencing people and events through action’. When combined, these scales generate indices of learning styles or types (Kolb, 1981).

Kolb (see Kolb, 1981; also cited in Frederico, 2000:377) suggested that if learning style is considered a state as opposed to a trait, then, over time, no one individual is likely to have a pure learning style. That is, we tend to have a predominant learning style, but each individual has aspects of other styles. Similarly the Myers-Briggs model is that people have preferred styles, which may be more or less polarised or balanced, but that as individuals mature, they may change or balance their preferences; but the styles are simply preferences.

Frederico (2000:376), using a quantitative approach surveying 234 naval postgraduate student volunteers and Kolb’s learning style inventory as an analytical tool, found that:
students with assimilating [reflective observation and abstract conceptualisation] and accommodating [concrete experience and active experimentation] learning styles demonstrated significantly more agreeable attitudes toward varied aspects of network-based instruction than students with converging [abstract conceptualisation and active experimentation] and diverging [concrete experience and reflective observation] learning styles. Frederico (2000:377) suggests that those involved in developing online elearning environments should:

... endeavor to design, develop, and deliver network-based instruction, which considers the dissimilarities among these styles, in order to facilitate student learning in on-line educational environments. That is, attempt to adapt network-based instruction to different learning styles disclosed by sampled students, to try to optimise their interaction with the content and acquisition of knowledge.

Frederico also suggests that students with diverging and converging learning styles would benefit from modification of their attitudes ‘regarding design of, beliefs about, and learning from network-based instruction’. This could be achieved by demonstrating well-planned, produced and implemented online learning thereby assisting their interaction and learning from this type of instruction (Frederico, 2000:378).

8.4.2 The Gregorc style delineator

The Gregorc style delineator is a self-scoring battery-based questionnaire on mediation theory that states that the human mind has channels through which it receives and expresses information most efficiently and effectively. According to Gregorc (1982), mediation abilities describe a person’s capacity to use these channels. Gregorc describes four mediation channels of mind styles: concrete sequential, abstract sequential, abstract random and concrete random.

Concrete sequential individuals prefer quiet structured environments and are usually practical, thorough and well organised. These individuals tend to perceive reality as the concrete world of the physical senses and think in a sequential, orderly way. This type of learner is a perfectionist and prefers to be told what to do and dislikes going against the norm. They enjoy being physically involved and active in learning (Drysdale, Ross & Schulz, 2001).

Abstract sequential individuals consider themselves to be evaluative, analytical and logical with a preference for mentally stimulating, orderly and quiet environments. The dominant abstract sequential student has an academic-type mind driven by a thirst for knowledge. Knowledge is power and the ability to synthesise and relate concepts enables these students to transmit ideas (spoken and written) intelligibly and eloquently. These learners thrive where teachers are experts in their area of interest, and learn well through lecture-style teaching (Drysdale et al., 2001).

Abstract random individuals are sensitive, spontaneous, attuned and person-oriented and focused on feeling and emotion. These individuals tend to be non-linear, multidimensional, emotional, perceptive and critical. They prefer active, free, colourful environments and dislike structured assignments. They thrive on building relationships with others (Drysdale et al., 2001).
Concrete random individuals think intuitively, instinctively, impulsively and independently and tend to process information as three-dimensional patterns. They can be risk takers, often jump to conclusions, correctly, and prefer competitive, unrestricted and stimulus-rich environments. They do not need many details to solve a problem (Drysdale et al., 2001).

Drysdale, Ross and Schulz (2001) in their study of 974 students at a major Canadian university found that dominant concrete sequential and abstract sequential learners are ‘well suited to computer tasks such as programming because such activities require linear processing and logical reasoning skills’. Concrete random and abstract random students need environments that are flexible and intuitive and offer many opportunities for multidimensional thinking. Drysdale, et al. suggest that abstract students in general have more of an affinity for computer applications than do concrete students.

Ross and Schulz (1999) recommended that abstract random learners be given strategies on ways to adapt their learning style for computer-mediated environments. Strategies such as providing opportunities to work with peers shift the focus from the computer to peers (Drysdale, et al., 2001). Drysdale, et al. also suggest that flexible, diverse teaching and assessment approaches are important in meeting the needs of all students.

The literature on learning styles and their relationship to computer-mediated environments is inconclusive. The limited studies that have been reported show mixed results of how different learning styles relate to computer-mediated environments (Wang et al., 2001). On the one hand, some studies have shown a strong link between an individual’s cognitive style and their reaction to computer-mediated environments (see for example, Whyte, Karolick, Nielsen, Elder & Hawley, 1995; Moldafsky & Kwon, 1994; Hsu, Frederick & Chung, 1994); on the other hand, other studies have not detected significant relationships between learning style and the effectiveness of and satisfaction with computer-mediated learning (see for example, Larsen, 1992; Sein & Robey, 1991).

The mixed findings of these early studies are reflected in more recent studies. For example, Frederico (2000) and Jonathan, Drysdale and Schulz (2001) suggest certain styles of learning are better suited than others to computer-mediated environments, yet other studies such as Wang, Hinn and Kanfer (2001) find no significant correlation between learning styles and computer-mediated environments. In a study of computer-supported collaborative learning, Wang et al. also found no indication of any ‘significant relationship between students’ learning outcomes and their learning style’. The limitations of this study may explain this result in part, as learning ability, motivation and previous achievement were not controlled. The study also focused on cognitive achievement in terms of final grades, which is easy for measurement and statistical analysis. In undertaking future research, these authors plan to examine students’ gain in social and collaborative skills and transfer of these skills.

Despite these findings, Wang, Hinn and Kanfer suggest that there is considerable weight to the argument that the nature of computer-supported collaborative learning enables success for learners with different learning styles.
Students with all kinds of learning styles would benefit from delivery media that promotes flexible learning in both individual and collaborative learning. (Wang, Hinn and Kanfer, 2001)

As these authors posit, computer-supported collaborative learning has the potential for improving team performance through enhanced peer communication, structuring group dialogue and decision making, recording rationales for choices and facilitating collective activities. The underlying principles and epistemology of collaborative learning is derived from Piaget’s constructivism (Piaget, 1985), Vygotsky’s sociocultural theories (Newman, Griffin & Cole, 1989) and situated cognition (Lave & Wenger, 1991). Collaborative learning requires a dynamic participation of individuals working together to construct knowledge. ‘Knowledge construction occurs through social and intellectual interaction with peers and experts’ (Wang et al., 2001).

Other studies suggest that individual learning styles can be modified. For example, in a study of networked ninth grade classrooms, Cohen (2001) suggests that a technology-rich environment that promotes collaborative, project-based learning can have an effect on learning style. Cohen reports that in interviews students stated that working with others on a team with unclear expectations and goals was stressful. She postulates that the very nature of constructivism ‘with its unclear goals and outcomes, and an emphasis on competitive teamwork can have a negative effect on students’ motivation, persistence and responsibility’.

While understanding that student learning styles provide awareness of student preferences, too much can be made of learning style inventories. However, understanding of their preferred learning styles aids students in their learning (Brennan et al., 2001). The recognition of the different styles of learning implies that teachers as well as learners should take advantage of the multiple instructional strategies that are available (Ross & Schulz, 1999).

Brennan, McFadden and Law (2001:31) remind us that computer-mediated environments have a certain attraction and novelty value for early users, but that beyond this ‘initial flush of enthusiasm . . . not everyone is going to be entranced by this way of learning’. Mitchell and Bluer (1996) stated there is a need to monitor the needs, impressions, reactions and learning styles of participants with much more attention and precision to ensure that enthusiasm for the new technologies matches the capacities and inclinations of students and teachers. This statement remains relevant today.
8.5 Multiple Intelligences

Intelligence is presumed to be a universal, probably innate, capacity where linguistic and logical use of symbols is privileged in specific cultural settings. Gardner, the founder of multiple intelligences, challenged the assumptions of specific cultural settings and the emphasis on the linguistic and logical. He developed a set of relatively autonomous human intelligences. These are logical-mathematical, linguistic, musical, spatial, bodily-kinaesthetic, interpersonal and intrapersonal (see also the following figure), as explained below.

- Logical mathematical intelligence is the capacity and sensitivity to discern patterns. These learners have the capacity to work with numbers and engage in higher-order thinking. People with this type of intelligence like to complete experiments, solve puzzles/problems, work with numbers, ask cosmic questions and explore patterns and relationships.

- Linguistic intelligence is the most well known in the Western world. This intelligence involves sensitivity to the sounds, rhythms and meanings of words and different functions of language. It is the capacity to communicate effectively in writing or orally. Linguistic people like to read, write and tell stories. They may be good at memorising names, places, dates and other detailed information.

- Musical intelligence from a neurological perspective is the first of the intelligences to develop. Some suggest this intelligence should be called the 'auditory/vibrational intelligence' as it is more than music and rhythm. It deals with the whole realm of sound and vibration — from the natural and/or human environment, from machines, from musical instruments and from voice. The consciousness-altering effects of music, rhythm, sound and vibration are probably more powerful than any of the other intelligences.

- Bodily/kinaesthetic intelligence is probably the type most taken for granted. This intelligence is about the ability to control one’s body movements to handle objects skilfully. People with good bodily/kinaesthetic intelligence do well at physical activities and crafts.

- Spatial intelligence deals with the relationships and placement of objects in the space-time continuum; that is, where one object is in relation to another. It includes directionality and everything people see: all conceivable shapes, specific patterns and designs, both regular and irregular, concrete and abstract images and the entire spectrum of colour and texture. It also includes the capacity to visualise and dream about the possible.

- Interpersonal intelligence is the capacity to discern and respond appropriately to the moods, temperaments, motivation and desires of other people. Interpersonal intelligence is about human relationships, collaboration with others and learning from and about people; it is often taken for granted. These people like to have lots of friends, talk to people and join groups. They are good at understanding people, leading
Intrapersonal intelligence reflects humans’ capacity for self-consciousness, the ability to step back from oneself, reflect on oneself and learn from one’s reflection. People with strong intrapersonal intelligence have access to their feelings and the ability to discriminate among them and draw upon them to guide their behaviour. They have a good knowledge of their strengths and weakness (Gardner & Hatch, 1993; Vincent & Ross, 2001; Gardner, 2002).

Gardner recently added the naturalist category (Vincent & Ross, 2001) to these intelligences. Naturalistic intelligence is related to one’s recognition, appreciation and understanding of the natural world. It involves the capacity to discern and discriminate among species, to recognise and classify flora and fauna and knowledge of and communion with the natural world. Gardner has also added spiritual and

![Diagram of multiple intelligences](image)

(Lazear, 1994:25)

existential intelligence, but has not yet clearly defined these two intelligences (Plucker, 2002).

Gardner reached his conclusions based on two aspects of his work. On the practical side, he was concerned about the almost exclusive emphasis on linguistic and logical-mathematical symbolisation in school environments, and on the theoretical side, which he explored in his studies published with Hatch, the development and breakdown of cognitive and symbol-using capacities (Gardner & Hatch, 1993).

In his own studies Gardner became convinced that separate psychological processes are involved in dealing with linguistic, numerical, pictorial, gestural and other symbolic systems (Gardner & Hatch, 1993:65). Gardner found that individuals may be more talented with one form of symbol use than with others, and that there was not necessarily any carry-over to other forms of symbol use. This finding convinced Gardner that the Piagetian view of intellect was flawed. Piaget had conceptualised all aspects of symbol use as a single semiotic function, quite contrary to Gardner’s findings (Gardner & Hatch, 65). Gardner’s conceptualisation of human intelligence took into account a wide variety of cultural and historical settings. This stretched the concept of intelligence beyond its usual application in educational psychology, leading him to propose a number of relatively autonomous human intelligences.

Gardner was concerned about the overwhelming emphasis in school settings on linguistic and logical capacities in the construction of items on intelligence, aptitude and achievement tests. He proposed that if different kinds of assessment instruments were used, then a different view of the human intellect might emerge (Gardner & Hatch, 1993:65). In these settings, problem solving is considered a crucial component, but the ability to design a product — to write a symphony, produce a painting, stage a play and manage an organisation — is not considered. Gardner also noted that each culture emphasises particular intelligences. For example he described the high spatial abilities of the Puluwat people of the Caroline Islands, who use these skills to navigate their canoes across the ocean, and the balance of personal intelligences required in Japanese society (Gardner, 2002). The eight multiple intelligences develop differently depending on the cultural and personal contacts of individuals as they grow. The intelligences rarely operate independently of each other, but rather are used together and complement each other (Vincent and Ross, 2001).

Gardner (1999:34) defines intelligence as:

*A biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture.*

He explains that intelligence is not necessarily exhibited in its raw state; rather, individuals prepare to use their intelligence by passing through a developmental process (Plucker, 2002). Critics of multiple intelligences believe that the eight multiple intelligences are a cognitive style rather than a stand-alone construct (Plucker). Gardner’s response to the belief that an intelligence is the same as a domain or a discipline was to distinguish it from a domain, which he described as a culturally relevant, organised set of activities characterised by a symbol system and a set of operation. For example, dance performance is a domain that relies on the use of bodily-kinaesthetic and musical intelligence (Plucker).
Vincent and Ross (2001) provide a set of strategies for teaching learners, which draw on the theory of multiple intelligences as follows:

**Linguistic:** learners learn best by saying, hearing and seeing words. Have them debate issues, write instructions for others to follow, explain how to work a problem and solve problems with partners.

**Logical-mathematical:** students learn best by categorising, classifying and working with abstract patterns and relationships, so have them compare and contrast situations, find patterns in problems, create outlines, create time-sequence charts and show cause-and-effect relations. Let them play logic games and perform investigations of complex cases. They need to learn from concepts before they deal with details.

**Visual-spatial:** learners learn best by visualising, dreaming, using the mind’s eye and working with colours and pictures. Have them make visual diagrams and flowcharts of facts, create graphs of information, create mind maps as a note-taking exercise and imagine and draw what they think about a situation.

**Musical:** students learn best by rhythm, melody and music. They learn better with music in the background. Use music to reduce stress, create jingles/songs/rap to learn information, use multimedia tools.

**Bodily-kinaesthetic:** these people learn best by touching, moving, interacting with space and processing knowledge through bodily sensations. Have them learn by performing the job, acting out a situation, demonstrating to others and simulating real situations.

**Interpersonal:** these learners learn best by sharing, comparing, relating, cooperating and interviewing. Have them role play, conduct interviews and seminars, play games, lead discussions, describe everything they do when solving a problem and interacting with the instructor.

**Intrapersonal:** these learners prefer to work alone on individualised projects, using self-paced instruction and having their own space. Have them keep a journal, reflect on their learning, use guided imagery to solve problems and write about what they have learned.

Teaching and learning strategies such as story-telling use a number of intelligences. Telling stories is a method of negotiating and renegotiating meanings (Jonassen & Hernandez-Serrano, 2002). Stories are an often-used device in solving complex problems; by exposing learners to stories generated at the workplace, learners are introduced to complexities of real situations, helping them develop the generic problem-solving skills essential to effective management. The learner is expected to
‘reflect in action’; that is, ‘on the spot surfacing, criticising, restructuring and testing of intuitive understandings’ (Jonassen et al., 2002).

In appealing to multiple intelligences Veenema and Gardner (2000) offer the example of using a CD-ROM to tell a story through eye-witness accounts using close-up views of sites and artefacts. The advantage of a technology such as CD-ROM is that it is capable of presenting pictorial, aural and textual renderings from different perspectives, assisting students ‘to form rich representations of an event and cultivate deeper understandings’. Students then display their understandings in many different ways: some might use language to argue, question and make connections; others might work out a narrative of events; still others might create a play, make a series of sketches, a video, compose music.

The theory of multiple intelligences explains why online learning, which often requires students to work alone and interface only with the computer, suits only a small number of students. Multiple intelligences explains the advantages derived through collaboration and the use of multiple strategies and mediums in designing online learning experiences.
8.6 Emotional Intelligence

8.6.1 Emotional intelligence and its impact on learning

The concept of emotional intelligence can be traced back to Gardner’s (1983) work on multiple intelligences, where he introduced intra- and interpersonal intelligences. The term emotional intelligence appeared in an unpublished dissertation (Payne, 1986) and was next seen in the work of Salovey and Mayer (1990), who developed a systematic theoretical account of the construct, described as a combination of Gardner’s interpersonal and intrapersonal intelligences. Salovey and Mayer (1990:189) define emotional intelligence as:

*The subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions to discriminate among them, and to use this information to guide one’s thinking and actions.*

Emotional intelligence has five characteristics:

1. The ability to understand and integrate emotions with cognitions;
2. The ability to manage such emotions;
3. The ability to appropriately control and regulate emotions;
4. The ability to recognise, understand and empathise with the emotions of others;
5. The ability to manage relationships (Slaski & Cartwright, 2002:64).

Emotional intelligence according to Mayer and Salovey (1997) is a composite of emotional reasoning abilities: perceiving, understanding and regulating emotions. Perceiving emotions consists of recognising and interpreting the meaning of emotional states and their relation to other sensory experiences. Understanding emotions involves understanding how basic emotions are blended to form complex emotions, how experience affects emotions and whether particular social settings produce emotions, specific to the setting. Regulating emotions is about the control of one’s own emotions and the emotions of others.

Goleman (1995) popularised emotional intelligence in his best-selling book, *Emotional intelligence: why can it matter more than IQ?*, which describes the skills involved in emotional and social competence. These include monitoring and controlling emotions and behaviours, coping with frustration and stress, social problem solving and decision making, communicating effectively both verbally and non-verbally, controlling impulses and delaying gratification, working cooperatively with others and initiating and maintaining friendships and other significant relationships. Ross, Powell and Elias (2002) suggest that although Goleman popularised these ideas, research into these types of skills ‘is nothing new’. For example, a critical component of social and emotional competence that had received considerable attention in the literature involves social problem solving and decision making. Success in these areas requires the skills of noticing and understanding feelings, determining and selecting goals, generating alternative solutions, selecting appropriate solutions and reflecting on the process (Ross et al., 2002:43). Coping with stress, an aspect of emotional intelligence described by Goleman (1995), is also a much researched area (see for example, Forman, 1993). Effective coping skills
improve one’s ability to handle stress and increase one’s sense of personal competence (Ross et al., 2002).

Slaski and Cartwright (2002) note that while environmental factors impact on moderating stress, experiences of stress or negative emotions are also moderated by the way in which individuals appraise and perceive their relationship with their environment. Their study of 320 middle managers at a major UK retailer found a significant link between emotional intelligence and health and performance, suggesting that emotional intelligence may play an important role in moderating the stress process and increasing individual resilience. This is significant as emotional intelligence can be developed through training and experience. Their study also suggests a link between physical exercise, good diet and emotional intelligence as exercising can provide a sense of achievement and a positive outlook (Slaski & Cartwright, 67).

Using skills sets that include emotional intelligence has become an increasingly popular consulting tool. According to popular opinion and anecdotal evidence, emotional intelligence can increase performance and productivity (Thi Lam & Kirby, 2002). The competitive advantage of using emotional intelligence was confirmed by Coleman (1997:76):

*Emotional intelligence gives you a competitive edge . . . Having great intellectual abilities may make you a superb fiscal analyst or legal scholar, but a highly developed emotional intelligence will make you a candidate for CEO or a brilliant trial lawyer.*

A growing number of writers suggest that emotional intelligence is an equal or a more powerful predictor of success than IQ (see for example, Goleman, 1995). Ross, Powell and Elias (2002) suggest that the study of the effect of emotions on performance in the classroom, workplace and personal relationships has been gaining credibility since the mid-1980s. They state that the evidence suggests that emotional and social intelligence is not fixed at birth, and can be developed through learning and experience.

There has been debate about whether emotional intelligence is an independent factor of intelligence or a cluster of personality traits (Slaski & Cartwright, 2002:64). The original Salovey and Mayer (1990) model included variables that traditionally belonged in areas outside intelligence such as flexibility and motivation (Petrides & Furnham, 2001:425). Salovey and Mayer’s 1990 model redefined emotional intelligence in cognitive–emotional terms. The model consisted solely of abilities such as perceiving, appraising and expressing emotions (1990:426). Goleman’s (1995) popularised version includes personality variables such as impulsiveness, assertiveness and optimism, which are attributes outside of intelligence. To address this issue Petrides and Furnham (2001) propose a differentiation between trait emotional intelligence and ability. Trait emotional intelligence includes behavioural dispositions and self-perceived abilities and is measured through self-report conducted within a personality framework. Ability emotional intelligence refers to actual abilities, measured preferably by maximum performance rather than self-report tests (Petrides & Furnham, 426).

The Mayer and Salovey (1997) definition of emotional intelligence in cognitive–emotional terms has also been challenged. Van der Zee, Thijs and Schakel (2002:105)
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posit there is limited evidence for placing emotional intelligence within the framework of cognitive abilities. Accordingly these authors define emotional intelligence as:

... the ability to perceive one’s own and others’ emotions, to interpret one’s own emotions and the emotions of others, and to cope with emotions of self and others effectively.

Van der Zee et al. (2002) defend their definition by identifying the commonalities and differences between academic and emotional intelligence. They explain that the concept of intelligence is a general ability to transform information into new concepts and skills. The ability is inherited. What analytical and emotional intelligence have in common, they explain, is that they both use declarative (understanding the nature of specific situations) and procedural (understanding what to do in specific situations) knowledge and apply this knowledge in a flexible manner (Van der Zee et al., 105). They argue that flexible application of declarative and procedural knowledge means ‘understanding what is going on in new and unknown situations and knowing what to do in such situations’. The use and application of knowledge marks the major difference between the two types of intelligence. Analytical intelligence, they argue, concerns problems for which there is one best solution available whereas emotional intelligence concerns problems which can be interpreted in multiple ways and for which there is no one best solution. Van der Zee et al. (2002) also point out that there are no absolute standards to evaluate emotional intelligence and what constitutes emotional intelligence is determined by the environment.

Emotional intelligence is also believed to influence job satisfaction (Abraham, 2000), play a factor in mentor relationships (Bennetts, 2002), moderate job insecurity (Jordan, Ashkanasy & Härtel, 2002) and imbue eavesdropping with positive and negative emotion (Elfenbein & Ambady, 2002).

Emotionally intelligent individuals are capable of setting priorities. When priorities are not imposed externally, the power resides with the individual to redirect effort towards new goals. This leads to increased job satisfaction and commitment (Abraham, 2000). Cooper and Sawaf (1997), in a study of emotional intelligence within an organisation, refer to the need to listen to feelings of ‘inner truth’ that arise from the link between emotional intelligence and intuition. Abraham’s (2000) study of customer service representatives from a diverse range of industries, and a second study of health professionals from the health care, insurance and telecommunications industries in the U.S., found that emotional intelligence has a stronger relationship with organisational commitment than does job satisfaction. The social skill component of emotional intelligence ‘led to the building of strong networks with the work group and possibly with supervisors’ (Abraham, 2000).

Thi Lam and Kirby (2002) investigated the link between emotional intelligence and cognitive-based performance using U.S. university graduates. They found that, overall, emotional intelligence — perceiving emotions and regulating emotions — contributed positively to individual cognitive-based performance. There was considerable variance in individual cognitive-based performance over and above the level attributable to general intelligence. However, understanding emotions did not contribute to cognitive-based performance over and above the level attributable to general intelligence.
8.6.2 Emotional intelligence and elearning

Literature is scarce on the relationship between emotional intelligence and elearning. However, given the assumptions made about learning in online environments, or elearning, where group interaction is required, it is reasonable to assume that there is a useful correlation between emotional intelligence and elearning.

Goleman (1998:252) includes focusing on clear manageable goals as one of the guidelines for emotional intelligence training. People need clarity on what the specific competence is, and the steps needed to improve it. The specifics of the competence should be spelled out and a workable plan to get there developed. Goleman also highlights the need for performance feedback, the opportunity for practice, providing models, encouragement and evaluation. Although these are guidelines for increasing emotional competence, the same strategies are entirely applicable to other forms of learning. Lally and Barrett (1999:153–4), for example, found that online learning is most appropriate when employed within a framework of 'cooperative goal structure'. In this environment student interaction becomes an integral part of learning. They also suggest that because the development of each individual in an online learning community may be more dependent upon the community as a whole, learning in an electronic environment may depend significantly upon group processes and, in particular, 'notions of social cohesion and co-operation'.

There is increasing literature on the role and importance of metacognition as part of the learning process (Lin, 2001). Learning is enhanced when students engage in the metacognitive activities of self-assessment, self-explanation, monitoring or revising (Lin). One approach to building metacognitive abilities is to create a supportive social environment where, for example, work is compared or multiple perspectives are contributed. Having the necessary emotional intelligence to accept feedback, to give feedback, to empathise with others and to listen (Goleman, 1998) are components of building metacognitive abilities.

Because non-standard problems are typical of work environments, problem solving is a feature of most contemporary learning environments (Jonassen & Hyug, 2001). Typically work on non-standard problems is done in groups. Jonassen et al. found that there are advantages and disadvantages to solving non-standard problems in a computer-mediated environment. Generally the computer-mediated group takes longer, and experiences greater frustration, than face-to-face groups, yet the problem solving is of a higher quality. Jonassen and Hyug found that students in the computer-mediated environment dealt with frustration by seeking verification or clarification and that this environment was more conclusive to ‘deep and reflective thinking’. Social problem solving and decision making are an intrinsic part of the process. Van der Zee et al. (2002) posit that emotional intelligence is necessary in solving complex problems.

Goleman’s explanation of the skills involved in emotional and social competence, particularly coping with stress and frustration, social problem solving and decision making, communicating effectively both verbally and non-verbally and working cooperatively with others, are aspects of emotional intelligence, which enhance learning in any environment.
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8.7 Culture, Language, Literacy and Numeracy

8.7.1 Absence of studies on culture and elearning

Specifically, this section examines the impact of culture, language and literacy in elearning by surveying, analysing and synthesising the recent research literature on the topic. Despite extensive effort to locate major research studies, the survey found the current research very narrow and limited in scope. The works studied deal with issues associated with culture, language and literacy of individuals or groups representing one or more cultural backgrounds as they engage in another culture’s elearning provisions. Despite limitations in the field of study, the literature illustrates the issue is of concern in both Australian and international settings.

The main issue that emerges is not about the merits or otherwise of some configuration of cultural, linguistic or literate concerns in elearning. The issue is the broader one of good principles in the design of effective learning interventions. It is about how the learning experience as a whole, distributed as it is across computers, the World Wide Web, various computer software packages and particular forms of interpersonal relationships, is configured to accommodate diverse learning styles and purposes. Further, it is these considerations of the integrated design of learning interventions that cater best for cultural, linguistic or literate variations.

A number of authors have examined the general impact of cultural differences and the language and literacy of learners on the effectiveness of electronic or elearning. It should be noted that while most research includes the influence of cultural differences, as well as language and literacy variations, on the effectiveness of elearning, very few of the studies devote much attention to one or all of these aspects. The bigger picture regarding the overall effectiveness of elearning, however, includes the need to integrate the necessary components in the elearning intervention, understanding that cultural, linguistic and literacy diversity forms part of that overall learning dynamic. This section therefore presents an overview of the more recent literature on the effectiveness of elearning.

8.7.2 Information and communication technology access and skills

Leu (2001) points out that new forms of information and communication technology (ICT) actually generate new literacies as people attempt to exploit technologies. Similarly, Leu (2001) indicates that ICT also calls forth new instructional practices to assist students and others to acquire new literacies.

Oliver and Towers (2000) explain that information literacy includes ‘the capacity to identify an issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it’ (2000:4–5). In modern societies ICT literacy is essential for information literacy. Oliver and Towers see ICT literacy as consisting of an integrated and broad set of generic skills related to:

- Resource/socio-structural literacy (for example, understanding of the nature and location of information on a global and local basis);
- Research literacy (for example, ability to analyse, extract and use information);
Communications literacy (for example, ability to format, communicate or publish ideas electronically);

Problem-solving literacy (for example, ability to organise and classify information); and

Technological literacy (for example, ability to determine the efficacy of new methods over traditional methods).

New literacies of this sort, according to Leu (2001), complement and build upon traditional literacies. For example, while knowledge of spelling continues to be required, new strategies are required in order to structure text appropriately.

Oliver and Towers (2000) investigated the needs of students in Australian universities and in the vocational education and training (VET) sector in relation to ICT literacy and access. Among their findings are the following:

- 77.4% of the TAFE students and 95.2% of the university students reported making regular use of ICT, while 25.8% of the TAFE and 11.3% of the university students reported making no use of computers at their institutions;
- 70.8% of TAFE students and 89.1% of university students reported skills indicative of a capacity to operate a computer independently; but
- Inequities were found in use and access as well as reported skills levels between groups such as male and female students, students with physical disabilities and those without, and Indigenous and non-Indigenous students. A comparison among TAFE students of Indigenous and non-Indigenous descent indicated that non-Indigenous students demonstrated statistically significant better ICT skills (p<.05) and ICT literacy index (p<.001) than did Indigenous students even though no statistically significant differences were found in regard to the two groups' access to and use of ICT. The same comparisons were made in regard to university students with non-Indigenous students reporting better ICT skills and literacy (p<.001), although university students (unlike TAFE students) of non-Indigenous backgrounds reported greater ICT use and access (p<.001) outside their institutions than did those of Indigenous background. Oliver and Towers (2000) also analysed their data on the basis of English- and non-English-speaking backgrounds of students. At TAFE no statistically significant differences were found in regard to ICT skills or literacy, but students of non-English-speaking backgrounds reported greater ICT institutional use (p<.001) and institutional access (p<.05). University students' responses indicated, though, that those of non-English-speaking background had better ICT skills than their English-speaking counterparts (p<.001) and that they had better access generally (p<.001) and better access to institutional ICT and made more use of institutional facilities (p<.001).

**8.7.3 Cultural differences**

Conventional instruction/learning contexts involve some dozens, scores or even hundreds of students interacting with one or more instructors. With elearning delivery
there is potential for many more and diverse people to be involved in exchanging information and understandings. Consequently, ‘the new literacies require us to read more critically and they enable us to develop new insights about far more cultural traditions and ways of knowing than we have ever experienced’ (Leu, 2001:16).

Facilitators in face-to-face situations may be somewhat aware of and able to take account of the difficulties a student from one cultural background may have while studying a course developed and delivered primarily for learners with a different cultural background. Similarly, while teaching opportunities that emerge from diversity of students' backgrounds may be taken up relatively easily in face-to-face contexts, these may be much more difficult in elearning contexts.

Malcolm (1998:130) held that Australian Indigenous people, for example, are accustomed to interactions where:

... many people may speak at once; attentiveness is not shown either by maintaining silence or by maintaining eye contact with the speaker; adults tend not to talk down to children; it is not considered polite to ask direct questions or to move too quickly from social to 'business' talk; and where silence is an acceptable response on the part of someone who has been addressed.

This is similar to cultural interactions of the Canadian Inuit. In Inuit society, it is not considered polite to look directly at someone who is speaking to you; and two people in conversation tend to stand side by side rather than facing each other. At meetings, the concluding comments often follow lengthy silences (which often embarrasses Western conveners who assume no one has anything more to say). Stoicism (rather than telegraphing one’s emotions, is highly valued. Personal space for Inuit is much larger than space for Westerners (or southerners). To address such cultural difference, cross-cultural workshops are given.

Threats to 'face' are likely when such conventions are ignored or attacked in some way.

However, the cross-cultural issues that surround elearning delivery go well beyond social convention and are many and complex. For example, Collis, Parisi and Ligorio (1996) list the following barriers:

♦ Problems of culture and environment;
♦ Teaching style differences;
♦ Problems relating to different educational values and cultures;
♦ Problems of language and semantics; and
♦ Technical problems relating to platforms, operating systems and lack of standard interfaces.

Goodfellow, Lea, Gonzalez and Mason (2001) point to four themes as capturing the essence of comprehensive discussions between researchers and students enrolled in an Open University master of arts course. The students involved were from the Netherlands, Greece, Portugal, Norway, Austria, Columbia, Pakistan, the U.S. and the U.K.
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The four themes are:

♦ Cultural otherness, wherein students perceive themselves as being, for example, 'Anglo' in opposition to 'the rest' who are of other nationalities;
♦ Perceptions of globality of the course material in regard to the extent it is inclusive of diversity;
♦ Linguistic difference, especially in regard to difficulties of producing timely and intelligent comment in a foreign language; and
♦ Academic convention as it applies to summative writing, students' interactions with their tutors regarding feedback and marks for written assignments, word limits and so on.

McLaughlin (2001) advocates a *culturally responsive view* of teaching and learning. This view promotes:

♦ Learning in a community (rather than individualised learning);
♦ Authentic assessment (rather than assessment on the basis of predetermined objectives);
♦ Focus on process (rather than on educational product);
♦ Flexible content (rather than content that is fixed);
♦ Social orientation (rather than any sort of behaviourist orientation); and
♦ Teacher as coach and mentor ('guide on the side' rather than teacher as 'sage on stage').

McLaughlin (2001) argues for elearning environments that are culturally responsive by:

♦ Providing for constructivist activities;
♦ Promoting shared understandings;
♦ Situating cognition in the students' contexts;
♦ Accommodating flexibility in thinking; and
♦ Emphasising active, collaborative, conversational, contextual, reflective learning.

Learning in cross-cultural settings, ideally, would be 'conversation' within a community of enquiry wherein cross-cultural understanding would be developed by seeing problems from many perspectives. Story-telling would be evident, difference would be seen as strength and the environment would be person-centred rather than content-centred (McLaughlin, 2001).

Just as any team needs to be nurtured through appropriate group development processes, so too is there a need for conscious development of an elearning community of enquiry. The instructor must be a facilitator of this (Gunawardena, Nolla, Wilson, Lopez-Islas, Ramirez-Angel & Megchun-Alpizar, 2001).
8.8 Summary

Elearning does not possess any unique features that allow it to avoid the variables under the domains set forth in this chapter. The belief that elearning is somehow more democratic, more collaborative, more driven by a person’s learning style and preferences and more interactive ignores how these factors have to be accommodated within the design and delivery process. Individuals also have to acquire learning that enables them to respond to the opportunities accessible within the electronic environment. Learning to use online and electronic learning environments, tools and applications involves explicit and conscious application of capabilities that are tied both to an individual’s own needs and to those of the organisation that may be sponsoring the transaction (Kilpatrick & Bound, 2002:19). The capabilities are not just tied to learning outcomes from the successfully completed process but also built into the experience in order that they may be replicated. As experiences are replicated, the individual feels more in control of the process while each transaction still has maximum utility in attaining desired personal or performance outcomes.

The main conclusion that emerges from this review of individual variables is that elearning can best accommodate these considerations by following the principles of effective elearning intervention design and responsiveness to the differences of individual learners. That is, identity, cultural, language and literacy factors are best addressed by quality assurance mechanisms related to how the elearning experience as a whole, distributed as it is across multiple technologies and the effectiveness of interpersonal relationships between learners, organisational personnel and learning facilitators, is configured.

Elearning interventions must factor in the diversity of cultural background, learning styles and individual trajectories. In undertaking the integrated design of elearning, how the technology and environment accommodate the individual, as opposed to the reverse, must be a prime consideration.

While elearning may assist the transfer of codified knowledge, it is the presentation and process (i.e. the authoring tools used, the instructional design and the learning environment) that must accommodate the individual’s learning styles and mental models, presented herein as emotional intelligence and multiple intelligences. Elearning is more than designing a process that presents codified knowledge in a way that enhances acquisition and effective application by the learner. It is a process that can actually encourage reflection and thinking, thereby reinforcing knowledge beyond the codified content. As will be shown in the next two chapters, maximising group, community and organisational performance outcomes often depends upon building capabilities that are actually peripheral to the transfer of operational skills and knowledge.

Key observations that can be made from research in this chapter include the following

Observation 8.1
The knowledge, experience, learning and beliefs (trajectory) that individuals have formed before a learning exchange greatly affect elearning outcomes.

Observation 8.2
Learning exchange is a form of interaction, which, even in an
electronic environment, has a specific situation and meaning for each individual involved.

**Observation 8.3**
Particular types of individual cognitive and metacognitive structures influence how individuals engage in elearning processes and construct and transfer new learning into knowledge that can enhance current performance and future learning proficiency.

**Observation 8.4**
Organisations promoting elearning content and processes that encourage identities inconsistent with an individual's identity actually promote resistance to learning.

**Observation 8.5**
Reinforcing identity and building self-efficacy in a learning process are stronger forces for sustained learning and performance than competency outcomes linked to performance alone.
8.9 References


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**Chapter Overview**

**Abstract**

Investigation of literature and available research has emphasised the distinction between knowledge dissemination, organisational learning and the development of organisational performance capacity. The distinction is important since the development of elearning as a strategic contributor to productive capacity and knowledge assets relies on the recognition that learning is far more than training for skills. Elearning is also to be found in collective experiences that add meaning and help turn collaborative learning into purposes that generate more than just learning outcomes.

Collaboration is a basic activity of human society. It can be defined as a set of actions that express and enact cooperative and complementary behaviours by two or more people. Roles and relationships represent a repertoire of mental models that people learn and use to collaborate. They provide ready-made templates for collaborative behaviours. Expressed as sets of behaviours, they also give rise to individual and group identities that last beyond a single collaboration event. Organisational identities emerge almost unexpectedly through individuals collaborating in and with organisations. An individual’s concept of organisational identity informs (and is expressed by) their collaborative behaviours with (or as) an agent of the organisation (Giddens, 1984).

Collaboration concepts influence the design of elearning and the contribution that elearning can make to knowledge absorption, generation and transfer.

An effective elearning community is unlikely to develop of its own accord. Facilitators are needed to develop the learning community and learners also have responsibilities. Central to this process is the development of social capital with its strong interpersonal bonds underpinned by mutual trust, within the emerging
community. Interpersonal trust develops as a consequence of effective interactions between people. The facilitation role includes the design of elearning interventions so that students can interact in a helpful, productive and trust-building way and learners can respond accordingly.

Learning and communication are closely intertwined. Communication, in a sociocultural field, is the situated interaction that produces meaning. Learning is dependent on the setting in which it is applied. Learning is also inherently linked to communication. The more effective the management of information communication, the more effective the learning process.

Learning involves changes in various aspects of people's knowledge and identity. It is also recognised that where identity is already present, through social and cultural factors, the transfer of knowledge between individuals is amplified and facilitated.

Managing meaning and building commitment reinforce communication and identity capabilities. These capabilities are valuable for strategic purposes and for the formation of individual interaction processes that further transfer and generate tacit knowledge. The networks of interaction also are shown to produce social capital (the quality of internal/external interactions, reciprocity, trust and shared values and relationships). Identity resources build a sense of 'belonging' and encourage participation, as well as providing the framework for people to co-orient their views of self and others in order to be 'willing to act' in new ways. This is a major influence on 'oiling the wheels of change'.

Research in this chapter firstly examines communities of practice and learning communities. These concepts are critical to understanding the role of collaboration in learning experiences and the acquisition, generation and transfer of knowledge.

The construct of shared meaning is utilised to investigate how divergent relationships and individuals with different trajectories may collaborate in a dynamic framework to co-orientate performance and to converge vision and purpose to agreed outcomes. Building purpose and commitment within and across groups or communities that share meaning extends co-orientation to the concept of shared futures. Learning communities are enabling structures to promote learning and accelerate individual capabilities.

It is evident that within convergent learning communities, elearning can play a significant role to transfer knowledge and encourage shared purpose and identity; it can also encourage and reinforce collaboration by individuals separated by time and space.

This research found that terms such as 'community', 'learning' and 'knowledge' are being used interchangeably by researchers and practitioners. Many of the concepts, which originated in the fields of sociology, psychology, organisational theory and community development, are influencing the construction and management of learning within organisations. The concept of elearning communities is proposed as a foundation for examining how elearning can help develop and accelerate learning and knowledge transfer and generation within collaborative communities that exist, within and outside an organisation.
Chapter Proposition

Proposition 9.1

Elearning can enhance how individuals collaborate not just for learning but also to generate and transfer knowledge.

Key Themes

Learning communities and group facilitation; flexibility and heterogenous learning communities; the relationship between communication, learning and meaning; cultural identity as knowledge; learning, collaboration and social capital formation; the role of learning communities and creation of shared meaning; concepts of co-orientation and convergence in the building of communities with shared meaning; creating shared futures by building commitment and purpose; divergent learning partnerships and negative aspects of divergence; convergent learning communities; implementing collaborative, internal and external learning communities with shared purpose; and the primary role of elearning for managing infrastructural, human and social capital.
While all collaboration models are directly applied to people and physical circumstances, models can encompass virtual environments. Learning is an example of an opportunity for collaboration and exchanges that additionally encompass opportunities for learning. Elearning can promote exchanges in an electronic environment. Service transactions can also represent opportunities for both collaboration and learning exchanges.
9.1 Introduction

The investigation for this report emphasises the distinction between knowledge dissemination, organisational learning and the development of organisational performance capacity. This distinction is important as the development of elearning as a strategic contributor to productive capacity and knowledge capital relies upon the recognition that learning is far more than training for skills. Elearning also encompasses collective experiences that add meaning and help turn collaborative learning into purposes that generate the capabilities necessary to perform and respond to change.

At the heart of this chapter is research that illuminates how to promote collaboration and purposeful learning across multiple individual participants.

Collaboration is a foundation activity of human society. It underlies all human achievements from reproduction and child-raising to building pyramids and spacecraft, to operating health care, government and education systems.

In its most basic and ideal form, collaboration can be defined as a set of actions that express and enact cooperative and complementary behaviours by two or more people.

Frequently used collaboration behaviours are evident in roles and role relationships: for example, parent–child, teacher–student, buyer–seller, doctor–patient, colleague–colleague. Where one or more collaborators’ roles are drawn from another collaborative arrangement or organisation, more complex roles and role-relationships can co-exist with instantaneous person–person roles. Examples of these relationships are government–citizen, business–customer, university–student, hospital–patient relationships.

In effect, roles and role relationships represent a repertoire of mental models that people learn and use to collaborate and which encompass expectations of protocols, actions and outcomes. A person entering a shop as a ‘customer’ expects someone to be present who acts as ‘salesperson’ and that salesperson to act in certain ways. The ‘salesperson’ identifies a ‘customer’ and seeks to provide sales assistance. In this way, roles and role relationships can provide ready-made templates for collaborative behaviours.

A customer–salesperson collaboration event draws upon the role identities of the people involved, and can reinforce and/or adapt their individual understandings of the ‘customer’ and ‘salesperson’ roles and relationship.

The roles and role relationships expressed in a set of collaborative behaviours can also give rise to individual and group identities that last beyond single collaboration events. For example, while an individual may enact many roles and role-relationships within an hour, a day or a lifetime, their basic role and self-identity persists. This ‘me’ identity encapsulates the underlying self-description that the individual uses to attribute meaning to the individual’s various collaborative roles and role relationships, the actions they take and the outcomes they experience.

Just like role identities and relationships, this individual identity is expressed and adapted through ongoing interaction with self, people and the world.
Organisational identities emerge by proxy; individuals collaborating in and with organisations each have their own experiences and explanations of the organisation. The individual’s concept of organisational identity that emerges describes the perceived roles and relationships of the organisation and its constituent agents. It is the individual’s concept of organisational identity that informs (and is expressed in) their collaborative behaviours with (or as) an agent of the organisation (Giddens, 1984).

Organisations often seek to measure and shape employee, customer and stakeholder perceptions of organisational identity. Just as assimilating various roles, activities and outcomes helps form an individual’s self-identity, an employee of an organisation seeking to define the organisation’s identity typically looks to the roles, relationships, activities and outcomes that are expressed and experienced by the organisation’s employees, customers and stakeholders. In this way perceptions and identity become mutually reinforcing.

Collaboration influences the design of elearning and the contribution that elearning can make to knowledge absorption, generation and transfer. It is through learning processes that an organisation can enable the flow of both tacit and explicit knowledge and embedded attributes unique to the organisation’s context. Any elearning system or structure that inhibits the flow of certain types of knowledge or that narrows the sources of knowledge is ultimately restricting the organisation’s human and productive potential.
9.2 Online Collective Learning — Some Issues

9.2.1 Facilitation of group functioning

In an elearning environment that integrates technological, organisational, learner and facilitator aspects, facilitators need to pay explicit attention to their responsibilities as coaches of social interaction, which involves much student–student and student–facilitator dialogue. There is little scope for facilitators to continue more traditional information-providing behaviours. Similarly, there is little scope for students to be quite so passive in their learning; rather they need to be active within a community of enquiry in purposefully (rather than incidentally) developing their personal understandings of the content of their courses.

An effective elearning community is unlikely to develop of its own accord. Rather, facilitators need to develop the learning community much as coaches of teams need to develop teamwork among players. Here, facilitators, learners and administrative personnel alike need to monitor the forming–storming–norming–performing stages of group development that interpersonal relationship development will follow. Central to this is the development of social capital, with its strong interpersonal bonds underpinned by mutual trust, within the emerging learning community. Interpersonal trust develops as a consequence of effective interactions between people. Initially, trust granting is likely to be conditional: ‘I will trust you until you demonstrate that such trust is undeserved. Once you show me that my trust in you is undeserved, I will cease to trust you’.

Consequently, a role of learning facilitators is to design the elearning intervention so that students can interact with each other in helpful, productive, trust-building ways. Similarly, a role of learners is to engage in elearning activities in ways that are likely to foster interpersonal trust within the learning group. How can this be done? One way is for the instructor to involve students in planned, sequential, structured, problem-solving experiences requiring high levels of mutuality and equality and ‘guaranteeing’ their individual and joint success (see, for example, Carrier & Sales, 1987; Damon & Phelps, 1989; Hooper, 1992).

The group experiences, however, need to account for, and be strictly related to, the purpose of the elearning intervention and the particular stage of the intervention. Without learners and facilitators having a shared understanding of the stage they are ‘at’ in the intervention, and structuring their relationship-building activities appropriately, effectiveness is likely to be impaired.

Group-development experiences can be broadly of two types. The first type involves experiences that are related directly to the curriculum. Thus, for example, a set of elearning tasks in an environmental studies course might include a group of four students developing an interview schedule to gather information from a sample of the community, writing a letter to the appropriate city council authority, designing a garden and obtaining a firm quotation from a landscaping contractor. The exercise might be set out so that each student is required to take the lead in one of the sub-tasks while the others are required to assist in refining the four ‘deliverables’. ‘Free-riding’ would be minimised if the group is required to submit all preliminary and final drafts as they are developed. Furthermore, success is ‘guaranteed’ if the material that students work with is of high quality and if the instructor provides constructive feedback as drafts are submitted.
The second type involves experiences that are 'artificial' in that their content tends to be 'generic'. Thus problem-solving skills and group development might be fostered initially (and if necessary, from time to time throughout a course) in, say, an engineering class, a building class and a teacher-training class by students being engaged in the popular 'man on the moon', 'lost in the desert', 'one-way, two-way communication' sorts of activities (as provided by sources such as Pfeiffer & Jones, between 1974 and 1985). Here the approach is to reinforce the learning on how to build teams. The task at hand becomes secondary to the effort and subsequent reward when the team is oriented towards a task and operating efficiently.

The upshot of these comments is that facilitators and learners have responsibilities to develop their learning communities. In traditional face-to-face learning contexts it is usually easy for facilitators and learners to see the benefits of good teamwork in the classroom. However, in elearning contexts, facilitators need to consciously offer trust- and communication-building opportunities to their learners. However, such opportunities alone do not bear fruit. Learners need to engage themselves in these. In other words, learners need to accept that their learning extends beyond learning content and process as it is typically thought to be, to learning how to build trust, networks and wholesome communication with fellow learners and with their facilitators.

9.2.2 Accommodating student differences

Heterogeneous learning communities are characterised by variations in learning styles, language skills, linguistic conventions, cultural imperatives and so on. Accommodating student diversity through content and learning processes is often difficult in classroom settings. Online learning can provide opportunities for alternative approaches. Any approach, however, must accommodate the individual differences while also facilitating the communication of information to an individual student or between students in a learning community.

Technically, it is possible to offer all learners a very high degree of flexibility in the way they engage with learning materials. In the best of all worlds, with no restraints on resources, one student could opt to have learning materials translated instantly into Bahasa Indonesian while another could do the same for Mandarin. One student could click for a graph to illustrate a point while another could click for a photograph to illustrate the same point. One student could satisfy herself that she has learnt the necessary material to the necessary standard by browsing through it for 30 minutes, while another could access a range of additional formative tasks before he was satisfied. One student could opt for particular readings to be converted instantly into versions with a considerably lower syllabic readability level. All learners could access examples relevant to their cultures and their home community's needs and expectations. Thus one student, while studying an aspect of animal husbandry, could access the relevant principles in regard to sheep and cattle, while another could do the same in regard to llamas and camels, and still another in regard to water buffalo and chickens.

Such an ideal world is not difficult to imagine when thinking about teaching and learning as an isolated concept in a particular course. However, it would be prohibitively expensive to extend such flexibilities to all concepts in all units or subjects in all courses that education providers offer. Nevertheless, there is an accessible repository, the World Wide Web, which can facilitate considerable
flexibility. Thus, learners in an architecture course who need to understand the stresses that are exerted within roof structures can search the World Wide Web (using, for example, www.google.com) for Chinese-, Moroccan- or Swiss-style roofs as appropriate and make their calculations accordingly. This approach is primarily process- rather than content-oriented. Learners need to understand certain content, but their instruction is primarily related to process: how to obtain the necessary information from the World Wide Web.

This sounds relatively simple, but it is not. The World Wide Web contains information that is not always congruent with learners' mindscapes or preferred ways of learning. Descriptions of an aspect of Chinese architecture, for example, located on the World Wide Web may be described by and for those with a particular cultural background or with particular learning preferences. What is most likely needed is process-driven provision that invites architecture students to begin their learning about roof stresses by choosing an approach (searching the World Wide Web, visiting certain buildings, constructing model roofs, talking to established architects or civil engineers with expertise in roof stresses, experimenting with roof structures using computer-aided drawing programs and so on). The teacher’s set of instructions might be ‘This aspect of the course requires you to develop the following competencies. You can develop these competencies in a variety of ways. I can help you locate suitable readings, arrange for a site visit, acquire modelling materials, arrange for a meeting with relevant practitioners and/or access a CAD software program. Of course, as with all other aspects of the course, you are encouraged to engage me and other learners in conversations regarding the various competencies, what they mean and how they can be acquired’.

Again, as in developing collaborative learning within communities, facilitators and learners have responsibilities in regard to student differences. Facilitators’ responsibilities centre on pointing to various options on what and how material is to be learnt. Learners' responsibilities are concerned with understanding their own particular needs and being prepared to search for ways to accommodate those needs.
9.3 Communication, Learning and Meaning

9.3.1 Communication of purpose and meaning as an aspect of learning

Communication is the situated interaction that produces meaning. It is situated in a sociocultural field. This means that the communicative partners are always located in a specific social and cultural context, and that this context allows the communication to simultaneously (a) make sense, and (b) draw on a set of social and cultural resources during the communication. Communication is as much in the ears of the hearer as the voice of the speaker. However, as the act and process of communication is a two-way process, the act of speaking is not classified as communication unless there is evidence that the listener (co-participant) has ‘heard’ the speaker; even then, communication is as much about how the co-participant hears the speaker as any other aspect of the communication act.

Learning is inherently linked to communication (Falk, 1997a). If every action is a form of communication, then learning is both a form of communication and an act or process that cannot be divorced from the act of communication. The communication school of study makes clear just how dynamic learning can be when managing the absorption and transferral of information into knowledge. This is reflected in how early writers on organisations and management established communication as a precondition for effective operations.

As early as the 1930s, Barnard (1938), and later in the 1950s Selznick (1957), argued that the function of managers is the embodiment of purpose: not only to make plans but to build purpose into the corporation’s social structure; that is, to infuse the corporation with meaning. For the early writers on organisational theory, communication had to be built into everyday business activities. For Selznick (1957:236) the key to effective planning could be viewed as interpreting and conveying meaning:

... that can become widely shared by organization members so that their actions abide by common definitions and explanations of situations. Individual organization members in the performance of their roles can [then] apply a common system of meaning to their own enactment processes.

Ernest Bormann (1983:100) defines communication as the human social processes by which people create, raise and sustain group consciousness. He refers to these social processes as symbolic and shared.

A public consciousness is a crucial element in a group or an organization’s culture. Culture in the communicative context means the sum total ways of living, organizing, and communing built up in a group of human beings and transmitted to newcomers by means of verbal and non-verbal communication. Important elements of an organization’s culture include shared norms, reminiscences, stories, rites and rituals that provide the members with unique symbolic common ground. Communication is a necessary but not a sufficient condition for organizational culture. Other things are required such as material goods, artefacts, tools, and technology, but without communication these components would not result in a culture.
Bormann contends that the symbolic constructs of reality that a group shares evolve new patterns of reality. He argues, for example, that technological change — the revolution in computers and information technology — was \textit{preceded} by symbolic change. According to this argument, the way we symbolically create and interpret the world has changed our technology, which is contrary to the usually accepted view that technology has changed our world.

De Geus illustrated the importance of learning to competitive advantage by stressing the speed of learning directly impacted organisational competitiveness (de Geus, 1988:71). He examined how strategic planning could be conducted to involve individual staff members and even people external to the organisation. This involvement generates individual understanding of corporate purpose and roles. As a learning process, planning generates documents that become much more than a communication tool understood by the few. In fact plans can become a symbol of collective purpose using a language shared by those involved:

\begin{quote}
\textit{the institutional learning process is a process of language development. As the implicit knowledge of each learner becomes explicit, his or her mental model becomes a building block of the institutional model.} (de Geus, 1988:74)
\end{quote}

The better that management processes assist in communicating information the more effective the processes become as learning experiences. It is in a company’s interest to manage how it conveys information in order to reinforce the communication and learning processes. De Geus (1988:74) re-emphasised the role of learning as a process generating innovation and the discovery of shared futures.

\subsection*{9.3.2 Separating communication myths from learning}

Learning is dependent on the setting to which it applies. Therefore, before examining the generation and transfer of knowledge between individuals, some outmoded concepts of communication, which warp how elearning is viewed, must be eliminated. By the beginning of this century, prevailing academic theories on communication had been widely challenged, which led to communication being re-defined and advanced through research that centred on the business enterprise. Many long-held assumptions about communication and learning are now being overturned. Some myths of communication and learning are outlined and interpreted in the left-hand column and explained on the right.
The purpose of communication is to facilitate understanding. (Communication is learning.)

These theories suggest that all communication involves learning or even that the primary purpose of communication is embedded in learning. Research shows that people don’t always communicate to facilitate understanding. Some individuals are purposefully ambiguous so that they can get things done quickly and effectively. According to Eisenberg and Witten, ‘Ambiguous missions and goals allow divergent interpretations to co-exist and are more effective in allowing diverse groups to work together’ (1987:418–426). Thus, learning and knowledge creation may occur even when communication does not.

Argyris offers another reason for this deliberate ambiguity. He calls it ‘skilled incompetence’ or the adeptness of some managers to avoid conflict by communicating routine behaviours that can actually wreak havoc. Argyris (1986) notes that skilled incompetence is a common method of communicating despite its undesirable consequences. So while facilitating understanding is an admirable purpose for communication, it can’t always be expected.

Communication is a linear process from sender to receiver. (Elearning is a form of communication tied to a purpose of the knowledge being transferred.)

This one-way model of communication still dominates many communication texts. It derives from the theory of rhetoric asserted by Aristotle in The Rhetoric of Aristotle, and has been adopted by public speakers and refined by numerous theorists. Shannon and Weaver (1949) perpetuated this one-way model based on their work with the Bell Telephone company (which used a one-way approach to transmit electrical impulses from one place to another). This linear and mechanistic interpretation and focus on the control of transmission was reinforced by a belief that the primary importance of corporate communication was to enhance efficiency.

The linear sender–receiver approach de-emphasises the meaning contained within a message, the means of transfer and the social context within which interaction between participants occurs. Advocates of this communication approach reinforce learning as a mechanistic process that can be manipulated and controlled. To analyse communication or learning as a one-way process is, to say the least, harder to support in an Information or Knowledge Age dominated by complex communication mediums and an expanding volume of information flow. To suppose that this one-way process can occur, or be studied in a vacuum isolated from its context, seems unreasonable.

Thus, analysing communication in terms of sender–receiver distorts the complexity of learning especially within the corporate setting.
The medium is the Message.  
(Content is more important than the elearning environment.)

This statement of Marshall McLuhan (1964) aimed to shift the emphasis of communication in the 1960s from the written word to the electronic media with which a new generation of young people had grown up. The focus shifted from a learning perspective to one on ‘content knowledge’ or material and mode of delivery (Falk, 1997a:67).

McLuhan’s slogan is still used in many management communication texts. However, the ‘medium is the message’ slogan also overlooks the complexity of the modern corporate world where the medium is a means to an end but is not an end in itself. The message is something more than the medium; it involves interactions between individuals (Bowles & Graham, 1993b:Chapter 3). Equally, a focus exclusively on the materials (content) of learning, without due regard for the process and context, seems inadequate.

Communication involves sharing.  
(Elearning empowers individuals through shared understanding.)

This statement moves communication to the systems level. It focuses on the idea that communication can be derived from and reinforce a ‘common culture’ through shared language or meaning (Irwin & More, 1994:48–52, 121–126; Scramm, 1973, as cited in Sless, 1986:15).

It is not necessary for all communication to involve sharing or relationships that hold shared purpose between sender and receiver (Sless, 1986:29). Learning can promote communication that reinforces a basis for shared relationships (Schrage, 1990:98) but collective understanding is not a prerequisite for either learning or communication.

Many other assumptions about learning are being challenged as a result of recent communication and language research. Simple lessons can be learnt; for instance, communication can impact on the flow of knowledge. The flow of knowledge embodies learning and therefore learning can be maximised where individuals engage in processes and exchanges with other individuals based on shared understanding.
Yet how does learning reinforce communication that is seeking to facilitate knowledge creation and robust management in a modern organisation? As suggested in Figure 1, the collective learning and overall corporate knowledge capital reside in the individuals acting in roles at all levels of the organisation or in teams. The flow of knowledge and therefore learning has to cross levels within the organisation and to external agents such as customers. Learning is not just a one-to-one exchange. The setting is much broader. To better understand its relationship to communication, learning must be studied in the wider sociocultural setting including its relationship to such factors as meaning and values that guide interaction and shape collective identity.

### 9.3.3 Meaning and culture

Underlying this study of knowledge is the recurring theme of meaning. For an organisation, knowledge might have capital value where it can be harnessed for a situated purpose to maximise productive capacity. This encompasses not only productivity or current performance, but also the capacity to meet future performance requirements by sourcing knowledge that can maximise human and organisational potential.

Learning is the process and framework not only for orienting individual actions towards agreed ends, but also for shaping how individuals interact to generate new knowledge that can redefine ends or collective purpose. Basically, learning has been promoted in the corporate world as the means to transfer codified knowledge to individuals, teams and the organisation in order to continually improve productive outcomes. Based on the research examined in previous chapters, it does not seem strategic to manage elearning as a transaction dealing only with transferral of explicit knowledge. Learning can contribute to performance improvement while also being conducted as a process of interaction that can build tacit knowledge.
But how can learning be targeted to specifically mobilise tacit knowledge? And, if this is done, does this debunk learning theories that suggest that efficiency and effectiveness of elearning involves communication of codified knowledge tied to specific organisational outcomes?

Knowledge assets are defined not by their origins or source but by the value derived from their contribution to an agreed purpose or outcome desired by the organisation. This is not an association set by bounded, or static, rational approaches linking the value of knowledge (and individuals) to the contribution just towards task performance. Rather, leveraging knowledge assets extends beyond the tasks that link productive capacity (means) and strategic objectives (ends) to also encompass the systems that enable individuals, groups (inside and outside the organisation) and the organisation itself to absorb new knowledge, respond to new demands and redefine purpose within their shared context.

**Cultural identity as knowledge**

Cultural identity is a form of capability that holds, as seen in Chapter 4, a knowledge asset value within an organisational setting. The culture of a corporation includes a vision and a reality. Jeanne Kirkpatrick, former U.S. ambassador to the UN, defines culture as follows:

> Culture includes the entire symbolic environment. Culture defines reality: what is, what should be, what can be. It provides focus and meaning . . . Culture gives us values and standards of values. (as cited in Clampitt, 1991:50)

Employees assume membership of a corporate culture when they join an organisation. Unfortunately, it is very difficult to encourage managers to analyse and hence to better manage this corporate culture. While they manage their budgets and other aspects of the corporation, they commonly attribute employee inefficiencies to ‘the employee’s poor attitudes to work’ or some other platitude. They rarely acknowledge, let alone realise, that the corporate culture is operating on two different realities: that is, a management view of what the organisation is and will be, and an employee’s view of what is and will be. According to one writer:

> . . . values rest at bottom on acts of judgement. And every act of judgement is a division of the field of experience into what matters and what does not. (Bronowski, 1978:32)

Managers and employees in many organisations have different values based on different judgments. A set of judgments about the way to do something can be so ingrained as to preclude any other way of doing it. The different sets of judgments between managers and employees can inhibit co-operation and preclude productive efficiencies.

For an organisation to manage culture it first must undertake a process of translating the myriad of values, ideas and beliefs that individual employees possess, or develop, and translate them into a few under which the business will operate (Clampitt, 1991:52). This is why culture is a major component of identity formation in groups, while the formation of culture is influenced by the identity attributes such as behaviours, values and roles that guide collaborative endeavours.
In short, learning involves changes in various aspects of people’s knowledge and identity. The transfer of knowledge is far more difficult where individuals do not share language, purpose or attributes that facilitate communication. Where identity is already present through pre-existing social and cultural ties, the transfer of knowledge between individuals is amplified and facilitated. Figure 9.2 is a representation of the learning process and how communicative interactions stimulate identity formation and knowledge flow.

**Figure 9.2 Parallel development of knowledge and identity resources**

![Diagram of learning process](See Falk & Kilpatrick, 1999:27)

This situated and sociocultural model of learning provides an umbrella for more specific aspects of behaviourist and cognitive approaches to learning and propositions supporting these approaches to a study of learning. The model focuses on the resources within and without the organisation used in the development of organisational learning. It is a structured approach to utilising individual and group learning in organisations, and to fully utilising and developing human resource capabilities to achieve greater competitive capacity.

The challenge is to ensure that individual and organisational learning is harnessed, and communication channels and identity created, to facilitate organisational learning to avoid ‘organisational defensive routines that inhibit organisational learning’ (Argyris, 1993:15).

### 9.3.4 Learning, interaction and the formation of social capital

As examined in Chapters 4 and 5, social capital is part of the wider knowledge capital equation. It is the product of social interactions (some of which are called ‘learning’), which serve the overall benefit of a community of individuals sharing a common purpose. The interactions draw on knowledge and identity resources and simultaneously use and build stores of social capital. The nature of the social capital depends on various dimensions of the interactions in which it is produced, such as the quality of the internal/external interactions, the reciprocity, the trust and the shared values and norms (Falk & Kilpatrick, 1999).

Managing meaning and building commitment reinforce both communication and identity capabilities. These capabilities are valuable not only for strategic purposes; they actually form processes for individual interaction that further forge social capital and an organisation’s culture. Reaching far beyond the organisation, communication
networks and identity can orient individual actions and learning towards shared outcomes. Yet these outcomes need neither predict nor narrow how individuals interact or redefine meaning. The very ability of individuals to communicate to transfer knowledge and redefine the purpose for that knowledge is at the heart of how individuals collaborate to build identity.

The importance of interactions in creating, transferring and generating knowledge has two important identity attributes. Interactions may assist with:

♦ Producing and reproducing identities of self, others and place as a product of various sources and types of knowledge, skills, behaviours, roles and collective cultural resources;

♦ Shaping and shifting identity-formation in such a way that facilitates people’s agency, willingness or capacity to act for the benefit of the group or organisation, and in new and different roles than their previous perceptions of self allowed.

The next section investigates how elearning can be used to form communities that can deploy communication in a manner that harnesses individuals’ capabilities. Once harnessed, these capabilities can be oriented to achieve and maximise an organisation’s strategic success.
9.4 Communities of Practice and Learning

9.4.1 Communities of practice

Lave and Wenger’s (1991) concept of a community of practice has been built on by many authors (see for example, Brown & Duguid, 1991; Hutchinson & Martin, 1999; Tomassini, 2000). A community of practice can be understood as a set of relations amongst a group of people that develop over time (Lave & Wenger, 1991:98) through shared practice such as shared experiences, language, values, processes and procedures (Tomassini, 42) and tools. A community of practice is constantly emergent, fluid and iterative (Brown & Duguid, 49).

Learning in communities of practice takes place through participation, as a result of the process of sharing experiences, developing trust and participating in dialogue and argument. In a study deconstructing the complex interactions between abstract canonical knowledge and non-canonical situated practice, Brown and Duguid illustrate how a community of practice developed amongst technical support representatives in a large organisation. Sharing stories of past machine breakdowns and using narrative to solve problems were common practices. These narratives and stories not only were created within the community of practice, but also became part of the learning of the community as a result of its representatives sharing their stories. Individual learning and the collective learning of the community of practice are integrally linked.

Such collective practices, developed over time, reflect the social relations within the community (Wenger, 1998:45). In the example given, the sharing of stories and the joint building of narratives to develop a diagnosis of a particularly unusual and difficult non-routine problem illustrates mutual engagement, trust and support. The exchange is shared (Wenger, 45), and provides further opportunity for mutual engagement and joint enterprise. So communities of practice not only provide support for learning, but in the process ‘enculturate’ (Brown & Duguid, 1991) their members.

However, this is not to say that individual identity becomes lost within the community. As Wenger (1998:155) explains:

*We are always simultaneously dealing with specific situations, participating in the histories of certain practices, and involved in becoming certain persons. As trajectories, our identities incorporate the past and the future in the very process of negotiating the present.*

The sense of trajectory is examined in depth in Chapter 8, but herein refers to the identity that an individual has, based on past experiences, current capabilities and certain assumptions about future actions and destinations.

Identity can be understood as a negotiated experience, as participation in community membership and as a learning trajectory (Wenger, 1998:149). Participating within communities of practice is part of the shaping and ever-changing trajectory of our identity. Wenger argues that identity is a display of competence, so that in a community of practice within which one is a full member, a person experiences competence and is recognised as competent (Wenger, 152). Identity is intertwined with participation in community membership. People know how to engage with others, they understand how accountability operates within the community and they...
understand the shared references that participants use. The converse is true when people enter unfamiliar terrain.

Communities of practice support individual learning and are themselves learning entities. Characteristics of communities of practice are identified by Wenger (1998) as communities that:

- Undertake joint enterprise;
- Develop shared values and language;
- Share knowledge;
- Build and create new understandings;
- Develop trust over time;
- Constantly change as the shared activity and relations within the community change;
- Are complex mixtures of competition and cooperation, trust and suspicion, power and dependence;
- Include ignorance;
- Make meaning of historical, social and institutional discourses and styles;
- Develop informal barriers to the external world, as the community develops and builds trust; and yet
- Maintain relations with the external world as part of shared activity.

Communities of practice can be a means for developing best practice both vertically and horizontally in and through organisations. Change is a process (Senge, 1992:73) that must address cultural and structural (Hargreaves, 1997:48) realities within an organisation and pay attention to the environment within which the organisation operates.

Recent literature about communities of practice (see for example Goss, Cochrane & Hart, 2002; Mitchell, Wood & Young, 2001) generally applies Wenger and Snyder’s (2000) definition to the corporate world:

A community of practice is a group of people informally bound together by shared expertise and passion for a joint enterprise.

### 9.4.2 Learning communities

A definition of learning communities is still evolving (Tu & Corry, 2002). Some authors use it interchangeably with the term community of practice (see, for example, Bowles, 1997:90; Goss, Cochrane & Hart, 2002) while others (Tu & Corry, 2002) suggest that a community of practice is one of the elements required for a learning community. In an earlier work, Tu & Corry (2001) differentiate between different types of community — knowledge construction community, knowledge management community, community of practice and collaborative learning community.
Tu and Corry (2001) argue that the development of an online learning community is an important approach to enhance the learning of online students. They claim that there is little if any differentiation in the literature between online and traditional communities, stating that ‘most studies have transferred the traditional community model to an online environment’, clouding the meaning of online community. In their 2002 article Tu and Corry define community learning as learning that occurs as a social learning process and claim there is a distinction between learning community and community learning. Learning community is seen as a community for participants to learn together and where learning is gained horizontally whereas community learning involves learning that is gained both horizontally and vertically. A learning community is generally dependent on the community undertaking learning exchanges. Mentis, Ryba and Annan (2001) define a community of learners as ‘a group of people with a shared purpose, good communication and a climate of justice, care and occasions for celebrations’. Using the terms learning communities and community of learners interchangeably, Mentis et al. explain that learning communities are drawn together through the principles of commonality and interdependence.

Tu and Corry (2001) point out that participating in an online community creates uncertainty about what roles participants should play, ‘what scripts they should follow, how they should behave’ and how to interact. To address these concerns they explore how and why online participants project their ‘self’. Their major arguments are that:

♦ Online social presence plays a critical role in online communication and interaction;
♦ Online participants can create multiple identities and socialise with different people with both pseudo and real identities at the same time;
♦ Writing onscreen causes communicators to lose their sense of audience and become self-absorbed, lose constraints and inhibitions, prompting them to send messages they would never say in face-to-face interaction.

Tu and Corry (2001) conclude that ‘social interaction defines the self, is enhanced by social presence, and permits the formation of communities’.

Tu and Corry (2002) also develop a theoretical construct for a learning community grounded in the ‘social learning process’ — a term not clearly defined in their work. Building on their work of the previous year on social presence, they put forward a construct that argues for the presence of four elements consisting of community practice (community), social presence (network), collaborative learning (learning) and knowledge construction (technology), all of which lead to social learning. To build a learning community, argue Tu and McIsaac (2001), it is necessary to determine which connections to make between learners and to understand what kind of knowledge to share, what kind of community it will be and how tightly sharing knowledge needs to link with work. These authors all argue that when the level of social presence is high online learners may engage more interactively in online activities and that making a direct connection between explicit and tacit knowledge is important in the design and use of knowledge management tools in online communities.

Kaplan (2002) notes that learning communities can be a vehicle for ‘connecting to other people’s stories and experiences’ and a place for mentoring and sharing of tacit
knowledge within an organisation. Kaplan gives three reasons for building community into a learning strategy:

- Approximately 70 per cent of what an employee needs to know to do their job successfully is learned outside of formal training; communities create a structure in which people can learn from informal interactions;
- Tacit knowledge is difficult to capture and encode, and communities are a way of sharing tacit knowledge;
- Communities create networks and relationships that can be used to increase individual effectiveness.

Kaplan describes a number of different types of online learning communities. The more recent term for learning communities in a virtual setting has been ‘elearning communities’. Elearning communities encompasses groups of people connected solely via technology. They are communities which promote virtual collaboration on a specific topic, supported by a number of technological tools such as webconferencing, email, streaming video, narrated PowerPoint presentations and facilitated online discussions. Blended (or ‘hybrid’) learning communities integrate online learning and face-to-face sessions where, for example, learners initially meet face to face, engage in activities to promote their ability to ‘think as a team’ and then ‘reconvene’ online. Kaplan (2002) argues that these types of collaborative communities require:

- Clarification of roles;
- Creation of subgroups;
- Support for individuals;
- Establishment of operating norms;
- Fostering of trust;
- Creation of a buddy system.

Both communities of practice and learning communities are commonly described as tools for sharing tacit knowledge.

_The secret to success of living companies, complex adaptive systems, learning communities or whatever terms we use, is that they consist of intricate, embedded interaction inside and outside the organization which converts tacit knowledge to explicit knowledge on an ongoing basis._ (Fullan, 1999:15)

### 9.4.3 Online communities of practice

Mentis, Ryba and Annan (2001) suggest that within an online community of practice individuals gain a sense of self-efficacy through reflective practice. The knowledge and skills gained by making contributions to the community lead to positive perceptions of ability, and assist with the formation of identity and ability to contribute as an effective member of the community. Through guided participation, individuals move from the periphery of the community towards the centre. Mentis et al. use Vygotsky’s notion of the zone of proximal development to describe the movement from the periphery to the centre of a community: the zone of proximal development:
is the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving . . . in collaboration with more competent peers. (Cole, John-Steiner, Scribner & Souberman, 1978:86)

Mentis, Ryba and Annan (2001) list four dimensions linked to the creation of an online community: ‘situatedness’, commonality, interdependency and infrastructure. They describe situatedness as learning embedded in rich situations and socially mediated acts where learners can construct their own meaning in applying their learning. Commonality is described as ways in which participants work together that make sense to them, sharing problems; it is socially mediated through signs, tools and ways of speaking. Interdependency is firstly where participants make use of each other’s abilities and contribute to the community by sharing their understanding with others. Secondly, it may represent infrastructure or networks that enable individuals in the community to share their knowledge and understanding.

Hill (2001) suggests the following strategies and techniques for building learning communities:

- Establish a ‘failure-safe’ space in which to work and communicate;
- Assist the learner to overcome information overload, set expectations, and establish patterns of where to find information and materials on the Web and when to anticipate various types of communication, using the structures provided;
- Encourage an atmosphere of adventure;
- Assist with time management strategies;
- Encourage the setting of priorities in reading messages;
- Remind the learner that someone is ‘out there’ by creating multiple ways for learners to keep in touch;
- Establish a well-organised structure to facilitate efficient interaction;
- Provide the learner with multiple means of access;
- Minimise technology ‘glitches’ and provide training for how to cope with them;
- Explicitly establish the importance of community and why it is important for learners to contribute to the learning experience.

Stuckey, Buening & Fraser (2002) claim that a community of practice lends itself to be a model for dissemination and professional development. Stuckey et al. (2002) describes PRODIGY, an electronic community of practice (ecommunity) of general practitioners (GPs), where a project team consisting of research and evaluation, software development, authoring and the national Dissemination Office are interdependent in developing the technology, updating clinical content and promoting PRODIGY amongst the GP community. An important factor within this community (as in most communities) is the value placed on relationships by the GPs. Bronwyn Stuckey, drawing on earlier work by McWinney (see Stuckey et al., 2002:3) states that the GPs tend to define themselves in terms of their relationship with the patient, and McWinney argues that ‘experience engages . . . feelings as well as . . . intellect’
and it is this that is at the heart of decision making. For these reasons, PRODIGY is regarded as a threat by some GPs to the more traditional and intuitive ways of working and to their autonomy in decision making (Stuckey et al., 2002:2-3). Stuckey reports that with this in mind, the community of practice being developed for PRODIGY ecommunity users aims to facilitate a forum through which GPs can share their views and knowledge about using PRODIGY in a practical environment (Stuckey et al., 2002:2-3).

Stuckey, Buening and Fraser (2002:3-4) also describes the online community of practice, StageStruck, which is a CD-ROM produced by Wollongong University and the National Institute for Dramatic Art (NIDA). Copies were distributed to every school in Australia in 1999. The award-winning project has been recognised as a pedagogical innovation because of its constructivist underpinnings and design as a multimedia knowledge construction tool. The StageStruck online community of K–12 teachers of the performing and creative arts are from around the country. Stuckey, Buening and Fraser state that it has taken two years in planning and web design, development and promotion to get to what Wenger (1998) describes as coalescing, the second phase of community development. Establishing a critical mass of members for the network and connecting potential and existing members through the website took much longer than anticipated. Early adopters of StageStruck have been invited to join projects, work in teams to produce curriculum support materials and mentor new users. StageStruck is also a place for publishing and sharing student work and teaching resources.

It is still too early to evaluate the effectiveness of these two online communities of practice. Nevertheless, the online community is progressing at a pace where it may be able to be assessed in late 2003. The StageStruck community illustrates how much harder it is to bring virtual communities of practice together when the medium for communicating the intention (a CD-ROM) does not carry with it the immediate network, as PRODIGY does with its online network.

Hill (2001) concludes that there continues to be many unanswered questions about ‘community building’ in online environments, particularly given that working online is a ‘dynamic and evolving context’. The strength of sense of community in online environments remains uncertain.

It is argued that computer mediated communication cannot build a community. (Weinrich, 1997; Fernback & Thompson, 1995) and Wenger himself describes establishing communities of practice as ‘the art of balancing design and emergence’ (Wenger, 1998 p. 9). Sharp argued that the literature on on-line communities points to ‘a weaker sense of community, a discourse community’ (Sharp, 1997 p. 6) and he went on to advance a set of actions likely to increase the success of communities of practice. These actions include face-to-face activities and groups wherever possible and opportunities for short-term mentoring. Even in the highly technological environment of the Internet we can see that technology alone cannot support all that true community requires. (Stuckey, Buening & Fraser, 2002:5)

The concepts of communities of practice and learning communities are based on sociocultural theories, drawing on situated learning, social cognition, situated activity and distributed cognition. Engeström (1995:410–411) identifies the lack of
Cognitivist and situated approaches share a common weakness. In both, the focus of analysis is restricted to actions, whether couched in ‘tasks’ or ‘situations’. Both are unable to account for what makes people act and form goals in the first place, what creates the horizons for possible actions, what makes people strive for something beyond the immediately obvious goal or situation. What is excluded is objects and motives of activity — the long-term ‘why’ of actions. Without this level, theories of situated cognition run the risk of becoming merely technical models of ‘how’? — more elaborate and flexible than mentalist models, but equally sterile when faced with societal change and institutional contradictions that pervade . . . everyday action.
9.5 Building Communities with Shared Meaning

Having explored the relationship between communication and learning, five points emerge for collective elearning within an organisational setting:

1. Communication operates in a cultural setting and is the basis for human interactions that impact on knowledge transferral and learning;
2. Communication impacts individual and collective identity and is in fact a determinant of it;
3. As at least 70 per cent of knowledge held by an individual and therefore by an organisation is tacit and everyday interactions and performance require this form of knowledge, so limiting learning to the communication of explicit knowledge (codified content) makes little sense;
4. Viable forms of collaboration require communication networks that facilitate and permit exchanges, whether in physical or virtual settings; and
5. In the so-called global knowledge economy organisations need to change the way they use communication to stimulate not only accelerated knowledge transfer, but also learning in ways that help generate identity capabilities.

As a process, building both competency and identity capabilities can be planned, implemented and evaluated the same as any other strategic function. What need to occur are both the breakdown of management practices based on Industrial Age principles and a move towards practices that reflect management in the Knowledge Age. What are required now are corporate executives with the ability to manage knowledge in a cultural context. Humans are capable of holding innumerable ideas, values and beliefs. Orienting the activities of individual employees and developing a corporate identity that achieves the co-orientation of its members towards an agreed future is at the heart of the challenge facing managers (Bowles & Graham, 1993b).

But how can learning be used to bring groups of people together to transfer their knowledge and to share an identity? Pacanowski and O’Donnell-Trujillo believe convergence can occur only when two private ‘symbolic worlds’ approach each other until there is consensus, that is, shared meaning (Pacanowski & O’Donnell-Trujillo, 1982:115–130). Building communities with shared meaning may seem a very ephemeral concept. However, the concept can further the understanding of how to build elearning communities with shared meaning. This then assists the understanding of how organisations seeking to maximise knowledge assets can harness elearning communities to achieve set ends, especially where change is dynamic.

Identity building is dynamic. However, development of identity to achieve shared meaning can be targeted. Elearning can be conducted to reinforce the development of shared meaning. Bowles (1997:68) suggests three components or steps that need to be accommodated:

1. Co-orientation;
2. Convergence; and

9.5.1 Co-orientation — attuning individuals to purpose and building shared meaning

A strong theme in management theory suggests that the main function of a manager is the embodiment of organisation purpose (see Section 9.3.1 on Barnard, 1938; Selznick, 1957). As such, how management embodies and conveys meaning can be critical.

What type of organisation is best suited for the management of meaning? What Ouchi defined in 1981 was the Type Z organisation, which has a strong normative system within which organisational members derive a sense of identity and purpose. The normative system provides a context in which individual action takes on meaning and in return, the Type Z organisation is built on the commitment of employees to a meaning. Ouchi suggests such corporations recruit personnel on the basis of their attunement of personal vision to the organisation’s. Corporations that manage the meaning of the organisation are more likely to successfully implement strategic plans than corporations with no meaning, where there is no real need for employees to translate the plan successfully into practice (Bowles & Graham, 1993a:10–16).

The practice of co-orientation involves individuals bringing their unique orientations together to coordinate their meanings. It is a learning process in which people watch others and develop response patterns that co-orient them towards the practices and procedures used in the workplace (Johnson, 1977:68).

Writing about how to build visions that create purpose and innovation, William Miller (1990:165) identified two key factors:

♦ **Alignment**, in which decision-makers agree on and affirm a basic direction and required actions; and

♦ **Attunement**, involving collective action (teamwork) required to move in a particular direction or to attain an agreed purpose.

Both alignment and attunement are processes involving management interaction and coordination towards a vision and a purpose. Alignment may involve every organisational member or a particular group of participants. Either way, a communicative process is involved to gain agreement. Attunement encompasses all organisational members involved with the implementation of a plan. Attunement involves the management of meaning towards aligned performance and convergence of purpose.

Alignment to purpose is critical. Without attunement, different realities may exist within an organisation. One may be the management view of what the organisation is and will be, and the other, the individual employee’s vision of what is and will be. Purpose can change but building visions for the future is a far more powerful tool for orienting individual and collective purpose. To build shared meaning, an organisation must first view itself as a community of individuals with identities they hold individually or collectively. Co-orientation needs to occur across different subsets of the organisation and external contributors to ensure that collective actions can deliver
strategic outcomes. Organisations seeking to build shared meaning need to promote a holistic approach to the communication of vision and purpose.

**Sharing experiences**

Co-orientation between individuals requires the sharing of fantasies. The term ‘fantasy’ should not be confused with common usage implying ‘imaginary’ or ‘not based in reality’. As a technical term, it can be likened to a shared conceptual/contextual framework. Bormann (1983:103) describes the process of sharing group fantasies:

> Typically a group in a task-oriented meeting will be discussing matters in a matter-of-fact and business-like way when a member will use dramatic imagery, word play, or, more often, tell a story in which characters enact a dramatic scenario in some other place or time than the here-and-now of the unfolding group experience. One or more of the others will be caught up in the narrative and begin to participate in the dramatic action. They may laugh, several may speak at once; they may become emotional and forget their self-consciousness. The mood of the meeting becomes charged and the participants become committed and involved in conversation.

Bormann contends that when members of the organisation share a fantasy, they jointly experience the same emotions, develop the same attitudes and emotional responses, and begin to interpret experiences the same way: that is, they achieve symbolic convergence. He states that much of what happens to individuals in organisations is chaotic and symbolic convergence is the method by which they structure their experiences in a meaningful way. Sharing fantasies, he contends, makes uncertain futures clear and attractive or unattractive by fitting them into narrative frames.

Bormann’s theory of shared fantasy provides us with the clearest understanding of the way in which learning and knowledge transfer is enabled by individuals oriented towards shared meaning.

**Team building and membership**

Co-orientation may also be assisted by team building. Individuals within formally defined boundaries become aware that they belong in an identifiable group, which is distinguishable by some important features from other groups. Individuals within a team have a tight symbolic reference because they are aware that they are personally different from other teams or groups with whom they are not symbolically tied by the sharing of the same experiences or ‘fantasies’.

Individual co-orientation may be reinforced by the adoption of a nickname by the team. A nickname provides a good example of a shared group fantasy. In creating awareness of the team, members need to share a group fantasy that clearly distinguishes the ‘us’ from the ‘them’ of other teams. This notion of ‘us’ and ‘them’ is consistent with a single enterprise focus because teams are presumably oriented towards compatible corporate goals unlike the ‘us’ and ‘them’ of, say, a management–employee conflict, which may assume incompatible goals.
9.5.2 Convergence — building communities of meaning

The transfer of information through communication governs the co-orientation of people both as members of the corporation and other communities. This also suggests that communication can promote interaction between persons of the same community, such as promoting cliques that restrict co-orientation.

Cliques or ‘rhetorical communities’ (Bormann, 1983:115) not only can restrict the communication of shared purpose but also can actively promote a purpose and vision that competes with those promoted by the organisation. Organisations seeking to build shared futures need to promote a holistic approach to the communication of vision and purpose. As suggested earlier, co-orientation needs to occur across different subsets of the organisation and external contributors to ensure that collective actions can deliver strategic outcomes.

Building a holistic community builds human and social capital

By removing barriers to the flow of knowledge the potential for generation of human capital is increased. The task for management is to shake out the restrictive practices of the numerous rhetorical communities within the organisation and get them to communicate holistically across the organisation. Attempts to achieve this by relocating work units, job rotation and other practices eventually fail because rhetorical communities exist across the structural–functional divides constructed by organisations.

Early examples of the co-existence of rhetorical communities within an organisation have occurred within quality circles (Deming, 1986). The principle is for members of a quality circle to be drawn from across the corporation and to co-exist as a team. Thus, their purpose is both with their peers in the workplace and as a subset (the quality circle) of the holistic corporation. Members individually have to move for their existing orientation to co-orient towards a purpose that the quality circle team shares. In turn the corporation has to attune the quality circle to the overall organisational goals and purpose. At all levels, orientation and co-orientation involve processes of individual learning to achieve agreed performance. To do this, information, or knowledge, needs to be transferred to the individuals about not just the outcomes, but also performance expectations.

Knowledge does not just have to be presented in documented instructions. Knowledge can be held by complex interactions between people. These interactions can filter information to gain relevant knowledge. The interactions can develop structures, processes or consensual collective actions (Boden, 1994:152) that not only filter information but also hold knowledge. Such relationships may occur in teams, between teams and in informal groups or individuals within an organisation that hold a common relationship outside the organisation’s purpose (e.g. religious, cultural, sporting, smokers).

In many cases the enterprise needs to manage the knowledge held by more than one individual to ensure that:

♦ Those with complementary knowledge work together to achieve agreed outcomes;
♦ Individuals holding a different set of knowledge cooperate as required, when required to guarantee the efficient delivery of an outcome;

♦ Operational efficiency is enhanced by sharing the facilities or job responsibilities between individuals and teams (Badaracco, 1991:84); and

♦ Knowledge can be generated through the complex interaction of ideas, synthesis of creative suggestions, and realisation of innovations into services or products through different knowledge levels encompassing stages such as concept development, design, production and sales.

Paradoxically organisations also need to manage the knowledge resident in groups to avoid problems such as the following:

♦ Knowledge held by one group is used to the detriment of the overall strategic purpose;

♦ The knowledge held by groups of individuals concerning their interaction is lost resulting in the inability of individuals and groups to effectively work together to achieve enterprise outcomes;

♦ ‘Group think’ is created where individuals conform to predominant thinking in a group and either alienate individuals who ‘think differently’ or collectively put group cohesion above enterprise-wide strategic imperatives (Hellriegel & Slocum, 1979:298–302);

♦ Groups create thinking that challenges rather than complements the enterprise strategic needs; and

♦ Groups develop their own frame of reference that is supported by the enterprise but develop outcomes and frameworks that don't advance the strategic goals or knowledge of the enterprise.

Other than serendipity and intuition, which rarely occur in the corporate context, explicit or migratory knowledge can only flow simultaneously or serially, or in a combination of these ways. Examination of large, hierarchical, bureaucratically structured corporations has highlighted how knowledge, like communication, flows either simultaneously or serially. This means that knowledge becomes compartmentalised and is hard to hold corporate-wide. This makes it difficult to develop a holistic approach to management of corporate knowledge. In this sense, the formation of groups of individuals (subcultures) that hold knowledge or do not contribute to corporate outcomes may create barriers to information flow.

Two types of groups may directly inhibit the transfer of knowledge and reduce the access of the total organisation to information. These groups are cliques and rhetorical community.

**Cliquess** are groups of people who tend to work in close proximity and exchange more than fifty per cent of their communications with each other. They frequently consist of individuals who have both formal and positional reasons for making contacts as well as interpersonal and informal reasons (Pace & Faules, 1983:138). That is, clique members reinforce clique beliefs and their differences through their communication and language.
A rhetorical community consists of people who participate in a rhetorical vision (Bormann, 1983:115). Rhetorical communities parallel the 'discourses' or shared language and meaning (Falk, 1997a). Such groups may share a rhetoric or discourse based on an inside joke, admiration of a former or current colleague, a language or belief system, or shared experiences. A rhetorical vision involves a common consciousness, sense or feeling about what is good, bad, proper and improper and aspirations that are applicable to the group. Rhetorical communities typically:

♦ Have agreed procedures for problem solving;
♦ Build their own symbols and language sets;
♦ Ensure that learning patterns reinforce behaviour within their community;
♦ Rely on both formal and informal channels to exchange information; and
♦ Question power that is structured so as to challenge their 'shared vision'.

Convergence is typified by individuals approaching agreed purpose while individually holding an identity appropriate for other networks, groups or contexts. For instance, a worker may attune and converge towards a purpose agreed at the place of work, but this does not mutually exclude other important outcomes they may hold as a member of the school’s parents and friends association or a labour union, or as a coach of the local football team.

Shared meaning refers to the construction of an agreed purpose with underlying well-established values and beliefs. It has to be more enduring than goals and objectives and reinforce the prevailing organisational identity. For individuals this may mean determining a comfort zone within which to both operate and develop convergence of purpose. Such a comfort zone is predicated upon conveying meaning to all members that the organisation's desired outcomes may not necessarily be of collective benefit at all times. However, individuals need to know how to contribute to plans and actions that are important to them and how they will benefit them when acting under the purpose promoted as the collective identity.

Management may need to determine a comfort zone in which people feel comfortable to operate with sustained convergence of learning and performance. However, individuals need to know how to access the learning that is important to them. The following two figures illustrate how the alignment of the individual sense of self-identity and collective identity can influence performance and learning.
Figure 9.3   Where meaning is split between individual and group

Figure 9.3 offers a simplistic representation of the orientation of individual and group purpose towards what has to be achieved to deliver performance. Performance in this setting is about task outcomes and compliance. The following figure depicts the convergence between the individual and the organisation of work. The development of shared meaning and the creation of an identity that links what individuals are expected to do (performance) and their motivations to achieve this outcome within an organisation is fundamental to the attainment of purpose. A community of individuals with shared meaning can meet multiple purposes. They do not have to continually reconvene to question why they are together or the benefits from sharing in a common purpose. Identity has already been established and continues to evolve as the group interacts in the networks and completes specified outcomes. This extends well beyond performance matters to create commitment to adaptive practices that seize future opportunities. Performance today can be attained through processes that are already reinforcing the collective identity and purpose.

Figure 9.4   Where meaning is shared

The above figures and contentions suggest that the value of human resources does not reside solely in the individual’s contribution to processes that result in productive outcomes. Rather, value extends beyond individual performance improvement.
Groups that share identities can spend more time acting and can continually renew their shared sense of purpose. This is a very flexible basis for collaboration and interaction that can underpin organisations seeking to build agility. Community networks and the identity capabilities can be embedded in the organisation’s context and draw on individuals’ capabilities, which may be derived from relationships outside the organisation.

### 9.5.3 Creating shared futures

It has been shown that communication and meaning can build purpose and commitment from individual group members. Building purpose and commitment within and across groups or communities that share meaning extends co-orientation to the concept of shared futures.

On the organisational level, shared futures centre on two themes: the benefits to the individual participating in a learning community and how learning communities that reflect individual needs can enhance an organisation’s strategic purpose. At the organisation level, learning needs to be promoted not just as the source of new capabilities (knowledge assets), but also as a strategic activity where business success is enhanced by the translation of an individual’s improved capability into overall business success. An improvement in individual capability neither predicts nor determines how well the business will respond to new opportunities. By and large a business that promotes learning as a mechanism to accelerate individual capabilities should also recognise that the business requires enabling structures to assist learning. Enabling relationships that capture knowledge requires serious reconsideration as to the boundaries of enterprise structures. In many cases forms of knowledge capital will not reside in networks and relationships that occur beyond the organisation. Encompassing such relationships and networks within a knowledge capture and transfer strategy can be advanced through learning. These learning communities have a central focus on achieving a shared vision where business can create competitive advantage and social well-being. In real terms this may simply boil down to how well individuals can collaborate to reduce the time between the identification of new business opportunities and the transformation of competence and identity required to secure a competitive market position.

### Attuning informal with formal practices in the workplace

Another aspect critical to examining how shared futures can promote learning and knowledge acquisition in organisations is the relationship between the individual participant’s construction of reality and the stated organisational procedures and practices.

Manuals and operating procedures may record responsibilities and, in theory, how individuals should complete job tasks but they rarely attempt to describe the complex interrelationships between individuals and groups. As these documents must be by their nature be retroactive rather than current, codified knowledge such as manuals cannot provide an accurate picture of how each individual interacts (Brown & Duguid, 1991:40-57).

Group organisational and community dynamics can be described as a web of interacting relationships. Responsibility to one's group, organisation or community is
expressed by the desire to defend the group’s beliefs from outsiders, to share group experiences and to gain rewards or acceptance from other members.

Within organisations learning from experiences takes place at the individual, group and organisational level. A useful learning environment is produced when within organisations ‘them and us’ is broken down by networking between groups attuned to a shared future. This, in turn, accelerates the process of learning by ensuring that individuals share information and transfer knowledge through learning processes that span individuals and groups (Robinson & Stern, 1997:104).

**Divergent learning partnerships**

Group membership is not the only criteria for collective action or indeed a ‘shared vision’. Willingness to participate and group cohesiveness in action may mask how some participants may be participating for other ends. This connects to the earlier review of rhetorical communities.

Divergent learning partnerships are those constituted by members who have different reasons for being involved. While mutually supportive, members interpret the contribution of learning from their own perspectives.

**Figure 9.5  Divergent communities**

A parallel exists between strategic purpose within a community and the participants within a business enterprise. However, it is the enterprise's purpose that determines
the participant’s purpose. This divergent ‘network’ is shaped by relationships that predict learning, communication and knowledge-sharing patterns. Without clear focus and convergence of learning to a shared meaning, information in such a network can be subject to distortion and misinterpretation. At worst such a network promotes confusion over the role of learning, and fails to capture and promote divergent learning and knowledge transfer as the interests of one or more partners differs from the shared purpose.

In a divergent community, elearning can facilitate communication to enable knowledge transfer. The ability to orient knowledge transfer to agreed outcomes is limited by each participant’s context and lack of shared identity.

**Negative aspects of divergence**

Communication is at the heart of the two most common reasons symbolic divergence occurs in an organisation: when the consultation process takes far too long and when people do not possess commitment to or have an understanding of their role.

Encouraging divergent input is commendable but the process has its own drawbacks. It can take a lot of time, and when that happens, management may tire of waiting and impatiently impose a plan and an implementation process disregarding any possible employee preferences. The non-consultative approach imposes values that conflict or are inconsistent with the group’s cultural values; it demonstrates communication divergence between management and employees.

Symbolic divergence also results when employees are not clear about their role in the planning process. Employee involvement in the planning process is typically to implement strategies to make the plan work, not to decide whether the plan is worthwhile. Any confusion about this role can lead to symbolic divergence.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distortions in objectives</td>
<td>Many shared objectives are worded to encourage understanding but actually distort the purpose. For instance, an objective may be framed to purposely avoid internal or external conflict, but actually fail to articulate the required ends.</td>
</tr>
<tr>
<td>Suboptimisation</td>
<td>Each operational area pursues its goals to the exclusion of the others or considers all goals other than their own irrelevant to organisational purpose.</td>
</tr>
<tr>
<td>Means–ends inversion</td>
<td>Individuals perceive a plan as a basis for cooperation and the plan become the end, rather than the agreement to achieve certain outcomes.</td>
</tr>
<tr>
<td>Group pressures</td>
<td>Many occupations and groups build their own sense of purpose and resist organisational ends.</td>
</tr>
<tr>
<td>External influences</td>
<td>While this is essentially a social issue, external influences can sometimes be due to a lack of convergent orientation between external stakeholders and management.</td>
</tr>
<tr>
<td>Intrinsic needs of individuals</td>
<td>Individuals displace legitimate power simply to serve their own personal agenda.</td>
</tr>
</tbody>
</table>
Consider organisations where senior management sets unrealistic budgets for sales staff to meet. In many cases sales figures are then fudged, budgets are ‘achieved’ in creative ways and in many cases the effort to meet set figures doesn’t contribute to overall organisational performance. Staff may become aware of the unrealistic expectations placed on them. In response these individuals may see managers as outsiders not contributing to the group’s well-being. Dysfunctional relationships then result that inhibit learning and utilisation of existing knowledge assets.

**Convergent learning partnerships — learning communities**

Revisiting communities of practice principles offers some insights on how communities can be built around convergent purpose. The greater the ability of those delivering learning in the organisation to build convergent relationships within the learning group, the better the ability to stimulate learning and to generate knowledge that is not limited by a single set of strategic outcomes. A group cohesiveness is then created and where a learning strategy mirrors individual needs the risk to individuals is low. Individuals and groups see that a need is being met and fear of failure is offset by rewards through learning and knowledge acquisition.

Characteristics of learning partnerships that add value to all members include:

- Planning general education to prepare the individual for a community;
- Planning training for skills and knowledge, not jobs;
- Recognising that training is inherently meant to be flexible and perform a role not encompassed by education;
- Involving stakeholders (students, facilitators, etc.) at the point of instructional design;
- Offering learning as ‘just in time’ and demand driven;
- Using means such as electronic, portable and Internet-connected modes, not classrooms;
- Enabling access when and where the learner determines;
- Offering availability regardless of demographics, location or employment;
- Empowering learning diversity encompassing any individual regardless of employment status, age, gender, race, religion, etc.;
- Being responsive to rural and remote learning;
- Achieving mass customisation through:
  - Learning methods and mechanisms that are driven by the learner with complete sensitivity to respective learning styles
Learning tools and mechanisms that permit interaction rather than just management of course work

The learner and their future being recognised as a unique variable

The learning of skills, knowledge and attitudes for work transcending any universal rules or guidelines on what constitutes a job;

- Creating real-time links between an individual’s learning record (education and training) and individual futures in learning and work (e.g. mapping courses, jobs, careers from a known basis of current capabilities).

Figure 9.6 Convergent learning communities

The learning partnerships and networks depicted in Figure 6 not only illustrate the organisation but also focus on learning and knowledge relationships. It is the creation of shared meaning through these learning relationships that shapes individual and group interaction. The learning community also promotes open communication and stimulates interaction between all parties in the network.
The interrelationships depicted need further explanation. The partnerships and relationships can be framed as what have been termed *learning communities*. Learning communities may be wholly internal to an enterprise, or span organisations.

In the convergent learning community it is apparent that elearning can play a significant role in assisting the flow of knowledge. In convergent communities, elearning can be deployed to full effect as shared purpose and identity are encouraged.

The next section examines literature on how elearning can reinforce and encourage collaboration in learning communities that include individuals separated by time or space (distance, geography, time, etc.).
9.6 Implementing Collaborative Elearning Communities

Knowledge development is not a linear process whereby one individual transfers knowledge and skills to another individual through a learning experience. Nor is the learning inherently held in a set of information or actions that one individual can convey to another individual or group.

Learning is omnipresent. No one individual can complete a ‘learning experience’ and possess all the skills and knowledge required to progress through life. Living is an ongoing process of learning, adapting existing knowledge to new situations and learning to learn for new experiences.

The myriad of different situations and means to stimulate learning mirrors the complexity and diversity of ways individuals interact to acquire and transfer knowledge. How well organisations manage the context of learning directly impacts on knowledge management. However, this does not mean one can establish an organisation, system, structure or process that can orient all learning towards agreed outcomes. Mark Easterby-Smith argues that these approaches, such as the learning organisation school of thought, are not compatible with the development of human capital in an organisation (1997:1085–1113). Despite the range of disciplines influencing the construction and management of learning organisations (Easterby-Smith, 1087), tailoring one strategy as part of any organisation’s management system is an ill-conceived approach. Rather, a range of learning strategies must be created that target individuals and teams while tying these diverse approaches into an organisational approach to learning. Such an approach would avoid efforts that focus on trying to predict and manage learning under a single learning organisation system with its assumptions about how individuals learn, and how to orient all individual actions towards predetermined outcomes.

The elearning community is one model developed to address how organisations and collections of individuals learn. This approach accounts for how individuals can generate knowledge assets through their actions and interaction.

When examining learning both in the community and within organisations it is essential that terms used interchangeably have the same meaning. ‘Community’, ‘learning’ and ‘knowledge’ are used by researchers and practitioners and many of these concepts and terms have been derived from a range of fields, such as sociology, psychology, organisational theory and organisational development. For example:

*The term community specifically defines commonality amongst participants and in the past the definition of community was relatively simple. With increasing mobility the term becomes less easy to define and in the electronic age where information and knowledge sharing is almost instantaneous around the globe, communities become not the holistic, geographically cohesive units they once were. (Falk, 1997b:4)*

That people do not know their next-door neighbour, or may not even work with those in the same geographic location where they live, does not deny the fact that people all still operate in communities of practice and that this is where individuals predominantly gain information, learning, and knowledge.
Sociology identifies that socially constructed realities are one way individuals can find meaning within community structures. Individuals see the world through shared meanings — symbols and experiences — and use a common frame of reference to gain shared learning and knowledge. The values that communities stimulate provide an interface between individual and collective interpretations of the world.

However, management perceives two main possible downsides to ‘sharing and caring’. The first downside is that corporate knowledge becomes shared property. Managers worry that the money and effort that the firm invests in creating a strategic learning organisation can walk out the door with the employee, and this is perceived not only as a waste, but as a threat to competitive advantage achieved through development of unique intellectual assets. Are these fears real and justified?

James Gee (1997) believes ‘new capitalism’ has a dilemma, which is how to control empowered work teams and units in flatter management structures that diminish central authority:

In communities of practice . . . in . . . new-capitalist workplaces, people develop ‘tacit knowledge’ (Nonaka and Takeuchi, 1995). In fact, this is just the sort of knowledge in and out of practice that allows workers to add value to the enterprise and to continually re-create communities of practice that can apprentice new workers through immersion. . . . Unfortunately for these businesses, the workers/partners own and can walk away with such tacit knowledge. . . . Empowered knowledge workers can take their knowledge and sell it to the highest bidder . . . (Gee, 1997:6)

However, in the true learning community, the community of learners involved in the process is distributed across both human and physical resource domains of organisational management (Gee, 1997): computers, technologies such as machinery and TQM procedural texts, as well as across the team members (who increasingly work at different times and in different locations on and off the worksite). The knowledge is therefore distributed across the team and technology, so in the event that one person leaves, they (a) do not have all the knowledge, so they take only a part, and (b) are unlikely to understand the full knowledge required of the team as a whole — if indeed any single member does.

Is this situation desirable in human and ethical terms? Is this a situation that organisations should feel responsible for? The partial answer to this question is found in the discussion of the second ‘downside’.

The second perceived downside relates to the fact that an ‘empowered’, ‘enlightened’ strategic learning community succeeds because workers are freed from traditional blockages in their thinking and work. They are integrating their lives as community members with their work in much more direct ways. They are encouraged to think and act across previously walled-in sectors. Lives are not nearly so compartmentalised.

These links and networks between workplace and community are creating a new awareness about corporate responsibilities and ethics in relation to the physical site of their operation, the communities from which the organisations draw their labour, and their wider client and stakeholder networks, such as product and service providers, warehouses and others. The perceived downside in this scenario, then, is that there is
pressure on firms to act more responsibly towards their various real and virtual communities. New ways of acting require a change in management’s identity as well as in the organisation, and as we know, these changes are often resisted, and take a great deal of time to accept and implement. If they are implemented.

However, the analysis of writings in this chapter seems to suggest that networks of mutual responsibility between an organisation’s employees and stakeholders — including the geographic and virtual communities — are one of the key features in producing self-perpetuating, sustainable and enhanced knowledge capital. The key is to identify the connections between those human, infrastructural and social capital resources and the capabilities required to maximise productive capacity. There are many positive results, not the least of which is that networks that promote interaction for common purpose can sustain improved knowledge and learning generation and transfer capabilities.

9.6.1 Building elearning communities internal and external to an organisation

The term community is used to define not just individuals with a common geographic location or communities of practice, but also a knowledge base of past experiences that is built on social norms, values and expectations. There is some resistance to describing organisations as communities; one problem described is the coercive elements that limit the development of shared visions.

When dealing with organisational learning and change, some organisations attempt to control the changing environment and uncertainty by constructing internal organisational structures that can increase commitment and reduce risk for individual participants and groups. It must be noted that risk aversion strategies used by individuals and organisations can inhibit learning. Change, however, has the capacity to promote learning by allowing for invention of new ideas and the purging of old mindsets.

In rapidly changing environments, the development of permanent, solidified definitions of self and community is more difficult. So even if opportunities for learning are greater, the threat to the individual is higher. The willingness to contribute in order to access learning and transfer knowledge into productive outcomes is impacted by these risk factors. As the threat to self increases then risk-aversion strategies are implemented. If the risk is not great then the acceptance of temporary group involvement is accepted. As the risks rise then the individual defends against all others in the organisation.

As the speed of change increases and certainty for individuals decreases, the corresponding commitment to learning and actions of a group also decreases. Enterprises undergoing a change process need to reduce risk for individuals by building commitment and ‘risk’ support structures. Elearning communities could become one means of building internal networks between individuals that share meaning and shared visions (Janov, 1995).

Knowledge capital resources available to an organisation are directly related to how elearning as a strategic activity can enhance access to knowledge held by individuals and groups. The emerging focus on human capital management suggests a re-emphasis on valuing people as an enabler of organisational capabilities — as the only
means of marshalling the infrastructural, human, and social capital into strategic directions through learning and other interventions. By creating shared meaning and commitment towards a shared future, individuals and groups need not keep revisiting why they are learning or working for an organisation. All the capabilities an individual holds must be respected if an individual’s potential productive capabilities are to be harnessed to meet the organisation’s purposes. As such, elearning promotes both alignment of individual and group actions towards agreed futures (convergence) while embracing divergence. Individual and group divergence may be the mechanism best able to redefine and reorient both actions and purpose.

**Figure 9.7 Building identity through elearning**

The above figure depicts the model advanced for the implementation of elearning. It not only involves identifying capability inventories, but also suggests there is a need to construct shared futures and to establish capability management systems that can link individual, group and organisational capabilities to nominated actions and outcomes.

Elearning in an organisation should expand from individuals learning for their own needs, to encompass learning by a community of individuals. It is through collaboration that elearning can encourage exchanges that encompass knowledge that is not explicit and is usually hard to diffuse. Elearning can encourage learning as a social, collaborative activity. This activity is distinct from other forms of distance and self-directed flexible learning, in which such activities have been attenuated.

As this chapter shows, the literature has two different perspectives on elearning’s role in collaborative learning, knowledge transfer and resulting performance. Elearning may be defined as either of the following:
Inclusive in organisational structures — that is, knowledge and learning can be tied to strategic purpose and occur as part of the functioning of an organisation. The organisation adopts a systematic approach to elearning that is tied to performance outcomes. Individual participants working in this community derive meaning through structures, systems and interactions occurring in the workplace. Supporting this concept is the development of learning organisations where knowledge and learning are meaningful on an organisational level and elearning is managed by the organisation to achieve specific performance outcomes.

Exclusive to organisational structures — this typically involves the belief that organisational learning and knowledge generation grows out of individuals and communities that are not limited by organisational structures. This view is supported by the idea that knowledge and learning can best be described and managed by a focus on the source and how it exists in networks of individuals that have identified with a common purpose that may require the transfer of knowledge and information that may well extend beyond the organisation’s requirements, practices or boundaries. Such an approach also argues individuals can choose paths to learning and source knowledge that may reside beyond workplace boundaries and systems.

These inclusive/exclusive approaches recognise that elearning must provide a process for learning and knowledge exchange that encompasses collaboration and environments that encourage sharing of non-codified knowledge.

The above concepts and their implications for an organisation are explored more fully in Chapter 10.
9.7 Summary

Elearning has a primary role within an organisation needing to maximise productive capacity by managing infrastructural, human and social capital. Communication is the vehicle by which elearning is facilitated and through which knowledge absorption and transfer is enhanced. The result is increased productive capacity.

Productive capacity is not a static or 'bounded' term. It denotes an organisation's own definition of what is required to meet current strategic needs and to achieve sustainable market advantage through superior capabilities. Elearning employed to achieve productive capacity is tied to knowledge as both a physical process and human social processes by which people create, raise and filter information. Knowledge is in turn created by this processes and shared by individuals through communication that involves physical, symbolic and interpersonal interaction.

Elearning can be harnessed by organisations and managers as the catalyst for transferring and translating communicated information into knowledge. This process is dynamic. It takes place in a corporate setting where knowledge and activity occur through interaction between people at the level of the individual, communities of individuals (teams or groups inside and outside the organisation) and whole-of-organisation. The very ability of individuals to respond to new imperatives and embrace individual divergence represents their real value to an organisation.

However, it is important to note that a majority of learning, like communication, received by an individual in a workplace situation does not occur through formal channels. To the modern elearning practitioner or knowledge manager, this suggests it is insufficient to manage all individual and collective knowledge as codified knowledge found in procedures, manuals, training programs, job descriptions and so on. Fundamentally, organisations need to move beyond management of elearning as a process for transferring explicit knowledge that contributes only to skills and knowledge (competence) that result in productive actions. Organisations need to acknowledge how communication and identity can be interwoven into the elearning process. Such an acknowledgment is necessary if elearning is to stimulate collaborative learning and the learning that each individual acquires simply by participating in a transaction with technology, people or content.

Elearning is both a process for building capabilities required by an organisation to maximise productive capacity, and a basis to maximise the human capital relevant to the attainment of sustainable success. To build all aspects of knowledge assets available to it, an organisation needs to build elearning frameworks that are as much about outcomes for individuals as they are for organisations. Learning communities help integrate individual and collective purpose. Virtual learning communities can enable individuals to communicate through shared meanings, symbols and experiences, and also develop an identity that orients individual action and the transfer of knowledge.

This chapter reinforces the distinction between building learning within an organisation and maximising an organisation’s knowledge assets through management of individuals and their interaction within a community. It does not provide a conclusive view on whether both can co-exist, or if one approach replaces components of the other. In essence the debate marks the changing role of the
elearning or knowledge management practitioner. Knowledge must be managed as a valuable business asset. Elearning encourages an organisation to develop systems to absorb, transfer and generate knowledge across all three pools of infrastructural, human and social capital. Some transfer will form learning that cannot be structured. As such, elearning mirrors communication for the purposes of information transfer. However, if strategic outcomes are to be maximised, efficient and effective elearning has to be able to target tacit and explicit knowledge transfer. This means transfer of both the known skills and knowledge associated with task performance and the knowledge implicitly held by individuals often through experience, or knowledge resident in the values, beliefs and ideas promoted through networks of interaction. Learning has to encompass both if performance outcomes requiring both forms of knowledge is to be effected. This means that communities and group learning have to be oriented to ensure that the organisation does not actually restrict how individuals interact and how these networks promote the generation and transfer of all types of knowledge.

The following chapter examines elearning from the organisational perspective. It builds upon the study in this chapter to establish how to develop organisational competitiveness through elearning strategies that assist organisational learning and the identification, absorption and transformation of individual knowledge into productive outcomes.

Key observations that can be made from research in this chapter include the following.

**Observation 9.1**
As a broad gauge it seems at least 70 per cent of knowledge held by an individual and therefore by an organisation is tacit and everyday interactions and performance require this form of knowledge so elearning should not be limited to mental models that view elearning as only a means to communicate explicit knowledge in codified content.

**Observation 9.2**
Elearning can maximise collaborative learning exchanges, which are known to greatly enhance the transfer of tacit knowledge held by individuals.

**Observation 9.3**
All learning involves communication, yet outmoded mindsets on communication as a linear sender–receiver process have limited use for elearning transactions. Elearning can encourage communication to build a shared sense of meaning that enhances collaboration and amplifies the purposeful exchange of knowledge.

**Observation 9.4**
Elearning can be used to enable learning communities within virtual or electronic environments that generate new knowledge networks and relationships with diverse participants within and outside the organisation.
9.8 References


Chapter 9  Group-Collective Elearning Variables


10 ORGANISATIONAL ELEARNING VARIABLES

Chapter Overview

Abstract

Central to any view on deploying elearning to enhance organisation outcomes is the need to appreciate elearning’s role in attracting knowledge. Elearning can do this by providing content, tools and an environment that encourages skills transfer as well as a converged sense of purpose that spans individuals and groups, which may not all be confined within an organisational structure. Any elearning solution must maximise relationships across internal and external ‘networks’ that hold knowledge capital. All interactions represent opportunities for the organisation to learn and acquire valuable knowledge capital.

Elearning is a critical strategy to leverage the creation of a learning culture.

The concepts of the learning organisation and different types of organisational learning have been reinvestigated to establish some precepts on how elearning can contribute to an organisation’s success.

Under a learning organisation approach, the individual within an organisation and the organisation as a whole have to commit to learning. This involves continually seeking to change existing practices through knowledge acquired by learning and to respond to the sources of information that stimulate new knowledge and learning. The primary focus is on the implementation of systemic, learning strategies.

Organisational learning may be viewed as a means to enhance an organisation's capacity to create a climate conducive to change and to realise competitive advantage through performance improvement. Its focus is on structures, systems, the learning environment and interaction between individuals, all of which enable learning. Organisational learning is essential in a learning organisation.
The literature advocates scepticism about learning organisation theories and approaches that relate to organisational management. Learning organisation principles and practices, however, indicate real value in integrating strategic learning and management systems to enhance organisational learning and productive capacity.

Organisations interested in increasing knowledge capital formation should use elearning to build individual learning and collective identity.

In a rapidly changing environment, homogeneity of values, views and attitudes limits organisational agility. Bureaucratisation is the epitome of a cohesive organisation culture that has difficulty with non-routine problems; this is the antithesis of a customer-responsive, service-oriented organisation. Individual purpose and learning trajectories may vary but learning is a means for collaboration and co-orientation of behaviours and alignment of personal capabilities to group and organisational outcomes-shared identity.

This research proposes a methodology to manage and map capabilities to build inventories of knowledge for evaluating and improving the contribution of knowledge to productive outcomes. It presents a model of an integrated capability-based inventory. The database system is based on individuals as components of an organisation's total productive capacity potential. The operational processes and linkages are explained. The tying of elearning data to HR systems is also developed as an integrated concept to explain how company competency standards can enhance strategic activities. As part of a knowledge management/HR plan, human capital can be allocated to achieve productive capacity and agility outcomes.

The research also explores the issues of return on investment in elearning. It concludes that current methods of assessing directions overemphasise cost reduction and underestimate and undervalue the contribution of elearning to the formation of knowledge capital as well as the value of capability development for the achievement of competitive advantage.

Elearning is a strategic activity with benefits extending beyond competency acquisition to encompass development of shared identity and human capital attributes, which enhance knowledge capital. Organisations that create elearning environments and content within which tacit knowledge can reside and be exchanged will maximise their return on investment.

Elearning is proposed as a fundamental component in how organisations can capture, transfer and extend knowledge resident in individuals, individual relationships and networks that enhance individual collaboration. In the organisational context, elearning is part of the organisation’s continual improvement of effective and efficient learning exchanges. This requires technologies and communication networks that can capture and report data beyond learning to the knowledge and performance management issues that underlie the search for the capabilities to achieve a competitive advantage.
Chapter Proposition

Proposition 10.1
Effective and efficient elearning entails a focus that extends beyond etraining — which enhances current performance in routine tasks — to an examination of the broader role of elearning — which enables collaboration and responsiveness to customers and market opportunities.

Key Themes
The learning organisation approach and organisational learning relationship explored; using elearning to help organisations learn; using elearning to build individual learning and collective identity through elearning exchanges; a system for reporting elearning data and human capital management; how to profile human capital and the link to organisational capabilities; building and positioning a capability inventory within human capital management system; the model for integrating capability management to organisational outcomes; deploying a capability inventory; a model for tying elearning data to knowledge management and HR systems; calculating return on investment for elearning initiatives and systems; and organisational learning as a means to enhance the construction of knowledge capital.
Chapter 10  Organisational Elearning Variables

Graphic Overview of Chapter

Capability Inventory
(Competencies + Identity)
(may include specific attributes; i.e. qualitative or value statements)

PERSON
Profile individual current capability

WORK
Cluster/package of capabilities to outcomes — job/position, career, etc.

LEARNING
Learning attached to each capability

Organisational Outcomes

• Productive capacity
• Shared identity
• Agility

Report, Evaluate and Improve

Learning
Knowledge Management
Performance

Knowledge Capital

Social Capital
Human Capital
Infrastructural Capital
10.1 Introduction

At the same time that organisations are still determining whether elearning is a good investment, most managers are still trying to determine the parameters for an effective elearning strategy. This chapter builds on the previous two chapters’ respective examination of how individual and group or collective variables influence the construction of an elearning strategy.

This chapter also examines how elearning is being advanced at an organisational level. Consistent with the broad-based investigative approach this chapter examines the historical precedents influencing the progress of this agenda. Two key areas are examined: the drive to build learning organisations and the drive to enable organisational learning.

The concepts and principles underlying the study of learning organisation and those covered in the previous chapter on learning communities are not necessarily incompatible. Jarad Kapsa (1997) identifies the usefulness of Senge’s five disciplines (personal mastery, mental models, shared vision, team learning, systems thinking) when building collaborative learning structures, including learning communities. Kapsa, however, argues that the tightly defined learning organisation structures are dissimilar to those that exist in a community based on individual needs and shared values. More open definitions of learning communities are more akin to the field of study dealing with organisational learning.

As with literature and research previously presented in this report, this chapter extends beyond the traditional view of learning as a simple extension of training for skills, i.e. the etraining paradigm. At the heart of any view on deploying elearning to enhance organisational outcomes is the need to appreciate elearning’s role in attracting knowledge. Elearning can do this by providing content, tools and an environment that encourage not only skills transfer but also a converged sense of purpose that spans individuals and groups not necessarily all confined to locations within an organisational structure.

A knowledge base restricted by training systems and procedures may be too narrow to capture knowledge and transfer the capabilities resident in networks external to the organisation. Therefore, any elearning solution must maximise relationships across 'networks' that hold knowledge capital. Networks can be built to encompass individuals outside, as well as inside, the organisation. Network interactions may include electronic transactions that are part of a supply chain or customer service relationships. In fact all interactions represent opportunities for the organisation to learn and acquire valuable knowledge capital.
10.2 Learning Organisations Revisited

This section reinvestigates the concept of the learning organisation in order to re-establish how learning, and for the purposes of this research, elearning, can contribute value to an organisation’s strategic success. The learning organisation approach provides a well established model for accomplishing this end.

When Peter Senge of the MIT Sloan School of Management in Boston wrote *The Fifth Discipline: The Art and Practice of the Learning Organisation* in 1990, he provided the catalyst and framework for expanded interest in the learning organisation. However, Senge neither invented the term learning organisation nor provided a unique framework to analyse the principles of a learning organisation.

For the 15 years prior to 1990, international writers had defined and discussed the concept of a learning organisation (Crombie, 1978; Garatt, 1987). Alistair Crombie, writing in the late 1970s in Australia, was careful to ensure that the learning organisation was advanced only as a ‘utopian’ model. He stated (1978:38) that both the learning organisation and the learning society were:

... stronger in heuristic significance than in empirical reference — they are suggestive of a future ideal, rather than descriptive of present realities.

Overextension of trends towards a learning-driven society and organisation were, in Crombie’s views, overextensions of reality based on ‘utopian visions’ (Crombie, 1978:38).

Another author, John Burgoyne of Lancaster University’s Centre for Study of Management Learning (UK), worked through the late 1980s to consolidate an original framework for creating what he termed a ‘learning company’. He published his findings with Mike Pedler and Tom Boydell in *The Learning Company: Strategy for Sustainable Development* (1991). The authors were explicit in ‘sizing’ how far the theory of a ‘learning company’ could be taken.

*The Learning Company is a vision of what might be possible. It is not brought about simply by training individuals; it can only happen as a result of learning at the whole organization level... it is an organisation that facilitates the learning of all its members and continuously transforms itself.* (Pedler, Burgoyne & Boydell, 1991:1)

Pedler, Burgoyne and Boydell did not suggest that the learning company was a reality, just an ideal paradigm to strive towards. The potential of the concept was promoted but they distanced themselves from any translation of good ideas and principles into ‘the promise of the ‘quick fix’” (1991:3). Learning was advanced as the catalyst for improvement, not a substitute for other management approaches.

Senge differs from Pedler and Boydell because he deliberately intended the learning organisation to provide a ‘management solution’ and to make the creation of a learning organisation a reality. (Senge, 1991:37) Senge’s *Fifth Discipline* (first printed in 1990) focused earlier work and thinking onto a definitive approach to the learning organisation. He wanted to use such an approach to shift how learning is viewed and to challenge the prevailing paradigm of organising work and business. Senge synthesises previous works on organisation learning and the learning
organisation to set forth a new systems approach to organisational management. He intended his work to avoid the piecemeal approach to training and development as part of organisational management (Senge, 1991:42), and to present a total, coherent and holistic framework for study and practice. As Senge (1992a:66) stated:

*Dividing an elephant in half does not produce two small elephants. Living systems have integrity. Their character depends on the whole. The same is true for organisations; to understand the most challenging managerial issues requires seeing the whole system that generates the issues.*

The aim of a learning organisation is to create a compelling corporate vision that encourages employees to constantly think about how they might improve the way that work is conducted.

Senge’s *Fifth Discipline* links an organisation’s capacity to become a learning organisation with its ability to obtain and hold competitive advantage. Senge depicts an organisational environment where individuals continually seek to expand their capacity to create desired results, where new patterns of thinking are nurtured and where people are continually ‘learning how to learn’ together. Such an environment has the potential to make work truly meaningful for employees and substantially increase the profitability of the business.

Senge’s image of a learning organisation builds on a number of past theorists, especially Chris Argyris. Argyris promoted the concepts of single–loop and double–loop learning.

**Figure 10.1 Single–loop, double–loop learning**

Argyris (1962; 1993) saw a single–loop organisation as defensive and eschewing learning. Actions of managers or staff maintained existing norms, rather than detecting errors and correcting them. Thus dynamic planning and a culture that was responsive to the environment were inhibited by the individual's capacity to learn from their actions (Argyris & Schon, 1978:143; Argyris, 1993:193). Alternatively organisations could develop ‘action strategies’ to overcome their inherent organisational defences against behaviours that inhibit responsiveness to external factors (e.g. customers and suppliers) (Argyris, 1993:98–99). Using such action strategies, organisations could use learning to address the organisational culture and
structure, as well as leadership and decision-making styles to achieve improvement actions (Argyris & Schon, 1978:143; Morrison, 1994:25).

Chris Argyris’s legacy was to imbue managers with the concept that they had to promote the transfer of knowledge throughout the organisation in order to ensure that actions were designed to produce intended consequences. Senge promoted this vision to a strategic level, where the enterprise’s competitiveness and capacity to improve were underpinned by learning. He also believed the learning organisation would rest on its ability to recognise how learning shapes futures based on a shared understanding of the ‘current reality’ (Senge, 1992a:250–51).

Senge’s writings reinforce the approach to management education and to training management, which acknowledges that intellectual capacity resides in all employees, not just management (Senge, 1992a:350).

Under a learning organisation approach the individual within the organisation, and the organisation as a whole, has to commit to learn, to continually seek to change existing practices through knowledge acquired by learning, and to respond to the sources of information that stimulate new knowledge and learning (Sefton, Waterhouse & Cooney, 1995:56).

In 1992, Doron Gunzburg identified four characteristics of learning organisations. He isolated these characteristics after returning from an international study of management development where managers were 'hotly' debating the virtue of building learning organisations. Gunzburg (1992:29) believed a learning organisation:

1. Has a climate in which individual workers are encouraged to learn and to develop their full potential;
2. Extends this learning culture to include customers and other significant stakeholders wherever possible;
3. Makes human resource strategy central to business policy; and
4. Provides a continuous process of organisational transformation, based on individual learning, and consequential learning assumptions, goals, norms, etc.

Garvin (1993:79) believed that the epitome of the learning organisation was:

...skilled at creating, acquiring and transferring learning within the organisation to change behaviour that stimulates new or improved performance.

Studies on early learning organisations identified how they commonly display characteristics, including the ability to:

♦ Learn collaboratively, openly and across boundaries;
♦ Value learning;
♦ Invest in promoting learning;
♦ Translate knowledge into action to gain competitive advantage;
♦ Reinforce the importance of an individual’s quest for personal ‘lifelong’ learning;
Encourage ‘experimental and seemingly tangential learning’; and


The features of a learning organisation fundamentally alter some organisational relationships. Education is espoused but more greatly valued where it is contextualised to both develop the individual and reinforce the link with enterprise outcomes. This invariably means universities and other education providers recognise that lifelong learning must become a relationship between the individual, the organisation and the provider to achieve workplace applications (Stern, 1993:3).

While organisational learning may be viewed as a means to enhance an organisation’s capacity to create a climate and culture conducive to change, the competitive advantages that may be gained through performance improvement are the immediate spur for any search to achieve this learning paradigm.

How managers use communication to shape learning and culture can impact strategic actions. Based on such findings, some organisations have adopted participative processes to produce corporate visions that are underpinned by quantifiable and meaningful objectives. These processes are in reality communication processes that encourage learning. The processes are conducted so that management and staff not only understand the strategic goals, but also are committed to their achievement through joint ownership of what they have created.

According to Redding and Catalanello (1994), an organisation advances through five stages as it progresses along the path to becoming a learning organisation. Those five stages are outlined following, and in Figure 10.2.

Stage 1. The start-up company is very busy but there is no effort invested in deciding what people need to know to do their job better. The organisation is learning how to stay afloat rather than introducing formal learning programs.

Stage 2. Training programs are made available through outside providers. Training is viewed as a consumable because the aim of these programs is to fix short-term problems, such as a lack of word-processing skills.

Stage 3. Some in-house training may be offered and there is a greater emphasis on gaining sustainable results from that training. There is still a need for planning, however, as training is not fully coordinated and may focus on ‘flavour-of-the-month’ subjects.

Stage 4. During this stage senior management come to the realisation that it is vital to develop the skills and knowledge of the workforce in order to remain competitive. Training, which is usually conducted offsite, is targeted towards providing a sustainable competitive advantage through a skilled workforce.

Stage 5. At this stage learning is seen as vital to the success of the organisation but there is also a real move to make learning part of the way everyday work is conducted. The organisation encourages employees, using a carefully planned process, to learn by trying new things and experiencing different processes while they are still at work.
The fifth stage typifies the learning organisation. Learning occurs when employees are able to work on new projects that are outside their domain of expertise. These projects or activities promote reflective learning that can stimulate insights into the way they normally perform or work. An example might be when a sales manager joins a production team and learns of how several new, and highly marketable, product features actually work. Another example is when a customer service team invites an experienced worker from another site to discuss how best to meet customer needs. Experiences such as these actually occur in a learning organisation because employees are motivated to improve their existing skills by an organisation that values these skills.

Elearning provides an effective and immediately more cost-effective way of accelerating an organisation’s progress through the five stages. It can be deployed to encourage more collaborative exchanges, or to enable people in multiple locations to complete a common activity.

10.2.1 Establishing a learning culture

Elearning is a critical strategy that can leverage the creation of a learning culture. A learning culture is also a key ingredient of the approach to building a learning organisation. There are two aspects to developing a learning organisation: the organisational element and the individual/team element. Efforts to build a learning environment must work at both levels simultaneously if they are to be successful.
The following chart broadly outlines the steps in the evolution of a learning culture. While they may be considered in conjunction with Figure 2 they actually describe processes that have evolved separately.

**Figure 10.3 Aspects of a learning culture**

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<th>WORLD CLASS</th>
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<td><strong>Coaching and mentoring</strong></td>
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<td><strong>Management of learning</strong></td>
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<td><strong>Promotion of training</strong></td>
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<td><strong>Awareness of training</strong></td>
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(Bowles & Graham, 1994)

**Step 1 — Awareness of training**

At this first step, a few people in the organisation may be committed to learning but they are probably scattered throughout the workplace or restricted to the training department. While these people may serve as examples to others, i.e. they are ‘champions’, their efforts are not coordinated and often go unnoticed.

**Step 2 — Promotion of training**

To move beyond this stage requires an overall commitment to what is known as lifelong learning. According to Senge (1992a; 1992b), this occurs when individuals are committed to expanding their capacity to create desired results, to thinking in new ways and to ‘learning how to learn’ together. Therefore, learning becomes part of an individual’s daily life rather than being something that is restricted to the classroom.

From an individual/team perspective, this step requires valuing learning and being prepared to undertake development in order to achieve the goals of the organisation. From an organisational perspective, this requires providing a vision that employees are prepared to follow and encouraging a learning culture by rewarding success. Organisations must identify individuals or groups with potential and be prepared to change in order to maximise that potential.

**Step 3 — Management of learning**

It is not enough that individuals undertake a learning process; their motivation must be channelled towards achieving organisationally relevant goals so that the learning organisation continues to maintain a competitive advantage. According to Arie de Geus (1988:70), former senior executive at Royal Dutch/Shell:
The ability to learn faster than your competitors may be the only sustainable comparative advantage.

For individuals this means being prepared to modify learning activities to ensure that the activities meet performance criteria. At an organisational level this requires making standards for performance clear and appropriate. Setting specific performance objectives that are related to overall business performance enables all employees to know what is required of them and how their input may provide benefits for all concerned.

**Step 4 — Coaching and mentoring**

Once learning is owned by individuals, and its purpose extends beyond organisational outcomes to recognise individual benefits, it becomes far easier to motivate people to learn. Learning can be encouraged through the development of ‘learning relationships’. Wisdom and expertise resident in longer-term employees can be harnessed through learning channels that enable coaching, mentoring and informal exchanges.

Figure 10.4 represents a consolidated view on how a learning culture may develop in an organisation while corresponding to the steps above.

**Figure 10.4  Continuum of strategies to develop an individual’s capabilities**

1. Fragmented skills and training programs
2. Integrated skills and training programs linked to key organisational outcomes
3. Quality and knowledge management systems that encourage both continuous learning and diffusion of information
4. Organisational learning strategies within a learning organisation approach, which uses learning to build sustainable competitive advantage

Evolution of strategies to enhance the contribution of an individual’s training and development to enterprise outcomes
10.3 Organisational Learning

Organisational learning, in contrast to the learning organisation, focuses on applying and identifying the factors that facilitate individual and organisational learning. Organisational learning is essential in a learning organisation. By itself, however, organisational learning does not make a learning organisation. Nor can it be argued that individual, team and organisational learning are preconditions for a learning organisation (Lessem, 1993:viii).

Organisational learning focuses on structures, systems, the environment in which learning takes place and the processes of interaction between individuals, all of which enable learning. Studies on learning organisations primarily focus on the systemic implementation of learning strategies that develop capabilities at the individual and group level. Unlike those on organisational learning, studies on learning organisations are less likely to emphasise the individual and group capabilities borne by and generated through the networks of interaction.

Organisational learning is closely related to other processes covered, primarily the learning organisation, knowledge management and development of knowledge capital. The following reviews some relevant definitions.

**Knowledge management**
Managing knowledge and learning to expand the *total capabilities* (knowledge, skills, attitude and identity capabilities) within the *domain of the organisation* (individual, team, corporate and community/strategic partners);

**Knowledge capital**
The infrastructural, human and social capital resources that enhance the capabilities available to an organisation for current productive capacity and agility. Knowledge capital may also be called intellectual capital;

**Capabilities**
Competencies (knowledge and skills) and identity (culture, behaviours, traits and roles) held by individuals or through networks of individual interaction that can contribute to an organisation's knowledge capital.

**Learning organisations**
Under a learning organisation approach the individual within the organisation, and the organisation as a whole, has to commit to learn, to continually seek to change existing practices through knowledge acquired by learning, and to respond to the sources of information that stimulate new knowledge and learning.

**Organisational learning**
While organisations are not usually built to learn they do organise functions and processes to complete transactions between individuals within and outside their structure. Such transactions stimulate relationships that can be deliberately
managed to encourage organisational learning through the capture, transfer and generation of knowledge. This knowledge has the potential to advance individual, group and organisational outcomes.

The literature also suggests learning organisations:

- Are adaptive to their external environment;
- Continually enhance their capability to change/adapt;
- Develop collective as well as individual learning; and
- Use the results of learning to achieve better results.

Argyris (1977) also envisaged the above points being present in organisational learning. Argyris believed organisational learning was a process that included the detection as well as the correction of errors (as cited in Malhotra, 1996:65). Argyris contended that organisations learn through individuals acting on the organisation’s behalf and individuals’ learning activities were therefore either facilitated or inhibited by an ecological system of factors (Malhotra, 68). These things combined may be considered an organisational learning system.

Despite the systems level approach to building the learning organisation advocated by Senge (1992), some researchers view the learning organisation approach as a ‘systematic approach’. As such it can actually ignore the diversity of how organisations learn and the vast array of processes that create knowledge or modify existing knowledge (Schulz, 2001). Equally, how individuals interact, transact and learn vary enormously. Unlike advocates of the learning organisation approach, most organisational learning advocates believe the aim is not to create systems that encompass how individuals, and therefore the organisation, learn. It is to accept that learning will occur and organisational learning can be ‘designed, deployed, and led’ to achieve agreed outcomes (Garvin, 1993). It will be the individuals within and outside the organisation who ultimately have to adopt behaviours and a desire to learn and it is up to the organisation to harness this capability to generate the knowledge required to perform and adapt.

Crossan and Hulland (1997:3) suggest organisational learning can be thought of as a ‘system through which knowledge flows in the organisational learning system’. This systems view also extends to seeing learning more mechanistically as a process, very much like any other process managed in an organisation. Organisational learning can be thought of as a:

... system of stocks and flows in the same way we think about a production management system. Concepts like throughput, capacity utilisation, and bottlenecks ... Raw materials, work-in-progress, and finished goods inventory all represent stocks of product, like intellectual capital or knowledge at various stages of development in the process. (Crossan and Hulland, 1997:3)

The Crossan and Hulland definition suggests a very rational management approach common to quality systems, production and operations management. This linear, rational processing approach may not suit all managers or learners. The definition does, however, promote the adoption of the concept by managers traditionally.
schooled in such management disciplines. This distinction between rational and non-rational approaches to organisational learning is significant. Crossan and Hulland advance a rational approach to managing organisational learning as a more attractive systems approach than the learning organisation. Crossan and Hulland identify six assumptions that delineate organisational learning from the learning organisation.

Table 10.1  Delineation of organisational learning from the learning organisation

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Why organisational learning in preference to the learning organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All organisations learn</td>
<td>Patterns of learning vary between and within enterprises (location, client group, teams, levels within the enterprise) and a theory must embrace not only the learning but also its patterns and processes. This will be unique to the enterprise so no single ‘theory’ can provide for variations of differences.</td>
</tr>
<tr>
<td>2. Learning is not an end in itself</td>
<td>Learning goes beyond what individuals can do to examine whether the organisation is skilled at developing new products and able to compete in a complex, changing world.</td>
</tr>
<tr>
<td>3. Organisational learning is more than the learning of individuals within the organisation</td>
<td>There is more to translation of learning than managing individual acquisition of skills and knowledge to generate performance improvement. Learning is embedded in interaction, roles of individuals within groups and across all levels — individual, group and organisational.</td>
</tr>
<tr>
<td>4. There are learning processes that link the levels</td>
<td>Learning is a ‘meta-process’ that needs to be managed with a realisation that individuals absorb knowledge and integrate that knowledge into the team level and institutionalise it at the corporate level.</td>
</tr>
<tr>
<td>5. Organisational learning needs to consider the flow of learning amongst the three levels: individual, group and organisational</td>
<td>This suggests the need for any learning process to integrate individual learning (competencies, capabilities and motivation) with the group level (group dynamics and development of shared understanding) and organisational level (knowledge assets/capital, systems, structure, procedures and culture in the enterprise).</td>
</tr>
<tr>
<td>6. Individuals within the organisation are the ultimate arbiters of organisational learning</td>
<td>Individual perceptions drive the system of knowledge management and building knowledge assets (or intelligence capital) so that measurement of organisational learning success is more than just the organisational goals and strategies to measure individual employee perspectives and understanding.</td>
</tr>
</tbody>
</table>

(See Crossan & Hulland, 1997:4-14)

The distinction between organisational learning and a learning organisation is subtle, but important. The learning organisation as advanced by Senge and his advocates is very much a systems level art and science of using learning to focus organisational design. An organisation can pursue strategies to achieve organisational learning that can underpin much of the learning organisational principles and practices. However, excellence in organisational learning does not necessarily occur only in a learning organisation. In fact many practitioners of organisational learning would not see any
value in building a learning organisation if organisational learning were correctly managed as part of wider management systems.

10.3.1 Building the elearning organisation

As shown in the previous section, authors such as Burgoyne and Crombie emphasise the need to be sceptical about learning organisation theories and approaches that relate to organisational management. Their warnings are included here to provide a sense of caution. Unfortunately, from the mid- to late 1990s many companies claimed to be learning organisation with no real basis for their claim.

Elearning is in danger of being pulled into the same quagmire surrounding research on building the learning organisation. Even now there are calls for the creation of the 'elearning organisation', a learning organisation that harnesses elearning or an ebusiness that uses learning to accelerate change. In both cases the aim is to rapidly acquire and transfer knowledge in order to build high-value knowledge capital.

To provide a clearer picture of how to build a learning organisation using elearning, it is important first to further clarify how to build a learning organisation.

Some advocates of the learning organisation argue that it can be achieved through an elearning function within an organisation working in partnership with the core business activities. Such an alliance can occur where the success of the elearning services and products are measured against the enterprise's goals and objectives. This 'value-adding' role of elearning is strongly centred on learning processes and delivery of training mirroring and underpinning the enterprise's search for quality improvement and overall market competitiveness.

While the components of this approach are logical and desirable, the available literature does not conclusively prove how an increased focus on elearning can transform an organisation into a learning organisation. One might suggest that the fundamental conditions for the learning-push model have been created; where learning is a supplier of services and pushes (supply driven) a service and/or product that influences users, in this case, other business units or processes. The learning-push proponents argue that if elearning builds a strong strategic role for its activities then organisational learning and performance will follow. However, the following questions must be asked:

♦ Do managers, especially senior managers in small and medium-sized organisations, allocate learning sufficient status or resources to respond to a learning-driven initiative to create a learning organisation?

♦ Can the concept of learning ‘partnering’, by both an internal function and an external provider of training and development, support organisational strategic goals and objectives if this strategic plan is too short-term focused (profit) or poorly framed?

♦ Does the prevailing management approach prefer supply-driven systems or demand-driven situations, where managers make demands on learning and human resource functions to supply these requirements (a so-called learning–pull situation)?

♦ If the learning organisation uses a total systems approach and philosophy embracing how managers manage, how can elearning
create partnerships, meet organisational goals and objectives, and still change management mindsets?

Creating learning partnerships, focusing learning on the organisation’s strategic objectives and measuring elearning activities’ contribution to business success do not necessarily create the preconditions for a learning organisation.

Elearning has also been advanced as a critical component in advancing continuous quality improvement systems. Garvin (1993) consolidated the view that the learning organisation was integral to an organisation’s search for quality improvement. Garvin paralleled the implementation of total quality management (TQM) practices and principles with the continuous learning by individuals, teams and the company to improve productivity and performance. Quality gurus such as the American Robert Galvin introduced their versions of quality reform concepts such as a ‘cycle of learning’ (Thompson, 1992:58.). This concept proposes a cycle be built into quality systems, where organisations revise the process of the total business to meet individual customer needs based on suggestions made by individuals who work in areas delivering customer service or products. Everyone in the chain learns how they contribute to the entire system and are encouraged to make suggestions from their perspective, with the idea that they already know their own part well and if imbued with a concept of and commitment to the whole, they might even better be able to suggest how to improve parts.

To achieve continuous quality improvement (CQI), organisations have to generate a shared vision of quality that transcends wider corporate and business strategic goals and objectives. Individuals have to learn not only how to perform in conformance with requirements, but also how to ‘think’. Senge believed that Deming’s (for instance, 1982 and 1986) approach to quality was ‘... essentially about creating learning organisations’ (1991:44). The focus of quality improvement is on individuals and teams. Managers have to move from a role as controllers to a role of empowering teams of individuals to achieve business outcomes.

Nevertheless, no research has been presented to suggest that all quality improvement strategies require learning organisation principles to be implemented before they can succeed. Nor is there evidence to suggest that the implementation of TQM or CQI creates the preconditions for a learning organisation; this applies equally to total quality service (TSC), quality control and quality assurance (QC and QA), total quality control (TQC), the national and international quality and standards regimes (i.e. International Standards Organisation), and similar formal quality systems.

Quality improvement may occur and could require a focus on learning organisation practices and principles. However, quality improvement, as with the learning organisation approach, is a holistic, systematic approach. While the learning organisation approach may be compatible with the quality improvement approach used by an organisation, organisations may choose different approaches to learning. Continuous improvement, whether at the level of an individual, group, organisation or process, necessitates learning, not just a learning organisation approach.

10.3.2 Using elearning to assist organisations to learn

As noted previously, one of the main principles of learning organisations is to promote organisational agility and adaptability. To do this, participants within
organisations must not be inhibited by what can variously be termed organisational mindsets, frames of reference or identity factors. Inculcation of new ideas or perspectives into all individuals within an organisation may limit overall learning capacity. Some aspects of working life limit organisational participants’ capacity to absorb, adopt, innovate or apply new ideas.

Studies on learning organisations have two major focuses. The first is the need for the organisation to have a more inward-looking focus on the individual within the organisation, and to identify and more fully utilise knowledge and intellectual capacity and capabilities.

The second focus is outward looking. To achieve strategic outcomes from elearning, the organisation needs to have an outward-looking focus on the complexity of interpersonal relationships and not hold views bounded by specific organisational structures. That tacit knowledge can be encultured or framed within identity capabilities that stress the importance of individual relationships and how they transfer knowledge into an organisation as a utilisable asset.

Workplace training in many Western countries shifted in the 1990s to a competency-based approach. A number of advantages and problems have been associated with competencies as they have been implemented in different countries, and the particular case of Australia will be used here as an illustration.

One major concern is the emphasis that skills or competency-based training places on task skills and assessment based on their demonstration. Skills are the traditional component of labour in organisations. The knowledge component of skills has been somewhat sidelined by the emphasis on skills, and therefore has not been fully integrated into the actual holistic ‘work activity’.

Task-focused learning does not centre on the factors that encourage agility and continuous performance improvement. Developing the ‘highly valued’ capabilities that move beyond current performance outcomes to permit rapid responsiveness to customers and markets requires a focus beyond training for routine task completion (Field, 1996: 24-25).

Using elearning for training outcomes should be differentiated from elearning; etraining does not have the same broad emphasis and organisational outcomes as elearning. The outcomes of etraining are not as optimal as those achieved by an efficient and effective elearning system. This is especially so in respect to the capture and transfer of tacit (uncodified, embedded) knowledge; traditional training structures are not as effective in this area.

It is not that organisational learning models underrate tacit knowledge; it is just that the systems seem to limit how learning can be used to generate knowledge assets tied to individual networks but not tied to purpose. In essence social capital is not fully addressed by a focus only on learning that is tied to the organisational purpose for learning.

Achieving a learning organisation status requires a frame of reference beyond those usually associated with the formal structures and history of the organisation. Systems have to be able to embrace the complexity of the individual and their relationships with communities inside and outside the organisation. Some knowledge assets,
especially social capital, reside in relationships, and the social capital cannot be tied to organisational purpose. To maximise individual performance, organisational capabilities must embrace the capacity to learn in an organisation, not just centre on the competencies required to perform for the purpose of immediate organisational productivity.

A strategic approach to learning is about enhancing organisational learning to source those capabilities required to enhance productive capacity. This approach acknowledges that the integration of learning with management systems under learning organisation principles and practices has real value. However, the learning organisation approach is inadequate in terms of using learning to maximise productive capacity and to promote organisational learning that requires an emphasis on the individual and how they source knowledge from inside and outside the organisation.

Elearning can promote organisational learning. In the previous sections a distinction was made between approaches promoting learning organisations and those seeking to encourage how organisations learn in order to generate knowledge. Elearning as advanced in an organisational setting can enhance how knowledge acquisition and transfer occur in order to build capabilities. Capabilities, as described in previous chapters, are composed of:

**Competence + Identity**

Capabilities include descriptors indicating all the dimensions that learning can address while building human capital, which contributes towards an organisation’s productive capacity and agility. While this approach can be used within a learning organisation framework it is more consistent with the principles underpinning a focus on organisational learning and how individuals learn.

10.3.3 **Knowledge capital requires organisations to focus on using elearning to build individual learning and collective identity**

Peter Senge codified the concept of mental models in his approach to building the learning organisation. He stated (1992a:7) that:

> I am increasingly convinced that this lack of implementation is not the result of poor management. Rather, the process of adoption fails because the new ideas are at such variance with mental models currently accepted by the organization. More specifically, new insights fail to get put into practice because they conflict with deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting.

Learning still uses the current frames of reference to try to alter the focus of organisational development. A formula is sought for elearning development in terms that modern managers can accommodate within their desire to use economic and financial measures that are tied to process improvement and competitive advantage. Elearning development as uncovered by previous research suggests an inward focus on the potential of the individual and their capacity to acquire and utilise knowledge. It also requires an outward focus to enable the development of capabilities (competence + identity) and the capture of knowledge assets that reside in the complex interpersonal relationships that make up any organisation.
For elearning to promote competency development that is transferred into performance improvement, the complexity of individual and collective interrelationships must be considered. For organisations the identification of interpersonal relationships necessitates the definition of culture, including shared beliefs, values, roles and patterns of behaviour. This definition then makes up the identity of individuals in the organisation and how insiders and outsiders view the organisation.

The traditional training structures and processes stress conformity as a cohesive factor providing unity of purpose for participants. Inculcation of belief systems and rewards occur through participation in training while diversity in the learning context is more difficult to encompass. The idea is that if people all metaphorically think and act like machines, perhaps even the sophisticated computer, they interact efficiently, remove variations in behaviour and generate shared values, views and attitudes that promote cohesion. In a certain and unchanging environment this attitude promotes process efficiencies and reduces the coordinating activities that managers within a hierarchical structure need to carry out.

In a rapidly changing environment, the lack of diversity of values, views and attitudes limits organisational agility. Bureaucratisation is the epitome of a cohesive organisational culture; anyone who has dealt with a bureaucratic organisation will attest to the difficulties faced when presenting non-routine problems (as epitomised by classic expressions such as red tape and Catch 22). This type is the antithesis to the customer-responsive, service-oriented organisation.

The development of openness and organisational cultures that balance functional efficiency with open systems (McGill, Slocum & Lei, 1992) are strategies seen to facilitate the development of a learning organisation; that is, the ability to take on and learn from diverse values, beliefs and experiences (Schrage, 1990:Ch. 5).

**Figure 10.5  Promoting shared identities through elearning exchanges**

Individual purpose and learning trajectories vary. However, learning is a means for not only collaboration but also co-orientation of behaviours and alignment of personal capabilities to group and organisational outcomes. Within this frame of reference, elearning not only can reinforce performance outcomes but also can instil a sense of identity based on activities that hold meaning for each individual within the collective effort.
Traditional training structures and procedures inculcate an identity that limits or underrates:

1. The complexity of the individual; and
2. The complexity of interpersonal relationships.

As suggested in the figure above, elearning can be deployed to stimulate organisational learning that has an inward-looking focus on the individual while embracing an outward-looking focus on interpersonal relationships and collaboration to collective ends. This collaboration and the ‘network’ of relationships between individuals may exist beyond the organisational boundaries. This collaborative network enables organisational learning to form knowledge that directly contributes to organisational outcomes. Collaborative networks can also be created by using elearning to provide an improved means to access and more fully exchange individual and collective capabilities.
10.4 Reporting Elearning Data and Human Capital Management

This section provides insight into how capabilities can be managed and mapped to build inventories of knowledge for enhancing and evaluating the contribution of knowledge to productive outcomes. The examples draw from systems implemented in companies across a range of industries and locations in Australia (for example, major retailers, wholesalers and local governments; see Bowles, 1998; Bowles & Baker, 1998; Bowles, 1999: Chapter 6).

Capabilities, as previously noted in Chapter 5, focus on more than skills and knowledge. Equally, a capability profile may be generated for a person, position, occupation area, community (collection of individuals or positions, process, team, job family, etc. with convergent purpose) and the organisation. The aim of this chapter is to present an understanding of how capabilities form a single currency that enables organisations to integrate elearning targeting, reporting and evaluation with multiple knowledge management, performance and other human resource activities within a standardised framework.

While research in this report focuses on the underlying frameworks required to use elearning to reintegrate knowledge–learning–performance, examples exist (Bowles & Baker, 1998; Mohrman, Galbraith & Lawler, 1998; Tovstiga & Birchall, 2002) of how this framework may be completed. The practical aspect of developing elearning is the ability to lever infrastructural, human and social capital both inside and outside the organisation. This promotes the overall ability to access, absorb and utilise human capital assets.

Mapping or auditing capability inventories is a way of measuring existing capabilities within the organisation and measuring the impact that individual and organisational capabilities have on current and future organisational performance requirements.

This section takes a reporting, rather than an analytical, role to provide some possible starting points for the mapping of capabilities within organisations and for integrating measurement and reporting across individual elearning and organisational performance. The profiling and mapping capabilities can be an internal process carried out by the organisation, or it can be one that is integrated into a learning community (a community for participants to learn together and where learning is gained horizontally across boundaries unlike communities of practice where learning is most often gained horizontally but in relation to vertical relationships — job roles, expertise, etc.).

10.4.1 Profiling individuals within organisations

Capability profiling requires the identification of the skills, knowledge and identity factors that support the ability of the organisation, team and individual to attain required outcomes. The outcomes indicate the standards for learning, performance and capabilities necessary when responding to future customer and market demands.

Functional job profiling

Profiling of individuals within organisations has reflected traditional management principles; that is, jobs and components of jobs have been seen as functionally
specific. Jobs therefore have been described in terms of the functions or tasks they fill without reference to the cultural or communications environment of the organisation.

While treating jobs as cogs in the machine does produce structural efficiencies, it does not recognise the truly productive aspects of individuals, that is, the ability to adapt to changing circumstances and the individual ability to innovate and find solutions to problems. Having individuals fit into clearly defined roles reduces capabilities for performance and inhibits innovation.

Humans are not predictable, mechanistic cogs in the organisational machine as portrayed in Charlie Chaplin’s *Modern Times*, the famous satire of urban industrial working conditions in the first half of the 20th century, featuring Chaplin as the ‘Little Tramp’ working on the assembly line. See including video clip [http://course1.winona.msus.edu/pjohnson/h140/modern.htm](http://course1.winona.msus.edu/pjohnson/h140/modern.htm)

Profiling human capital

Business profiling as it is currently undertaken provides an identification of the skills gap in performing current jobs within the organisation. Skills-based needs analyses have identified functional expectations of positions. These analyses are most successful where specific functional positions are based on job activities within processes that achieve defined process outcomes. A skills-based profiling of jobs is limited in identifying knowledge components of jobs.

Skills-based descriptions of outcomes and jobs echo more mechanistic forms of organisational design and tend to lock in structural relationships and many different forms of central authority and control.

Psychological testing of knowledge or non-skills components of a job has been limited to general traits gauged against existing office holders that are considered ‘proficient’. It has not focused on an individual’s capability or capacity to perform.

Traits have been measured to determine behavioural compatibility between individuals and job roles; these have been retrospective judgments by researchers and managers in terms of individual traits that have been seen to relate to performance in particular jobs.

The identification and delivery of knowledge components of jobs at least at the management level have been provided through educational streams; universities have provided functional job-related vocational education through post-graduate study. Management competencies have at least indirectly been identified in relation to general educational qualifications.

Capability inventories are a dynamic business tool; they are the embodiment of the competencies, cognitive factors and experience required to achieve competitiveness as well as the basis for framing training and development, career development and organisational development.
The following table identifies some of the differences between current skills profiling and capabilities within organisations.

### Table 10.2 Comparison between skills-based audits and capability inventories

<table>
<thead>
<tr>
<th>Skills-Based Approach</th>
<th>Capability Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasks can be described using a single descriptor</td>
<td>Tasks vary with time and situations and interpretation of data must consider these variables</td>
</tr>
<tr>
<td>Information is based on current performance data and projections</td>
<td>People’s perceptions are an important variable to measure</td>
</tr>
<tr>
<td>Reality can be quantified</td>
<td>Actions define current reality</td>
</tr>
<tr>
<td>Logic based</td>
<td>Value based</td>
</tr>
<tr>
<td>Performance is real and can be quantified if the correct instruments are used</td>
<td>Individuals can adapt to context to complete task</td>
</tr>
<tr>
<td>Training-embedded behaviour</td>
<td>Training continually redefines culture</td>
</tr>
<tr>
<td>Tasks define jobs</td>
<td>Tasks may define multiple purposes and futures</td>
</tr>
<tr>
<td>Individuals need job descriptions to define performance expectations</td>
<td>Job descriptions rarely reflect current performance reality but help to describe expectations and career pathways</td>
</tr>
<tr>
<td>Skills analyses define the portability of individual competencies between jobs</td>
<td>Capabilities define multiple futures</td>
</tr>
<tr>
<td>Defines current job roles within organisations</td>
<td>Identifies organisational performance needs</td>
</tr>
<tr>
<td>Provides efficiency</td>
<td>Provides adaptability</td>
</tr>
<tr>
<td>Focus is on job performance</td>
<td>Focus is on organisational outcomes</td>
</tr>
</tbody>
</table>

Skills-based profiling focuses on functional processes and as such produces task efficiencies that are, however, one step removed from organisational outcomes. Therefore, there is a focus on the processes involved and not the outcomes needed to be achieved; it also reduces the ability of the organisation to adapt to changes in the operating environment.

Capability profiling, on the other hand, is linked to strategic outcomes for the organisation and the readiness to continually change and meet new challenges. Participants’ roles are directly related to key result areas for the organisation. Functional efficiency is reduced but innovation and agility are increased.

#### 10.4.2 Linking individual and organisational capabilities

Within the organisation, individual and organisational performance must be aligned to ensure that energy and effort are not wasted. As previously noted, one problem associated with using capabilities rather than functionally specific job roles is that it sacrifices efficiency for effectiveness or a focus on outcomes. The key to the process of aligning individual performance to shared outcomes is the ability to develop a ‘shared mental model’ or ‘shared frame of reference’ that can drive activity within groups or within the organisation to provide a focus for individual efforts.

The following table identifies the alignment that needs to take place between organisational and individual capability management.
## Table 10.3 Capabilities and the three levels of organisation application

<table>
<thead>
<tr>
<th>Performance Variables</th>
<th>Organisational Level</th>
<th>Group/Team/Process Level</th>
<th>Individual Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Goals/ Purpose</strong></td>
<td>Is the organisational purpose known and are strategic goals ‘in tune’ with the reality of economic, political and cultural forces?</td>
<td>Do the process goals enable people to work together to achieve both organisational and individual ends?</td>
<td>Are the professional and personal goals of individuals consistent with that of the organisation?</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td>Does the enterprise system provide structure, policy and creative frameworks that support improved ways of attaining performance?</td>
<td>Are processes designed to permit individuals and groups to modify systems to ensure that they meet anticipated contingencies?</td>
<td>Are individual styles of learning and creative processes respected?</td>
</tr>
<tr>
<td><strong>Expertise</strong></td>
<td>Does the organisation select for capabilities (e.g. for cultural ‘fit’ as much as ‘skills’)?</td>
<td>Are processes and teams developing expertise to respond to change and new customer demands?</td>
<td>Do individuals have the applied competencies to master both task performance and work in a specific context?</td>
</tr>
<tr>
<td><strong>Future Capacity</strong></td>
<td>Does the enterprise manage human, infrastructure and social capital to achieve its mission/goals?</td>
<td>Are management systems and processes designed to encourage learning that improves current and future capacity?</td>
<td>Does the individual want to perform, learn and respond to customer demands?</td>
</tr>
<tr>
<td><strong>Cultural Identity</strong></td>
<td>Is there a sense of shared identity and convergence of values, beliefs and norms to support desired performance?</td>
<td>Are interrelationships identified and managed to encourage diversity, creativity and innovation while achieving team and process outcomes?</td>
<td>Is the individual committed to work and innovation while respecting divergent views and ideas?</td>
</tr>
</tbody>
</table>

(See also Ruona & Lyford-Nojima, 1997:791)

### 10.4.3 Building a capability inventory

The following figure depicts how a capability inventory can help integrate different components of an organisation’s human resource management system. The unshaded boxes indicate the strategic level activities (cross-functional and collective), and the shaded boxes indicate more individual and team level performance and learning management or operationally focused activities.
Building a capability inventory to serve multiple functions is not easy. It presupposes that management acknowledges learning as a strategic activity, and that the contribution of learning can be measured in terms of current performance and future organisational competitiveness (productive capacity). Where adopted, the capability approach has evidenced that training for individual development has an immediate outcome and rationale that can be related to the overall effort to build human capital (Bowles, 1999).

Capabilities can be mapped by building on existing measurement systems. Many of the existing measurement systems are generic across organisations and functionally specific for individual jobs and roles within the organisation. Customisation of an organisation’s specific conditions or circumstances can provide a picture of possible individual contributions towards organisational performance. As has been identified in the previous section all individual traits and skills must be mapped to organisational goals or key result areas. The key is that rather than relate an individual to a job, the individual’s capacity to contribute to organisational performance is identified.
Table 10.4 Traditional points for collecting data for a capability inventory

<table>
<thead>
<tr>
<th>Capability Area</th>
<th>Examples of Information Collection Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competencies (skills and knowledge)</td>
<td><em>Skills and knowledge</em> — Productivity sheets, downtime, checklists, procedures manuals, diagnostic ratings, training programs, job descriptions, job analysis forms, skills audits, occupational analysis data, industrial awards, occupational and industry classification data, performance improvement targets. <em>Attitudes and values</em> — Attitude surveys, value and climate audits, individual job satisfaction indices, educational programs, job weighting scales.</td>
</tr>
</tbody>
</table>
| Identity (culture, roles, behaviours, traits) | *Cultural identity* — Cultural audits, climate audits, job satisfaction surveys.  
*Experience* — Job selection frameworks, personnel records, job weighting scales, performance appraisal data.  
*Levels of interaction and communication* — Organisational structures, span of control documentation, workflow systems, quality system work procedures, job sampling, information system audits. |

10.4.4 Integrating capability reporting and management

Management information systems provide the focus for capability management. Developing data collection systems — that can map the development of skills, educational qualifications, experience and expertise gained externally to provide information on individual and group capability to reach outcomes within the organisation — provides an analytical framework to decide upon future capacity to meet organisational performance outcomes and a database for sourcing skills and building capability profiles.

Solutions in the form of a database that not only can collect relevant training and education information but also can translate this data into management reports are essential. In effect a data bureau under the control of the enterprise, or managed on its behalf, can become the hub of an HR system. Not only can its approach underpin learning and individual performance outcomes reporting and recording requirements for the organisation, but it also can streamline and integrate the data-driving capability reporting for human capital at all levels (e.g. the individual, business unit, a region or business partners such as suppliers, training providers, contractors).

The use of a capability-based reporting system permits the enterprise to ensure that all elearning delivery and assessment activities:

- Relate to on-the-job outcomes wherever possible;
- Recognise an individual’s current capabilities;
- Map learning requirements against potential work placements;
- Maximise the placement of an individual in work to fulfil the employer’s job performance requirements (when, where, how, etc.);
- Generate cost profiles for workplace development activities;
- Maintain a resource schedule (physical, human and time based);
Generate capability profiles for any mix of individual, group, enterprise or strategic partners;
Manage suitably qualified elearning vendors and providers, assessors, coaches and mentors; and
Integrate existing elearning with tools and procedures used in the workplace.

There must be value in such a system for the individual. The capability-based approach to learning, performance and knowledge management appears to allow internal recognition of individuals’ skills; in addition, individuals’ development provides linkages to external elearning programs. Irrespective of how the enterprise conducts elearning programs, all curricula can be designed or customised to deliver qualifications or credits towards qualifications for any individual/employee. The linkages between organisationally specific capabilities and future learning pathways should be maintained if the aim is to maximise possible developmental outcomes available to an individual.

Figure 10.8 illustrates a capability-based approach to creating and managing learning and performance. It also summarises a system based on observations reported in this chapter.

**Figure 10.8 Integrated data-driven capability management inventory**

Matching capability profiles to individuals, work or career, and learning can integrate individual, job and business outcomes. This is managed by a database that permits managers and nominated individuals to ensure that staff are both aware of job requirements and focused on completing training that meets either immediate job needs or career development requirements.
Figure 10.9 Mapping person — work — learning

(After Bowles & Wilcox, 1995)

Capability profiles provide for an integrated human capital reporting system. Knowledge assets possessed by individuals can be confirmed, moved or acquired through recruitment of personnel, management of individual training and development, assessment of performance and utilisation of career and succession planning reports.
### Table 10.5 Relationship between capability mapping and HRD functions

<table>
<thead>
<tr>
<th>Match this</th>
<th>Profiled using these for</th>
<th>Value-Adds to Existing Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Match</strong></td>
<td>Individual’s Profile</td>
<td>Learning Profile</td>
</tr>
<tr>
<td>Relates capabilities required for performance in a specific job, job family (i.e. occupation or team) or sector.</td>
<td>An individual’s ability to work in a specific job and ability to progress into a career area and current capability to fill a vacant job can be ‘matched’.</td>
<td>Learning required for a job can be ‘matched’.</td>
</tr>
<tr>
<td><strong>Person Match</strong></td>
<td>Job Profile</td>
<td>Learning Profile</td>
</tr>
<tr>
<td>Enables individuals to be profiled through a database against learning that they have completed and may be recognised through qualifications.</td>
<td>An individual may choose future job or career moves and confirm competencies and learning required for a position.</td>
<td>Individual’s existing qualification or current capacity may be recorded.</td>
</tr>
<tr>
<td><strong>Learning Match</strong></td>
<td>Individual’s Profile</td>
<td>Job Profile</td>
</tr>
<tr>
<td>Relates learning and sources of learning required to satisfy the capabilities for an individual choosing a career path or a specific qualification.</td>
<td>Training and education can be packaged for an individual seeking to fill capability gaps required for a job or career path.</td>
<td>Training can be packaged for a job and all individuals seeking the position/job.</td>
</tr>
</tbody>
</table>

### 10.4.5 Capturing and utilising elearning usage data (a knowledge repository)

A database capability management information system can be developed within organisations to provide capability profiling and reporting systems, which can be benchmarked across organisations. The database can provide selected access based on agreed security parameters, and facilitate:

- Maintenance of a central repository related to relevant industry, occupational and organisational learning and performance;
- Establishment and management of quality-assured, accessible and consistent capability and competency reporting and recognition frameworks;
- Transfer of learning attainment by individuals into further training and/or career pathways;
Tracking and reporting of capability acquisition by individuals, teams, jobs/occupational areas, elearning courses/modules, workplaces, regions, etc.;

- Tracking and administration of registered elearning vendors, providers and assessors;
- Reporting and trend analysis of elearning course completion, ROI and the like;
- Mapping and monitoring of actual overall organisational capability acquisition (responsiveness and speed to performance proficiency);
- Surveying of special compliance or project needs (e.g. OH&S, insurance training);
- Streaming between in-house, vendor and formal qualification-based courses.

The development of a capability inventory within or external to organisations may be deployed to achieve the following outcomes typified by the implementation of similar systems in Woolworths and other Australian organisations.

**Figure 10.10 Deploying a capability inventory**

By storing and/or interfacing to information, the capability database can:
♦ Maintain and disseminate:
  - Capability profiles of individuals
  - Registers of all elearning and other courses relevant to an organisation
  - Registers of approved providers for relevant courses
  - Registers of compliance or competency-based industry (trade, etc.) requirements
  - Registers of qualified coaches, trainers, assessors, etc.;
♦ Maintain, map and link (by matching) workplace performance activities against learning and assessment requirements for a course;
♦ Analyse and report on the acquisition of capabilities of individuals by location, by course, by date, etc.;
♦ Analyse and report on the provision of courses by provider, by region, by workplace, by type (rural/remote, etc.);
♦ Evaluate reporting and analyse the activity of courses, providers and assessors; and
♦ Monitor customer satisfaction by obtaining user feedback on the scope and efficiency of the elearning services.

10.4.6 Integration of capability with job profiles and targeting training, recruitment and selection

Figure 10. 11 Using capability profiles to define performance and learning for a job
N.B. All identifying numbers for the capabilities are examples. Each would have a formal capability profile and code derived by the organisation. The eight levels of learning and performance shown are based on the eight levels of the Australian Qualifications Framework, a benchmark for defining standards of performance and qualifications across industries and occupations. The above process would also target recruitment, selection and succession planning activities. The capabilities (competencies and other identity descriptors) for the profiled individual show significant gaps between capabilities held and those required for the position. Gaps could equate to elearning/training needs or a recruitment decision, for example, selection of another individual with a close profile match. Unrealistic expectations related to actual job performance would stand out starkly where the capabilities were not possessed by the individual or group to attain actual performance as specified for a task or job.

10.4.7 Mapping elearning to recognised qualifications

Achievement of individual capabilities and competencies within a specific workplace performance can be linked to formal qualifications for each individual. This can extend to all levels of the organisation and not just apply to traineeships and apprenticeships. As capability profiles move up the employment levels, managers could increasingly have vocational and trade qualifications augmented, or replaced by university, degree-based educational qualifications. The individual may also have degree or professional qualifications updated by refresher courses, by short courses on new rends, or graduated into higher level research-based degrees such as the Ph. D.
Figure 10.13 Formal qualifications and organisational levels of capability (an Australian example)
10.4.8 Linking elearning data to HR systems

Standards promote the integration of recruitment, selection and job design activities. This requirement impacts job design, the formation of teams and training within a quality service environment.

Figure 10.14 Company competency standards enhance existing strategic activities

Shaded areas represent the alignment of individual learning to team/process and organisational level learning required to deliver productive capacity.
### 10.4.9 Using capability data to map to position descriptions

The following position descriptions are conceptual outlines of how capabilities can be integrated within traditional position descriptions using responsibility, task and accountability profiles. This example is based on versions used by several organisations including government bodies and one the largest corporations in Australia, Woolworths.

**Figure 10.15 Capability data to map to position descriptions**

<table>
<thead>
<tr>
<th>JOB DESCRIPTION FORMAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division:</td>
</tr>
<tr>
<td>Department:</td>
</tr>
<tr>
<td>Team/Group:</td>
</tr>
<tr>
<td>Position:</td>
</tr>
<tr>
<td>Grade:</td>
</tr>
<tr>
<td>Award/Agreement:</td>
</tr>
<tr>
<td>Responsible to:</td>
</tr>
<tr>
<td>Positions Supervised:</td>
</tr>
<tr>
<td>Enterprise Team Membership:</td>
</tr>
</tbody>
</table>

**Purpose/Position Specifications**

<table>
<thead>
<tr>
<th>Responsibilities and Accountabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRA Responsibilities</td>
</tr>
<tr>
<td>(Number from Corporate Plan and/or Number from Business or Work Team Plan)</td>
</tr>
<tr>
<td>Job Performance Indicators</td>
</tr>
<tr>
<td>(List or attach Job Performance Plan)</td>
</tr>
</tbody>
</table>

**Guiding Values/Principles**

**Identity Attributes —**

(Job and Performance Context and Indicators, Reporting Relationships)

**Position Competencies**

1
1.1
1.2
2
2.1

(Bowles, 1999:120)

An example drawn from existing job descriptions

- How the function fits into the corporate system
- The internal and external ‘client’ relationship
- The performance context and the function’s importance

Overall outcomes, expectations of incumbent and position responsibilities in brief

Performance described in terms of quality, cost, time or human elements

Standards described may be from quality outcomes

Organisation or team/unit values relevant to position

How results are to be achieved and supported

- Job competencies described for job duties and tasks required by person achieving job performance outcomes/standards
- Can be a list of numbers that parallel job/level standards
10.5 Elearning — Return on Investment and Beyond

This section is concerned with how the potential of elearning for an organisation is evaluated in terms of return on investment (ROI) methodologies. In particular, it focuses on the assumptions, issues and dynamics that impact the effectiveness and validity of this evaluation process.

The majority of existing literature on evaluating the organisational value of elearning centres on measuring return on investment. However, it is becoming increasingly apparent that such an approach is incomplete and, review of literature undertaken by this Investigative Research Report would suggest, myopic. For this reason, it is proposed that a consideration of the assumptions, issues and dynamics surrounding elearning evaluation is necessary.

10.5.1 Risks, complexities and the need for a balanced approach to elearning evaluation

Elearning in any organisation begins as a concept. People endeavour to give this concept life within the context and activities of their organisation. This presents some interesting challenges, mainly because gaining the organisation’s attention for and investment in an elearning initiative depends more on the nature of organisational processes than on the nature of elearning.

The competitive and dynamic nature of the modern business environment means that the survival and success of an organisation hinges on which investments it makes to change or improve its activities. In these circumstances, a key task of an organisation’s management is to consider and adequately evaluate a range of investment options. This task encompasses a challenge: being able to identify a diverse range of options can make it difficult to find a common basis for their evaluation. The challenge tends to be resolved in two main ways: by using financial approaches, such as return on investment (ROI); and by evaluating against the outcomes and strategies accepted by decision-makers. In describing the characteristics that define an effective ‘internal marketplace for innovation’, Shelton (2001:15) observes the following:

*Inside the company, innovators actually “sell” management their creative ideas—embodied in R&D projects, product-development collaborations, or strategic alliances. If management likes what it sees, the management team funds projects based on the perceived commercial value to the company. Otherwise, management holds back on funding. And across the organization, everyone knows that no amount of cheerleading will make an innovation successful in the external market if the company’s internal marketplace does not value it for both its creative and commercial promise.*

What does this mean for elearning? To gain the attention and investment of an organisation, proponents of elearning must become successful participants in this internal marketplace of ideas on the future for their organisation; they must ‘sell’ the value of elearning in a way that transcends alternatives. However, proponents of elearning may face a number of challenges in this internal marketplace. Briefly, these include:
The diverse areas that need to be addressed in forming an elearning initiative, including HR, finance, technology, senior management and internal clients;

An apparent lack of familiarity of HR/training professionals in engaging in the organisational processes that surround the proposal of organisation-wide or strategic projects;

The high level of initial investment and costs associated with elearning projects, compared with pre-existing levels of HR investment and uncertainty over the long-term pay-offs;

Uncertainty over the most appropriate managerial and functional ‘home’ for elearning within an organisation, whether in HR, IT or elsewhere;

The technologies for elearning are emerging, can be complex, and in large part tend to be beyond the day-to-day experience of most HR/training professionals;

The issues of efficient and effective learning deployment tend to be beyond the day-to-day experience of decision-makers and technology professionals;

The if-it-ain’t-broke mentality;

Other potentially related initiatives, such as knowledge management and customer relationship management, can cloud and distract efforts towards elearning; and

Given the prospect for cost savings, elearning can be almost too easy to ‘sell’ to the decision-makers of an organisation without justifying its associated impact on processes and existing modes of learning.

In short, despite the prospect of significant benefits, elearning can represent a minefield of risks and complexities for an organisation. Therefore the challenge, amid these risks and complexities, is to undertake a well considered and balanced evaluation of elearning.

### 10.5.2 Spanning a knowledge gap

Linder and Cantrell (2001:2) explain that:

*A business model is your company’s logic for making money in the current business environment. It includes the value propositions you work out with all your important stakeholders and the operations you put in place to make good on your promises and to make use of what you get in return.*

This aligns with Drucker’s (1994) view that ‘every organisation, whether a business or not, has a theory of the business’, and that this theory is made up of ‘assumptions that shape [the] organisation’s behaviour, dictate its decisions about what to do and what not to do, and define what the organisation considers meaningful results’.

For management to accept and invest in elearning, elearning needs to become a part of the theory and logic used to explain and understand the organisation. This development is not something that tends to happen quickly; it seems to be the case...
that new concepts achieve acceptance only when they prove themselves. And, as these concepts and their results become established, progressively higher degrees of organisational utilisation and benefit become achievable. In this way, the progress of elearning within an organisation may follow a pathway of emphasis and impact equivalent to the following (Academy Internet, 2001:6).

**Figure 10.16 Evolving elearning and its impact on business**

The need to reach the senior and strategic decision-makers of an organisation emerges because elearning can require significant upfront investment in technology, time and development. This need, and perhaps more interestingly an implied unfamiliarity of typical elearning proponents with this type of activity, is reflected in the following explanation in a book by Brandon Hall (2001:2).

> Once you’ve determined that the organization is ready for e-Learning, you’ll need to sell it. You might as well start at the top of the organizational chart, so we lead off with a chapter called "Learning ‘C-Speak’: Talking to Your Executives in a Language They Can Understand." This is a whole chapter dedicated to the careful art of making a successful presentation to the executives (CEOs, CIOs, CFOs, etc.) who will make the decision to implement e-Learning in your organization.

Regardless of whether elearning emerges as a ‘bottom-up’ or ‘top-down’ initiative, training and HR staff involved can quickly find themselves in new territory.

Training and human resource management functions tend to operate as support functions rather than core value-generating functions of the organisation. As a consequence, beyond established HR functions, most of these training and HR groups have not had the need to devise, propose, ‘sell’ and deliver strategically important investments to senior decision-makers. With the high investment costs and opportunities of elearning, this is changing.

For bottom-up elearning initiatives, proponents need to frame elearning proposals in terms of financial and strategic benefits in order to have the significant investment
approved. The alternative, top-down elearning initiatives, is also likely to result in training and human resource staff being called upon to contribute to proposals in terms of financial and strategic benefits. In both cases there is a need to establish a common basis of understanding between an organisation’s senior managers and training/HR professionals, thus yielding a need for learning practitioners to comprehend ‘C-Speak’ and talk to executives in ‘a language they understand’.

It would seem that the language and experience gap between training/HR professionals and senior decision-makers could make launching an elearning initiative difficult. Following on from this, it can also be reasonably anticipated that any difficulties will be exponentially compounded when the scale and complexity of technology investments and development issues are taken into account.

10.5.3  Elearning return on investment — issues, assumptions and traps?

The trade press is replete with articles quoting training managers boasting how many hundreds of thousands of dollars (or more) they expect to save with e-learning, generally through less travel, fewer hours “lost” to training, and lower staff costs. Years ago, ROI never came up in discussions of corporate training budgets, primarily because the knowledge/skill level of the workforce was regarded as an intangible asset that did not show up on the balance sheet. That may still be the case, but the telecommunications and systems infrastructure necessary to deliver e-learning does appear on the balance sheet, so ROI has become a tool of the trade in training departments. (Greenagel, 2002:1)

With its existing role in managing, measuring and evaluating the performance of organisations, the financial paradigm has become an intrinsic element in processes to evaluate alternative organisational investments. As a consequence of this financial paradigm, there has been a migration of other business concepts towards language and explanations that parallel those that represent the financial paradigm. This is evidenced by discussions of intellectual capital (for example, Stewart, 1997; Sveiby, 1997; Edvinsson & Sullivan, 1996; Von Krogh, Ichijo & Nonaka, 2000), social capital (for example, Cohen and Prusak, 2001), human capital (for example, Fitz-enz, 2000; Davenport, 2000), knowledge capital (for example, Drucker, 1988) and other areas. This emulation of financial language and approaches is also accelerated by the need to justify infrastructure investments for intangibles outcomes, as explained by Greenagel (2002:1).

By aligning with the dominant financial paradigm, emerging business strategies such as elearning can gain a number of advantages, including:

♦ Competitiveness with other existing and emerging business strategies — the financial paradigm serves as a gatekeeper to the types of strategies that can be considered by the organisation, and without addressing this gatekeeper, the emerging business strategy cannot gain an effective audience with the organisation’s decision-makers;

♦ Concept recognition by organisational decision-makers — by leveraging the existing understandings and worldview of decision-makers, the emerging business strategies have an increased chance of
being successful in attracting the attention and investment of the organisation;
♦ (Apparent) legitimisation of the emerging business strategy — because it purports to make business sense in a financial context.

One of the traditional ways that new types of organisational initiatives seek attention is by presenting a business case, including use of return on investment (ROI) and related measures. ROI justification of projects tends to be framed in terms of reducing costs, increasing revenues, or both. Elearning tends to focus on cost reduction as an initial justification for investment. Thus, classroom costs minus elearning costs should produce a positive equation that represents cost savings and immediate ROI advantage. Elearning ROI calculations tend to look like the following, from Kurtus (2002).

### Table 10.6 Calculating ROI

<table>
<thead>
<tr>
<th></th>
<th>Classroom Training</th>
<th>Elearning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages of Trainees ($20/hr, burdened)</td>
<td>$ 400,000</td>
<td>$ 240,000</td>
</tr>
<tr>
<td>Travel Costs (50% of people travelling)</td>
<td>$ 250,000</td>
<td>$ ----------</td>
</tr>
<tr>
<td>Trainer Wages</td>
<td>$ 47,500</td>
<td>$ 11,400</td>
</tr>
<tr>
<td>Trainer Travel</td>
<td>$ 20,000</td>
<td>$ ----------</td>
</tr>
<tr>
<td>Development Costs (custom training)</td>
<td>$ 160,000</td>
<td>$ 400,000</td>
</tr>
<tr>
<td>Delivery Systems (1st year amortised)</td>
<td>$ ----------</td>
<td>$ 35,000</td>
</tr>
<tr>
<td>Totals</td>
<td>$877,500</td>
<td>$686,400</td>
</tr>
</tbody>
</table>

In this example, savings equate to $191,100 to adopt elearning over existing classroom-based methods.

Many online sites demonstrate how to calculate traditional ROI for training and elearning. For instance the tools section of Kevin Kruse’s e-Learning Guru website (www.e-learningguru.com) provides MS Excel ROI calculators for the following equations:
♦ Cost comparison (http://www.e-learningguru.com/tools/cost_comp.xls)
♦ Break-even analysis (http://www.e-learningguru.com/tools/break_even.xls)
♦ Cost-benefit ratio (http://www.e-learningguru.com/tools/cost_benefit.xls)
♦ Return on investment (ROI) (http://www.e-learningguru.com/tools/roi.xls)
♦ Internal rate of return (http://www.e-learningguru.com/tools/irr.xls)

The literature and available online tools seem to be obsessed with cost-reduction aspects of elearning ROI. This emphasis on cost reduction is predominating as many decision-makers look to improve the bottom line. A leading elearning information website states:
E-learning is too new to have produced hard evidence of learning gains. E-learning’s top-line upside is speculative; its bottom line savings are on more solid ground. (Cross, 2002; also attributed to American Society for Training & Development [ASTD] as cited in Baker, 2002:10)

In fact making the initial case for a return on investment from elearning does not appear particularly challenging in most circumstances; Urdan and Weggen (2000:4) report the following:

With traditional training methods, companies generally spend more money on transporting and housing trainees than on actual training programs. Approximately two-thirds of training costs are allotted to travel expenses, which represents a major drain on bottom-line profitability. In today’s competitive environment, organizations can no longer afford to inflate training budgets with extensive travel and lodging. If opportunity cost is taken into account, the actual costs of training are even higher. Time spent away from the job travelling or sitting in a classroom reduces per-employee productivity and revenue tremendously.

Hum and Ladouceur (2001) reinforce this cost-saving potential of elearning and point to the prospect of additional intangible benefits that should be included in an evaluation of elearning ROI.

One of the first questions organisations ask before undertaking an e-learning strategy is, “Will it save money?”; in other words, what is the return on investment (ROI). Without regard to the intangible benefits such as increased productivity or allowing people to take control of their own career development, people always start with the financial aspect of projects. There have been numerous studies and seminars conducted showing the ROI in some cases as high as 318% in cost savings only and a significantly high percentage in cost savings and effectiveness. Each e-learning vendor has its own ROI methodology, but the biggest cost savings can be attributed to travel expenses and opportunity costs. One of the top reasons indicated for implementing an e-learning strategy in various studies is the cost effectiveness. . . . But, elearning should not be justified solely on the tangible monetary aspects. (Hum & Ladouceur, 2001:19)

So, given that an elearning project is likely to come in at the ‘right price’ in terms of ROI, the main questions are whether elearning compares favourably with traditional modes of learning, and whether a cost-reduction rationale for elearning captures the nature and potential of elearning. These questions are considered in the following sections.

10.5.4 The nature and potential of elearning — does cost reduction make sense?

A pure cost-reduction-oriented approach to justifying elearning investment does not necessarily take into account the quality of the learning experience and outcomes delivered. Colin Grant (cited in Baker, 2002:40) makes the following observation:
It is easier and cheaper to produce pages of scrolling text than to produce highly interactive and engaging educational material. It is easier and cheaper to produce trivial tests and interactions than complex and challenging ones. So, while the demo is often so impressive, you'll often find that by module 4 of an 8 module course, the viewer is nearly paralysed with boredom and looking for a noose — or at least a career change.

Others agree that cost effectiveness is secondary to the qualitative possibilities offered by elearning.

The issue of cost effectiveness in online learning is a clouded one and difficult to assess. Depending on the sophistication of the online course, the cost can be enormously different. If materials are merely transferred to the web so that students can download and print them at home, the cost is low and the educational experience is little different from buying a text book or being sent printed materials by mail. The possibilities of online education, on the other hand, relate to the potential complexity of the type of educational experience that can be provided. Medical students, for example, could be offered simulated surgery; business management students could be offered simulated business scenarios in which they must gather information, make decisions and deal with unexpected changes in the business environment. The difference in educational quality between these types of online provision is hard to measure in dollar terms. (Blurton, 1999, as cited in Bell, Bush, Nicholson, O’Brien & Tran, 2002:28)

As is so often the case with industries migrating toward online business and technologies, the message of opportunity has become interpreted in terms of adapting existing practices rather than transforming them. As a result, the main advantages of new technologies can be missed, ignored or forgotten. Hammer and Champy (1994:7) explain that:

The real power of technology (such as electronic commerce, telecommunications services or multimedia) is not that it can make old processes work better, but that it enables organisations to break old rules and create new ways of working.

The importance of breaking old rules rather than making old processes better is heightened if doubts about the effectiveness of traditional processes already exist. The approaches to adapting existing learning practices are discussed by Baker (2002:3) as follows:

Let’s get our courses on the web means ‘Let’s take a lecture course, let’s eliminate the lecture – leaving only the notes, the readings and the quizzes – and let’s call that a course.’ Here we go again, a step backwards in modern education. Just as universities were beginning to realize that one guy droning on in front of 500 students was not quality education, they propose to eliminate the human and leave the quizzes. Nevertheless, there are now many companies offering courses online and many universities willing to endorse what they offer as being of actual educational value. Frightening, really.
It seems worth stating that elearning is not restricted to traditional learning delivered electronically. Facilitating learning via electronic media presents advantages and impediments that do not exist in traditional modes of learning. Therefore, beyond the issues of justifying investment and developing technologies, coming to terms with both the advantages and impediments is critical. A return on investment equation that does not take into account the potential disparity of results between electronic and non-electronic modes of learning is incomplete. For example, elearning approaches may be assessed by line managers to be 20 per cent more (or less) effective than traditional approaches; this disparity in outcomes must be taken into account in determining ROI.

The essence and rationale of elearning is learning, not technology. Reflecting on this, Greenagel (2002:1) comments:

_E-learning can change the way we learn in dramatic ways, but not if developers continue to ignore measures of learning effectiveness. The e-learning industry continues to emphasize cost savings and ROI, but risks ultimate indifference by end users (trainees) because the e-learning experience is seen as puerile, boring and of unknown or doubtful effectiveness. The effectiveness of the course is less dependent upon the enabling technology than on the skill with which the developer uses the available technology to construct learning experiences appropriate to the trainee and to the topic._

Further, Greenagel (2002:1) points to an unsound model of elearning cost-effectiveness and a lack of emphasis on outcomes; he identifies a number of problems and challenges:

- Developers don’t seem to be aware of how people learn, for they continue to use mostly flawed models;
- Corporations are more interested in throughput and low unit cost, so solid measures of effectiveness are infrequently developed or applied;
- The available platform drives the instructional strategy, which may not be appropriate to the learning style of trainees or to the learning objectives;
- The cost of development is high, so bad (cheap) programs drive out the good ones in the absence of any commitment to measure effectiveness;
- Effective elearning experiences are rarely scaleable.

In summary, it would seem that, in the absence of consensus and creativity about what elearning can deliver to an organisation, cost reduction can easily become a default or ‘lowest-common denominator’ rationale for elearning adoption. This type of rationale risks ignoring or compromising both learning outcomes and the potential for strategic advantage. Kruse (2003) suggests that:
ROI analysis effectively minimizes the risk of failures and financial waste, but it also reduces the chance for innovative breakthroughs and tough-to-measure results. By only focusing on ROI, Chief Learning Officers may miss some tremendous opportunities to contribute to their organization's strategic goals. To gain project support, an e-learning plan should include ROI estimates as one dimension, while focusing on overall total benefits to the company.

Justifying elearning investment on the basis of cost reduction (and using project scale to achieve further cost efficiencies) can risk developing a cost-reduction mindset among project sponsors and participants. If, as contended above by Greenagel, elearning experiences are rarely scaleable because they fit a unique mix of individual needs, in a context, at a point in time, then the cost of developing or sourcing effective content and actual economies of scale may not diminish as more students engage in elearning. The costs may in fact increase. Further, and more significantly, promoting cost reduction as a rationale for accepting elearning risks may undermine subsequent attempts to advocate the benefits of investment in human skills and capabilities. Reducing costs has immediate bottom-line visibility, which will probably be a major selling point as far as project sponsors are concerned, but if new elearning systems do not deliver to expectations, and more expenditure is subsequently recommended to conduct more or improved training, then this follow-up request would be unlikely to be favourably received. Therefore, it may be worth portraying elearning from the start as a wise investment, with any anticipated cost savings reinvested in an increased quantity and/or quality of staff training. Such an approach also provides greater scope and budget for applying new elearning facilities. With this approach there is also a greater prospect for demonstrating the contribution and value of efficient and effective learning, rather than simply reducing costs.

10.5.5 Elearning return on investment — the bottom line

What’s the bottom line on elearning ROI? ROI provides a way to evaluate, from a financial perspective, whether a proposed elearning project appears to head in the right general direction. Martin (2000) notes that:

**Surprisingly, only 14 percent of organizations ever quantify their return-on-investment, according to a December 1998 survey by the American Management Association. Further, AMA's director of management studies Eric Rolfe Greenberg notes, "No two people do it the same way, which is a big reason why some companies that used to conduct such an analysis no longer do one."**

Surprisingly, despite drawing attention to this, Martin (2000) suggests that ROI provides ‘a signal that an initiative is eminently justified’, and that:

**With a concrete training ROI figure, training managers can improve their chances at securing funding for new, bolder learning initiatives. They have a solid foundation for optimizing the training they're already conducting, a strong connection to the company's bottom line, and a business case for their continued existence.**

This level of faith in ROI does not appear to be warranted or widely shared. In tackling perceived ROI ‘hype’ and a need to get off the ‘ROI bandwagon’, Kruse (2003) makes three suggestions:
1. Many senior executives don't care about ROI.

2. ROI is an imperfect science which often involves making educated guesses at potential savings and gains. Senior executives know this, and know that there are many real world variables that can't be captured by a formula. As my own CFO told me recently, "I don't trust any spreadsheet model I haven't manipulated myself."

3. ROI "guesstimates" are often a cop-out for much tougher measurements of actual results. Rather than ROI math, how about measuring employee engagement scores before and after management training or pilot studies of sales training programs that measure closing ratio's and time-to-close?

On the basis of the discussion above, it seems appropriate to view elearning ROI estimates with caution. Further, given the vagaries of ROI estimation and calculation, news of elearning successes and ROI benefits should also be regarded with some degree of caution.

Rosenkopf and Abrahamson (1999) discuss the nature of ‘fad’ models of technology diffusion, explaining that in some circumstances, organisations ‘do not premise their adoption decisions on technical or profitability information, but rather on information about the number and reputation of previous adopters’ (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). The impetus to join the technological ‘bandwagon’ is further explained as follows:

A variety of fad theories explain why increases in the number and reputation of adopters cause social bandwagon pressures to grow. One sociological variant specifies institutional bandwagon pressures — pressures on organizations arising from the threat of lost legitimacy. In these theories, the more organizations adopt an innovation, and the greater these organizations' reputations, the more it becomes taken-for-granted that it is normal, or even legitimate, for organizations to use this innovation (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). When this happens, organizations that do not use the innovation tend to appear abnormal and illegitimate to their stakeholders; these organizations tend to adopt the innovation because of the fear of lost legitimacy and stakeholder support (Tolbert & Zucker, 1983; Abrahamson & Rosenkopf, 1993). A similar approach from economics assumes that organizations tend to adopt an innovation the more other organizations have adopted it because they will be evaluated more favorably if they do what other organizations are doing (Scharfstein & Stein, 1990). (Rosenkopf & Abrahamson, 1999:10-11)

In a similar vein:

A second variant of fad theories describes competitive bandwagon pressures — pressures on organizations arising from the threat of lost competitive advantage. Bandwagon pressures occur because, as the proportion of adopters increases, non-adopters experience a growing risk that if the innovation is a success, their performance will fall well below the collectivity average; they adopt to avoid running this risk (Abrahamson & Rosenkopf, 1990; 1993). Still a third variant of fad theories assumes that organizations adopt an innovation the more
organizations adopt it because the number of adopters is taken as evidence that these adopters must know something that the non-adopters do not know. (Banerjee, 1992)

If the pressure to conform to a perceived bandwagon is stronger than an organisation’s desire for a clear rationale for elearning adoption, useful organisational outcomes seem unlikely.

In summarising ROI-related issues, it seems worth noting the following:

♦ The validity and utility of an ROI evaluation depend on the assumptions, measures and considerations that have gone into its creation;
♦ The difficulty in identifying and measuring some potential impacts means that an elearning ROI projection (and post-implementation evaluation) will be only an estimate;
♦ Producing a positive ROI does not obviate the need to explain and explore the broader possibilities of elearning with an organisation’s decision-makers and elearning stakeholders; and
♦ Elearning does not produce results that are exactly comparable with an organisation’s existing learning programs — an ROI must take this into account.

The limitations of elearning ROI appear to be gaining recognition. Berry (2000:1) comments that:

Many businesses are only beginning to witness the dramatic cost savings in transitioning from traditional training to e-learning, yet a few forward-thinking companies already know this is old news. They have started ambitious measurement programs to prove e-learning's positive impact on customer service, productivity and sales. Metrics can deliver such proof, which is why Gartner Group estimates that about 30 percent of its e-learning clients use metrics to chart e-learning's impact on the company's performance. Gartner says the use of metrics to justify elearning will expand as more companies use e-learning to support high-priority business goals, rather than run training programs for training’s sake.
10.6 Summary

Elearning can provide an even more effective and efficient way for organisations to learn than is currently even conceptualised, as management mindsets seem welded to the return on investment (ROI) issues. For learning organisations, elearning also provides a means to enable the accelerated approach to generative learning and cross-location and cross-team collaboration.

This chapter highlights how organisational learning and the learning organisation emphasise that learning is far more than skills training for routine task performance. Learning is a strategic activity. The emphasis is important for this approach to elearning. Elearning is not operating at its optimal level if it is purely limited to an etraining activity. Elearning is a strategic activity with benefits extending beyond competency acquisition to encompass growth of shared identity and human capital attributes that enhance the organisation’s knowledge capital.

Organisations that can enable elearning and that create elearning environments or content within which tacit knowledge can reside and be exchanged can maximise their ROI. The ROI debate does not seem to address how sustainable competitive advantage is also enhanced by elearning, which increases productive capacity and organisational agility.

Elearning must also focus on creating frameworks for transacting knowledge within communities that may have individuals who reside outside the organisation’s boundaries. Organisational learning can occur through learning exchanges or learning resulting from data captured during transactions between internal staff and external individuals (i.e. customers or suppliers). This fact re-emphasises the need for data reporting to be enabled across performance, knowledge, learning and service management systems. Human interactions drive all these areas and individual learning marks all the communications.

The importance of learning as a strategic activity is advanced by the learning organisation as proposed by Senge and his adherents. Learning in these approaches becomes far more than a theoretical construct but a means for organisations to focus sustainable competitive advantage through learning. A learning organisation takes a deliberate, systems view of learning. Learning becomes not only a vehicle but also a philosophy driving survival and future success of the enterprise. Learning organisations make intentional use of learning at the individual, group and organisational level to expand their capacity (Pearn, Roderick & Mulrooney, 1995:18). To achieve these outcomes, learning needs to become part of a total solution adopted by the organisation and understood by all of its individuals as well as key external strategic partners.

While it is not the place of this research report to evaluate the learning organisation approach, the Investigative Research Report highlights the growing emphasis in the literature on advancing learning as a strategic activity.

This chapter does, however, advance organisational learning as a means to enhance learning activities to underpin the construction of knowledge capital. Organisational learning is presented as a distinct approach to the learning organisation. The literature examined argues for elearning, and learning in general, as a fundamental component
in how organisations capture, transfer and extend knowledge resident in individuals, individual relationships and networks that enhance individual collaboration. In the context of organisational learning, elearning is part of the ongoing reinvention of how organisations maximise effective and efficient learning exchanges. Equally, elearning embraces aspects of learning that extend beyond training for competent performance, encompassing efficiency and effectiveness in terms of an organisation’s overall ability to learn and be responsive to change. Technologies and communication networks that capture and report data go beyond learning to transfer knowledge and examine the knowledge required to support an organisation’s continual search for the capabilities to sustain competitive advantage.

Key observations derived through research in this chapter include:

**Observation 10.1**
The elearning process should assist the integration of individual learning (competencies and identity) with the group level (team performance and development of shared identity), and organisational level outcomes (knowledge capital, systems, procedures and culture).

**Observation 10.2**
To sustain organisational agility, identity must be co-oriented and learning used to enhance collective trajectories (mental models).

**Observation 10.3**
Creating learning partnerships, focusing learning on the organisation’s strategic objectives and measuring elearning activities’ contribution to business success create the preconditions for organisational learning.

**Observation 10.4**
Current elearning ROI calculators are limited to cost reduction for eTraining, and do not address organisational outcomes such as the formation of knowledge capital or even human capital.
10.7 References


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Chapter 10 Organisational Elearning Variables


Abstract

The purpose of this chapter is to outline the nature and dynamics of elearning technologies. This overview offers insights into how elearning systems are constructed and separates 'technology-driven' perspectives from views centred on elearning's use and application.

The elearning ecosystem consists of people and organisations interacting to develop, deploy and derive benefits from elearning systems. The ecosystem has not evolved to a point where a stable set of concepts and technologies has gained ascendancy. In a broader sense, elearning technologies are works in progress presenting a challenge to organisations — 'A frothy sea of competitors jostling for dominance' (Barron, 2000).

This research has looked at elearning business drivers and technology architecture issues. Crowley (2002) identified seven drivers that he translates into five design principles and implementation guidelines for elearning architectures. The principles are open architecture; scalability; globality; integration; and rapid and timely availability. In essence, elearning systems encompass content creation and management systems (LCMS), learning management systems (LMS) and learning environments of activities.

This chapter goes on to discuss the recurring elements of an elearning system — learning content, learning objects and metadata; authoring tools and systems; learning content management (LCMS); learning management systems (LMS); and virtual learning environments. An elearning technology map is presented in the graphic overview to describe the relationship between these elements. A model to integrate LMS and LCMS in a learning ecosystem is also suggested.
The question of elearning standards and compliance was investigated to determine whether there is a movement towards recognising the need for industry- and market-wide conceptual convergence on the nature and importance of elearning technologies, functions and services. ‘Common standards for metadata, learning objects and learning architecture is mandatory for the success of the knowledge economy and future’ (Hodgins, 2001). The interplay between organisational learning needs, competitive pressures amongst providers, cooperative technology and standards organisations is anticipated to continue to shape elearning technologies.

Further key emerging trends, technologies and issues related to elearning were examined. This chapter discusses peer-to-peer technologies, virtual classrooms, the impact of bandwidth on costs and deployment, the potential of wireless and mobile elearning (mobile or mlearning), and content personalisation.

Elearning is emerging from a courtship of learning and technology. The discussion is only just beginning to shift from one centred on technology to one focused on learning and/or learner issues. The perceived potential from both the technological and pedagogical sides has led to a high degree of readiness to explore and invest in new applications and approaches. However, the existing approaches are also argued to have severe limitations. The current approaches to content management and the lack of ‘preciousness’ as to the language used and its meaning for business, technical and educational professionals is challenged. In this setting the most appropriate strategy is to build elearning initiatives incrementally as it is unlikely that technologies can deliver the prospective elearning opportunities yet.

A number of observations are made and five strategies are proposed to deal with implementation of elearning initiatives now. It is suggested that particular emphasis be placed on budgeting for the required learning and business outcomes and not the technology.

**Chapter Proposition**

**Proposition 11.1**

The technologies associated with elearning are a two-edged sword; they are a harbinger of positive new approaches to learning and content management while also increasing confusion over how to get the right mix to design effective elearning, achieve compliance requirements and attain both learning and business outcomes

**Key Themes**

An overview map of elearning technology; the composition of an elearning ecosystem; elearning business drivers and architecture issues; the integration of LMS and LCMS in a learning ecosystem; an investigation into the recurring elements of an elearning system; the status of elearning standards and compliance; emerging trends, technologies and issues; and elearning implementation strategies for today.
11.1 Introduction

Although the focus of elearning is necessarily on delivering learning outcomes for people and organisations, a prevailing theme in the majority of popular literature on elearning is the use of technology to enable these outcomes. The purpose of this chapter is to outline the nature and dynamics of elearning technologies.

It is not the intention of this chapter to explore and compare every technology and application. Nor is it to contrast the efficiency and effectiveness of each technology for a given learning scenario. While a noble aim, this would be outside the scope of the resources available for this report. Relevant research literature is referenced and many reports are appended to Chapter 12.

This chapter investigates some of the more familiar terms and technologies in order to offer insight into how elearning systems are constructed. One of the reasons for doing this is to separate ‘technology-driven’ perspectives on elearning strategy from views that are centred on elearning’s use and application.
11.2 Elearning Solutions

This section considers the broad context of elearning technologies and their creation and use. The rationale for this is that individual elearning technologies and approaches are labelled in different ways by different groups of people, and are regarded with different types of end use in mind. For example, although obvious overlaps exist, there are also marked differences in the way elearning is regarded in corporate versus educational contexts because of the different goals that these types of organisations work towards. Thus, with different groups and technologies in play, it is useful to briefly consider the nature and dynamics of elearning’s intellectual and technological marketplace.

11.2.1 The elearning ecosystem

The growth of interest, investment and activity in elearning has led to the emergence of what could be described as an ecosystem of business activity. This ecosystem consists of people and organisations interacting to develop, deploy and derive benefits from elearning systems. Describing the activities surrounding elearning as an emerging ecosystem provides a useful means for conveying the network of interactions and feedback that are impacting the pathway of elearning development. Briefly, the ecosystem consists of groups such as:

- Organisations undertaking elearning to deliver business/organisational outcomes;
- Elearning technology providers seeking to develop and sell their technologies;
- Elearning content providers seeking to develop and sell their own or other people’s content;
- Learning and HR professionals managing the elearning functions as part of their organisational roles;
- Elearning users seeking to acquire and confirm capabilities; and
- Instructional designers and those repurposing existing content to be used in elearning.

At any point in time, the elearning technologies available represent the ecosystem’s best solution for meeting the individual and collective needs of its members. Similarly, it can be understood that the future of elearning technologies will emerge from the pursuit of needs and opportunities that exist within the ecosystem. While these observations of the elearning ecosystem may seem straightforward, they provide a meta-context for evaluating the maturity of various elearning technologies: by considering the gap between what needs the technology is currently meeting and what needs and opportunities remain. It could be reasonably assumed that the technology will continue to progress rapidly for as long as the apparent cost of developing and adopting new technologies is less than the apparent value of unmet needs and opportunities. However, technological developments, as evidenced in Chapter 6, do not always move along a logical, linear pathway. It could be expected that some of the current developments with the most market appeal will be replaced by new technological breakthroughs or technical advances that hold greater value to both current adopters and late adopters of elearning technologies.
At present, the elearning ecosystem has not evolved to a point where a stable set of concepts and technologies has gained ascendency. In a broader sense, just as ecosystems continue to change and evolve, so elearning technologies are works in progress. In a Kuhnian context, elearning lacks exemplar examples and descriptions of its domain. Consequently the intellectual development (and dependent business and technical development) of the domain evidences paradigmatic uncertainty and competition between concepts. In short, there is a high degree of variation in explanations of what elearning systems do and what they deliver. The current state presents a challenge to organisations evaluating their elearning options. Consider the following comments:

* A frothy sea of competitors are jostling for dominance. Business and technology models are evolving at Internet speed. New products and capabilities are sprouting up weekly. Pity the training professional who must select a learning management system. (Barron, 2000)

* “Different models of e-learning are emerging as numerous suppliers rush to fill the vastly increased demand for Web-based training in the form of content, tools, and services,” says Jim Ayube, a training analyst with market research firm Aberdeen Group. (Barron, 2000)

* Keep in mind that this is still a very nascent industry, so standards and technologies will continue to emerge or consolidate . . . (Crowley, 2002)

### 11.2.2 Elearning business drivers and technology architecture issues

Crowley (2002) identifies the following key business drivers influencing the nature and architecture of elearning technologies:

- **Cost** — reduction in both learner travel costs and opportunity costs of lost productivity, and ability to reuse and repurpose learning content rather than recreating it;

- **Access/Scalability** — using networking/Internet capabilities to enable access to learning on an as-needed, where-needed basis, and designing multiple presentations of learning material to cater for different bandwidth and technology scenarios;

- **Modularity** — creating elearning in a format whereby it can be sourced in short ‘chunks’ of 2 to 10 minutes. This does not mean a ‘module’ in the sense ascribed by traditional training fields whereby it is a stand-alone, defined learning outcome within a course. The chunk in this case is a stand-alone piece of knowledge or information that may, or may not, maintain its relationships with a defined learning outcome;

- **Timeliness** — rather than focusing purely on online course creation, using elearning technologies as a means to deliver immediate knowledge or performance-improvement needs;

- **Relevance** — allowing customisation of access and content relevant to the needs and context of the learner; and
Accountability — providing electronic mechanisms for feedback and evaluation of the performance of learners, managers and elearning developers.

Crowley translates these business drivers into design principles and implementation guidelines for elearning architectures:

- **Open Architecture** — employing systems and architectures that comply with open standards rather than proprietary ones, thereby decreasing the costs of shifting technologies and migrating content to new or different elearning systems;
- **Scalability** — while elearning initiatives may commence with a small project, they may ultimately extend across the organisation to every employee, and therefore an elearning architecture must be designed with scalability in mind and to some extent ‘future proofed’;
- **Globality** — achieving global portability of content and technology;
- **Integration** — ensuring that elearning technologies integrate across human resource, performance, finance and knowledge management reporting systems, while also being flexible with respect to changing business requirements and processes, technologies and vendor solutions; and
- **Rapid and Timely Availability** — progressively adding levels of elearning architecture sophistication over time, to create outcomes in the short term.

To address these drivers and issues, elearning technology currently seems to mainly reflect the following types of representation (Brennan, Funke & Anderson, 2001:10). In essence, elearning systems encompass:

- **Content Creation and Management** — sourcing, creation, storage and management of elearning content — functions typically addressed by a Learning Content Management System (LCMS);
- **Learning Management** — capturing and applying information about learning resources, existing skills and learning activities to measure and manage learning outcomes at the organisational level — functions typically addressed by a Learning Management System (LMS); and
- **Learning Activity** — delivering elearning content, facilitating interaction and learning assessment.
The structure and content of this diagram illustrate a number of potential functions and uses of elearning technologies:

- Enabling content authoring or simply sourcing content ‘off the shelf’ from learning content providers;
- Enabling multiple modes of media in elearning content;
- Enabling integration of elearning activities with other organisational systems and activities; for example, knowledge, HR and ERP systems;
- Organising all content into reusable knowledge objects;
- Managing these knowledge objects through a repository of learning objects;
- Adapting or customising the presentation, sequence and content of learning objects;
- Managing the authoring, tracking and use of learning objects;
- Enabling multiple modes of learning content delivery;
- Managing the access to and use and reporting of learning outcomes;
- Mapping and tracking competencies; and
- Enabling access to learning on a where- and when-needed basis.

While the Brennan, Funke and Anderson depiction of the functions of elearning systems presented in Figure 11.1 is very typical of contemporary views, some would argue more appropriate models should be used.
Explanations of the elearning technologies, such as the one provided in Figure 11.1 appear to have been formulated to make sense of the various elearning technologies and services available. However, the systems identified by Brennan, Funke and Anderson do not necessarily exist as discrete identifiable systems. There is overlap and ambiguity in their functions and definitions. For example, Sun (2001:1) notes that:

The term “learning content management system” (LCMS) was coined by a consortium of six software vendors to differentiate themselves from standard learning management system vendors, and the space has evolved into its own e-learning software offering. Often confused with LMSs, LCMSs offer functionalities that frequently overlap with those of learning management systems. LMSs often handle everything up to the “entry” into the virtual classroom.

Despite significant progress, it seems apparent that key areas of elearning technologies remain ‘works in progress’ and areas of prospective benefit rather than having been exhaustively proven through successful use.

The following discussion focuses on some of the recurring elements in explanations of elearning technologies, namely:

- 11.5.1 — Learning content, learning objects and metadata;
- 11.5.2 — Authoring tools and systems;
- 11.5.3 — Learning Content Management Systems (LCMS);
- 11.5.4 — Learning Management Systems (LMS); and
- 11.5.5 — Virtual learning environments (VLE).
11.3 Elearning Technology and Systems

11.3.1 Learning content, learning objects and metadata

The Internet Time Group (2001) provides a useful explanation of some key elements and functions of elearning systems, as presented below. This represents a useful way of quickly defining, identifying and relating these elements and providing an agreed set of definitions.

Figure 11.2 Internet Time Group definitions and elearning system components

<table>
<thead>
<tr>
<th>Course</th>
<th>Learning object</th>
</tr>
</thead>
<tbody>
<tr>
<td>The old-school unit of formal learning. A packet of content, a means to deliver it, and an assessment of mastery. Generally more than any particular learner needs.</td>
<td>A standalone chunk of learning. May have been chipped out of a legacy course. Can be mixed and matched to form personalized learning experiences. Think of it as a discrete mini-course.</td>
</tr>
</tbody>
</table>

Metadata

Tags affixed to learning objects to explain what’s inside: its content, objectives, author, language, date, version, level, assessment, and more.

Repository

The repository is nothing more than a database of learning objects. As we shall see, an LCMS can deliver these as required by a specific situation.

Think of it this way. A course is made of learning objects that are glued together in a big lump. One size fits all. It's all or nothing. An LMS registers the learner and records completion.

In the world of the LCMS, the sort of lessons and activities that were once components of courses have lives of their own. An LCMS assembles these objects into learning paths personalized to the needs of the individual learner. The LCMS also comes with the machinery to cook up new jelly beans in-house.

(Illustration source: Internet Time Group, 2001)
Learning objects and learning content

Learning content is the information and media that constitute the learning 'payload', as opposed to the technologies and systems that deliver content.

*Content is essentially the material used to convey the subject matter. It may include text, graphics, audio, some form of interaction, and concept application. Content is not tied to any code and may be created using any number of tools from Microsoft Office to Dreamweaver.* (Brennan et al., 2001:3)

Historically, learning content has been organised to correspond with course units; thus, the content for a course was organised into one self-contained block of information that covered the entire scope of that course. In contrast, elearning contemplates units of learning content (i.e. learning objects) that are much smaller in scope and amount of content. The purpose of adopting this paradigm is to encourage the reuse of common elements of learning courses, thereby decreasing costs and streamlining and improving learning content. In effect, learning content is being structured into common building blocks that can be quickly found, reused and customised according to particular contexts and learner needs. Brennan et al. as employees of International Data Corporation (IDC, one of the major global research and market forecast companies), defined learning objects as:

... a standing piece (a.k.a. “chunk”) of education that contains content and assessment based on specific learning objectives and that has descriptive metadata wrapped around it. (Brennan et al., 2001:2)

The source and rationale of learning objects is further explained by Wiley (2001) as follows:

*Learning objects are elements of a new type of computer-based instruction grounded in the object-oriented paradigm of computer science. Object-orientation highly values the creation of components (called ‘objects’) that can be reused (Dahl & Nygaard, 1966) in multiple contexts. This is the fundamental idea behind learning objects: instructional designers can build small (relative to the size of an entire course) instructional components that can be reused a number of times in different learning contexts. Additionally, learning objects are generally understood to be digital entities deliverable over the Internet, meaning that any number of people can access and use them simultaneously (as opposed to traditional instructional media, such as an overhead or video tape, which can only exist in one place at a time). Moreover, those who incorporate learning objects can collaborate on and benefit immediately from new versions. These are significant differences between learning objects and other instructional media that have existed previously.* (Wiley, 2001:3)

The underlying rationale and assumptions behind learning objects is that information systems enable learning content to be more effectively created and organised to achieve reuse, and that the maintenance of context and themes can be achieved across multiple learning objects. This appears possible in some cases; however, it is worth exploring some of the limitations of the ‘LEGO block’ view of learning objects. Wiley (2001) makes the following observations:
Learning objects and their behavior have been likened to LEGO bricks... and other children's toys in a twofold effort to (1) communicate the basic idea and (2) put a friendly, familiar face on a new instructional technology. These analogies continue to serve their intended purpose of giving those new to the idea an easy way of understanding what we are trying to do: create small pieces of instruction (LEGOs) that can be assembled (stacked together) into some larger instructional structure (castle) and reused in other instructional structures (e.g., a spaceship). Unfortunately, the metaphor has taken on a life of its own. Instead of serving as a quick and dirty introduction to an area of work, this overly simplistic way of talking about things seems to have become the method of expression of choice for those working at the very edge of our field—even when speaking to each other. This point was driven home recently at a conference of a professional educational technology organization, where the LEGO metaphor was referred to in every presentation on learning objects, and even those on related topics such as metadata.

The problem with this ingraining of the LEGO metaphor is the potential degree to which it could control and limit the way people think about learning objects. Consider the following properties of a LEGO block:

- Any LEGO block is combinable with any other LEGO block.
- LEGO blocks can be assembled in any manner you choose.
- LEGO blocks are so much fun and so simple that even children can put them together.

The implicit assumption, conveyed by the metaphor, that these three properties are also properties of learning objects is needlessly restricting some people's views of what a learning object could potentially be and do. It is the author's belief that a system of learning objects with these three properties cannot produce anything more instructionally useful than LEGOs themselves can. And if what results from the combination of learning objects is not instructionally useful, the combination has failed regardless of whatever else it may do. The recommendation of another metaphor seems necessary. (Wiley, 2001:15–16)

Wiley’s alternative proposal is to regard learning objects as atoms, noting that:

- Not every atom is combinable with every other atom;
- Atoms can be assembled only in certain structures prescribed by their own internal structure;
- Some training is required in order to assemble atoms.

Further, it can be pointed out that atoms are defined as the smallest particle of an element that can exist either alone or in combination. This suggests that only experts should split or recombine them; in the case of physics, this would mean scientists; when applied to learning objects this would be instructional designers and multimedia developers.

Ultimately, Wiley concludes that:
If learning objects ever live up to their press and provide the foundation for an adaptive, generative, scalable learning architecture, teaching and learning as we know them are certain to be revolutionized. However, this revolution will never occur unless more voices speak out regarding the explicitly instructional use of learning objects — the automated or by-hand spatial or temporal juxtaposition of learning objects intended to facilitate learning. These voices must penetrate the din of metadata, data interchange protocol, tool/agent communication and other technical standards conversations. While instructional design theory may not be as “sexy” as bleeding-edge technology, there must be concentrated effort made to understand the instructional issues inherent in the learning objects notion. The potential of learning objects as an instructional technology is great, but will never be realized without a balanced effort in technology and instructional design areas. (Wiley, 2001:29)

An analogy to refine this concept can be advanced. Adopting the LEGO concept is like hiring a group of builders to renovate your house with no blueprint or architectural plan behind it. If they are not experts using these plans you may end up with rooms with no passageways connecting them or with a stairway to a nonexistent second storey!

**Metadata**

Metadata is used to label a learning object — in various ways — to allow it to be easily located, managed, accessed and used. Brennan et al. (2001:4) explain that:

*Metadata is used to describe what the object contains — much like a label lists the ingredients and nutritional value of a box of cereal. Objects are catalogued using subject-specific metadata and can be indexed, searched, and reused. Metadata typically includes information about the educational content, such as how long the material will take to complete, the language in which it is written (e.g., Spanish versus Japanese), and any prerequisite knowledge required to work with the object. Metadata may also be used to assign different levels of access depending on the sensitivity of the information contained within the object (e.g., employees will typically have access to objects that customers do not).*

Hodgins (2001:15) explains that metadata comes in two flavours: objective and subjective metadata, which are described as follows:

*Objective metadata are factual data, most of which can be generated automatically — things such as physical attributes, date, author, operational requirements, costs, identification numbers, and ownership. Subjective metadata are the more varied and valuable attributes of a learning object determined by the person or group who creates the metadata. The labels on the cans are objective metadata; your opinion of the product, for example, whether it worked as well as a fresh ingredient in your favorite spaghetti sauce, is an instance of subjective metadata.*
... As personalization becomes the key element of learning, subjective metadata become increasingly important. The value of the learning object goes up as its associated metadata increase in richness and completeness; the value of the data objects also goes up as it approaches its smallest potentially useful size.

In summary, learning content is organised into discrete learning objects, and metadata is tagged to these learning objects to facilitate their use. The concept of learning objects underpins many of the advanced elearning systems, and is now commonly associated with the type of benefits that are derived when using these systems. The concept is drawn from other computer technologies, and its popularity has probably been fuelled by the interest and offerings of large IT and elearning systems vendors.

The concepts surrounding learning objects also draw upon themes of content and content management. Systems in this area have evolved from companies — news and media organisations in particular — presenting large amounts of similar information via the Web. The nature of the content and content–use in these contexts is quite different from elearning; in particular:

♦ Such companies deal with content that involves information rather than interaction; and
♦ The content is basically filed, and not necessarily reused other than by searching or reference from related news content.

In effect, elearning adds several dimensions of complexity to the typical web content management system. Taken together with the fact that the concept of learning objects has emerged from the information technology area, it seems that the core elements of elearning technologies have originated from technologists rather than from trainers or designers. It seems likely that the value of these learning content management approaches will be extended as HR and training professionals apply and refine their use towards learning and learning management outcomes.

**Disaggregating and packaging learning objects and content to meet an individual's knowledge requirements**

Elearning is a strategic activity. It can play a critical role in capturing, transferring and expanding an organisation’s knowledge capital. To maximise its efficiency and effectiveness in this role, elearning has to accommodate the type of learning required and the type of knowledge being transferred.

The paradox in moving knowledge in a flexible manner to meet the specific requirements of an individual, on demand, on time and anytime, is that there is also a need to assure the relationship between learning transfer and the acquisition of required capabilities. These capabilities are then measured and ‘accounted’ for in terms of their contribution to the development of human capital, and in turn, knowledge capital.

To be under control the elearning content has to firstly be identified as appropriate for a given purpose, in a given situation and even for a given person. Yet, as we have already confirmed in this Investigative Research Report, the reasons knowledge workers want information on demand is most often because it is for an unexpected event or is to competently perform non-routine tasks. Staff working on help desks or in contact service centres are good examples of where a customer’s non-routine
enquiry or personal issue requires an immediate solution. The learning required must be based on the appropriate knowledge and received in real time.

Explicit, codified knowledge is excellent because it can be ascribed a purpose and packaged to achieve this outcome. In the example of the service providers, the type of knowledge they require is likely to be uncodified and tacit and has usually not been widely diffused. It is far more likely to reside in the individuals who have reached mastery through applied experience. The appropriate learning for the individual may in this case not be online manuals or support sheets, but may be to ask a supervisor or colleague.

Elearning may, therefore, involve learning that is tacit or explicit. Learning objects may also be packaged and distributed to support the communication of information, or as a communication exchange structured with the aim to transfer learning. This dichotomy is profoundly influenced if the communication exchange is intended to be for the purposes of structured learning. The transfer of tacit knowledge is most likely to occur in unstructured environments where individuals can share their knowledge (Horibe, 1999:154). This may include collaborative exchanges, conversations or non-verbal communication experienced by an individual when working with others or watching them work in a given context (Von Krogh, Ichijo & Nonaka, 2000:125-130; Dixon, 2000:18).

Implementation of elearning to achieve maximum strategic benefit requires an organisation to enable tacit or explicit knowledge exchanges that will either be:

♦ Communications for information transfer but not structured to assure learning outcomes;
♦ Communications for information transfer that is structured for the purpose of learning outcomes.

As already highlighted in Chapters 3 and 4, not all learning is based on tacit knowledge and not all knowledge can be codified. For instance, making tacit knowledge explicit may make it more mobile or able to be diffused. This can make the knowledge easier for competitors to replicate. Tacit knowledge also may reside in a situation, person or network of interactions (individuals and organisations) that cannot be codified. This also enables an organisation to develop tacit knowledge that is uniquely embedded in its culture, identity and situation, and which becomes a competitive advantage that competitors cannot replicate.

Implementation of elearning to accommodate tacit and explicit knowledge, across information and learning communication exchanges, is an area marked by a lack of contemporary research. The following section therefore outlines some of the important considerations for an organisation seeking to maximise elearning through consideration of the type of knowledge and the type of learning involved.

Packaging and tracking learning objects

As elearning has advanced, the structure of learning has moved beyond text transferred onto static web pages. Backed by learning and content management systems, it is now possible to create learning objects. **Learning objects** have been defined as modular digital resources, uniquely identified and meta-tagged, which can be used to support learning. Once meta-tagged, learning objects can be stored and
accessed in a manner that permits learning to be customised for each specific learner on demand. This may even be done with consideration of their learning styles, experience, knowledge and learning goals (Wiley, 2001). In addition the objects can be disaggregated to permit the same objects to be used for different modules and courses, or to be reusable to accommodate how different individuals access the same content. This means the same learning objects may be rapidly repurposed to form new content, or to be presented in different packages to support a learner’s immediate needs (i.e. personal attributes or available technology).

In disaggregating learning objects to form new or repurposed content, it should not be assumed that the content still holds the same context or situational relevance built into the module, program, short course or course. As valid instructional design suggests, modules represent stand-alone, defined competencies or learning outcomes that can be assessed. Usually components of a module are not able to be assessed in a summative manner. This suggests they may be assessed in a formative manner, but they cannot be linked to the evidence required to judge outcomes attainment associated with the full module, or through holistic assessment to multiple modules (a program or course).

Figure 11.3 The ‘Learnativity Model’ for designing learning objects

Learning, as continually stressed in this research report, is omnipresent. However, learning structured to achieve specific learning outcomes is designed to achieve the agreed outcome on a consistent basis or to an agreed standard. While it may be meaningful for an individual to acquire information on an immediate needs basis, this may not link into structured learning processes. The above model illustrates the hierarchy of content packaging or aggregation. However, there seems to be a lack of consistency in the terms used to define how objects are meaningfully aggregated. Examination of existing literature on elearning highlights the very vague language in
use by different cultures and professional groups. With the exception of the contrived term ‘nugget’, all the following taxonomy presented by the authors of this Research Report align with the formal language and terms used in Australia. The following definitions associated with structure of learning have been employed.

Learning components are collections of learning objects bundled and packaged into meaningful groupings. These may include:

**Course** — A sequence of modules that leads to a credential being issued to provide formal recognition through a qualification or professional accreditation (Note this is deliberately distinct to what some universities, especially in North America, or some applications, e.g. WebCT, describe as ‘courses’ what may best be described as one unit of study or what is listed below as a module).

**Program** — A sequence of modules that does not result in completion of a course but credits towards a course and qualification (i.e. multiple modules but less than a course).

**Module** — A stand-alone unit of study or learning that offers credit transfer into a program or a formally recognised course.

**Short course or session** — May best be said to refer to a stand-alone module or program of training that does not offer credit transfer into a course that may be recognised by a formal qualification.

The relationship of learning components may be recognised through:

**Formal, national qualification** — A consistent and portable credential recognising an individual’s attainment of all the criteria, learning outcomes or competencies nominated as requirements for recognition at a given level of accreditation (i.e. the Australian Qualifications Framework in Australia). This may be through the completion of a course, through direct assessment, or a combination of these.

**Curriculum** — A formal document structuring and packaging criteria, learning outcomes or competencies into a learning ‘package’, such as a course, module or program.

**Certificate or certification** — A form of recognition for satisfactory completion of a defined set of criteria, learning outcomes or competencies associated with a short course, module, program or a course not linked to formal qualifications (i.e. a vendor- or company-endorsed credential).

**Credit transfer** — Establishes the value or credit a person may receive in recognition of prior experience, current competence or completed training or education when seeking to move or transfer into a formally recognised course or program of learning. This credit is applied towards a qualification.
Learning objects and information objects may be re-packaged for knowledge transfer as part of an elearning process or as part of an information communication. They may for instance be classified as:

**Learning nugget** — Used to delineate a ‘chunk’ that is an original knowledge asset or learning object; this chunk maintains its ability to credit transfer an individual’s learning towards an agreed outcome that is linked to a course or short course.

**Knowledge nugget** — Used to delineate a ‘chunk’ that is an original knowledge asset, information object or learning object that is a component of a more extensive learning program but no longer maintains its formal relationship to a learning outcome or a course or short course.

**Learning content** is best thought of as knowledge assets packaged into materials, activities and supporting resources to support learning components. They enable a learner to complete learning to the outcomes attached to a learning component. They may include case studies, challenges, assessment tools, experiments and so on.

The above taxonomy recognises that not all structured learning is formally linked to qualifications. It also distinguishes between informal credentials, such as those issued by vendors and enterprises, which have no formal relationship with qualifications recognised by academic institutions across a country or around the globe. Learning may in such cases be for immediate performance needs and not part of a pathway towards a recognised qualification or even a certification.

However, being able to repackage content into immediate, ‘bite-sized’ chunks (nuggets) suiting an individual’s immediate needs may not preserve the learning outcomes or the context. In simple terms, disaggregating the learning objects may disaggregate the formal learning framework.

The table below from Martinez (2001) reinforces the importance of recognising how objects can lose not only their association with the learning pathway, but also their relevance to an individual’s learning style or orientation.

**Table 11.1 Strategies and guidelines for three learning orientations**

<table>
<thead>
<tr>
<th>Learning Issues</th>
<th>Transforming Learners</th>
<th>Performing Learners</th>
<th>Conforming Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Relationship</strong></td>
<td>Prefer loosely structured, mentoring relationships that promote challenging goals, discovery, and self-managed learning.</td>
<td>Prefer semi-complex, semi-structured coaching relationships that stimulate personal value and provide creative interaction (hands-on).</td>
<td>Prefer safe, structured, guiding relationships that help them avoid mistakes and achieve easy learning goals in a simple fashion.</td>
</tr>
<tr>
<td><strong>Goal-Setting and Standards</strong></td>
<td>Set and achieve personal, challenging short- and long-term goals that may exceed goals set by others; maximise effort to reach personal goals.</td>
<td>Set and achieve short-term, task-oriented goals that meet average-to-high standards; situationally minimise efforts and standards to reach standards.</td>
<td>Follow and try to achieve simple, task-oriented goals assigned by others; try to please and conform; maximise efforts in supportive relationships with safe standards.</td>
</tr>
<tr>
<td>Learning Issues</td>
<td>Transforming Learners</td>
<td>Performing Learners</td>
<td>Conforming Learners</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Learner Autonomy and Responsibility</strong></td>
<td>They are self-motivated to assume learning responsibility and self-directed goals, learning, progress, and outcomes. They experience frustration if restricted or given little learning autonomy.</td>
<td>They are situationally self-motivated to assume learning responsibility in areas of interest. Will give up control and extend less effort in areas of less interest or in restrictive relationships.</td>
<td>They are cautiously motivated, prefer less responsibility and self-directed learning, like to be more compliant, and are ready to follow others.</td>
</tr>
<tr>
<td><strong>Knowledge Building</strong></td>
<td>Commit great effort to discover, elaborate, and build new knowledge and meaning.</td>
<td>Selectively commit measured effort to assimilate and use relevant knowledge and meaning.</td>
<td>Commit careful, measured effort to accept and reproduce knowledge to meet external requirements.</td>
</tr>
<tr>
<td><strong>Problem Solving</strong></td>
<td>Preference for case studies and complex, whole-to-part problem-solving opportunities.</td>
<td>They prefer competitive part-to-whole problem solving.</td>
<td>They prefer scaffolded support for simple problem solving.</td>
</tr>
<tr>
<td><strong>Adapted Presentation</strong></td>
<td>They prefer occasional mentoring and interaction for achieving goals (MENTORING).</td>
<td>They prefer continual coaching and interaction for achieving goals (COACHING).</td>
<td>They prefer continual guidance and reinforcement for achieving short-term goals (GUIDING).</td>
</tr>
<tr>
<td><strong>Strategies to Achieve Objectives</strong></td>
<td>Enable high-standard, strategic goal-setting and planning, support realistic personal goals, and ensure putting theory into practice.</td>
<td>Foster personal value (intrinsic benefits) and holistic thinking, offer hands-on, practical support to encourage planning and effort into continual improvements.</td>
<td>Provide time and comprehensive, structured support for adapting training and transitioning skills for improved performance.</td>
</tr>
<tr>
<td><strong>Feedback</strong></td>
<td>They prefer inferential feedback.</td>
<td>They prefer concise feedback.</td>
<td>They prefer explicit feedback.</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>Discovery.</td>
<td>Coached discovery.</td>
<td>Guided achievement.</td>
</tr>
<tr>
<td><strong>Learning Module Size</strong></td>
<td>Short, concise, big picture, with links to more detail if necessary.</td>
<td>Medium, brief overview with focus on practical application.</td>
<td>Longer, detailed guidance, in steps.</td>
</tr>
<tr>
<td><strong>Information Need</strong></td>
<td>Holistic, specific information needed to solve a problem.</td>
<td>General interests, practice, short-term, task-completion focus.</td>
<td>Guidance to fill a requirement.</td>
</tr>
<tr>
<td><strong>Content Structuring</strong></td>
<td>They prefer freedom to construct own content structure.</td>
<td>They prefer general instruction and have a limited ability to reorganise.</td>
<td>They prefer to let others decide the content structure.</td>
</tr>
<tr>
<td><strong>Inquiry</strong></td>
<td>Ask probing, in-depth questions about content. Expect inferential, theoretical challenges.</td>
<td>Ask questions to complete assignments. Expect specific, practical directions.</td>
<td>Ask mechanistic questions about assignments. Expect explicit guidance.</td>
</tr>
</tbody>
</table>

(Martinez, 2001:23)
Given Martinez’s indications, strategic elearning has to ensure that the content being packaged is consistent with the type of knowledge and type learning while maintaining its appropriateness to the learner’s needs and preferences.

A revised approach to managing content is therefore proposed. It is worth making explicit the fact that learning objects may be used for knowledge exchanges as part of unstructured and structured elearning.

Knowledge for information transfer may move down the elearning ‘supply chain’. Knowledge moves from information repositories, through a learning process to transfer knowledge required for applied outcomes (a known purpose). Equally, enabling elearning for wider learning and knowledge purposes makes sense for an organisation seeking to learn. Elearning can manage knowledge with regard to not only informational transfer value, but become an investment in the creation of environments, content and tools that enable collaborative exchanges to encourage flow of tacit knowledge within a learning context.

Elearning may also require the development of strategies that encourage cognitive skills, behaviours or identity creation within a learning context. For instance, simulations, project teams or games may be used. The same solutions may be utilised to accelerate both knowledge and information transfer. This may include collaborative environments, document exchanges or advanced ways of packaging learning objects to facilitate transfer to individuals with certain learning styles and self-efficacy. Designing these solutions can provide valuable insights into how knowledge should be presented as an informational object.

Research also suggests that it is not possible to capture and move some tacit knowledge or content (see chapter 4). No amount of meta-tagging can incorporate this form of knowledge into a controlled content delivery or development process. It is reiterated that if the observations uncovered in this research report are followed, elearning should provide environments, tools and contexts within which tacit knowledge can be shared. These solutions provide a framework for delivery and evaluation that can be grafted onto the transfer of knowledge as information objects that do not necessarily involve structured learning.

The process by which individuals receive information objects that have no relationship to learning outcomes can be reverse-engineered. Learning that has not been recognised as a component on a pathway to formal qualifications can be re-oriented through assessment of prior learning, current capabilities or formal credit-transfer processes. Prior to entry into a structured elearning course, individuals can be assessed and their competencies or prior learning recognised. This is especially useful if the same knowledge repository or content management system can record and report when and to what level the individual has previously accessed the knowledge assets or objects and if they have evidenced assessable outcomes (e.g. completed a problem-solving exercise, analysed a case study).
Figure 11.4 Strategic elearning content model

- Environment
  - Instructor-led
  - Learner-led
  - Structured–Unstructured
  - Community–Individual
  - Classroom, Distance

- Electronic Access
  - Internet (browser and non-browser)
  - Computer (CD-ROM or CBT)

- Learning Components
  - Courses
  - Programs
  - Modules
  - Short courses

- Learning Objects

- Information Objects

- Content/Knowledge Repository

(revised Learnativity Model, Wenger, 2002:5)
11.3.2 Authoring tools and systems

Authoring tools are:

... software applications for creating interactive courses, [and] are designed to help the user create online modules bringing together all components of a course: text presentations, graphics, links, questions, and tracking of student performance. (rmautomationsystems.com, 2003)

Authoring tools enable the creation and structuring of learning objects. A comprehensive explanation and review of authoring tools is included in the report Authoring Tool Strategies by Chapman and Hall (2001), which is referenced and appended to support Chapter 12.

Authoring tools tend to be encompassed within the functions of a Learning Content Management System (LCMS); these systems are discussed below.

11.3.3 Learning content management systems

Some typical definitions of learning content management systems (LCMS) are as follows:

A learning content management system is a system that is used to create, store, assemble, and deliver personalized elearning content in the form of learning objects. (Brennan et al., 2001:4)

An LCMS provides authoring, sequencing, and aggregation tools that structure content to facilitate the learning process . . . an LCMS's strength is its ability to modularize and manipulate content, developers can begin exploring new learning techniques. For instance, Guillermo Leija [Product Manager for Global Knowledge's LCMS Knowledge Pathways] believes that LCMSs are poised to address adaptive learning. "An inherent capability of LCMSs is adapting content to fit a learner's personal profile, not just by delivery mode but learning styles." (Ellis, 2001)

LCMSs are the corporate version of traditional course management systems that were initially developed for higher education. (Robbins, 2002)

Brennan et al. identify the following key building blocks that a good LCMS provides:

♦ Easy-to-use content creation tools;
♦ Flexible course design and delivery;
♦ Support for reusable learning objects;
♦ Administrative functions;
♦ Assessment tools;
♦ Open interface with an LMS or other enterprise system;
♦ Communication and collaboration functions;
♦ Security functions;
♦ Facilities for content migration; and
Automated implementation processes.

11.3.4 Learning management systems

In comparison, learning management systems have been described as follows:

Internet-based software that deploys, manages, tracks, and reports on interaction between a) the learner and the content; b) the learner and the instructor. The systems perform student registration, track learner progress, record test scores, and indicate course completions, and finally, allow instructors/trainers to assess the performance of their students. (Rmautomaticsystems, 2003)

Software that automates the administration of training events. The LMS can perform functions such as registering users, tracking courses in a catalog, and recording data from learners. (Chapman, 2002:26)

Moran (2002) synthesises the following explanation:

There are several definitions used to describe learning management systems. The basic explanation, according to IDC, is "a software application that automates the administration, tracking, and reporting of training events." Another source, e-learning Age, describes LMSs as "software systems used to collect and analyze data relating to existing and developing skills of a workforce."

While both definitions are acceptable, it's perhaps more accurate to combine them: "An LMS is a software application that automates the administration, tracking, and reporting of classroom and online training events, enabling detailed analysis of the effectiveness of your training investment." Ultimately, that's why an organization buys an LMS — to provide information that influences decision making and optimizes training dollars.

However, Aldrich (2001) regards LMS implementations as ‘empty highways’ — having abundant capabilities and costs, but little use; he suggests that ‘while we need learning management, we may not need learning management systems’. Aldrich’s view contradicts the typical ‘you need this technology’ paradigm and is an interesting alternative. His perspective is expressed as follows.

Many companies have invested hundreds of thousands — even millions — of dollars to purchase and customize learning management systems. But due to the lack of courses and time pressures, less than 20 percent of potential learners use them. Enterprises that use their LMSs are comprised primarily of IT professionals who need to continuously update their skills or salespeople who need to learn about new products quickly . . . Indeed, LMSs fail to track a surprisingly large number of self-paced formal learning options, including books, magazines, conferences, meetings and speeches, mentoring and apprenticeship programs, and such group projects as designing a new product or helping a company develop a new marketing plan.
LMSs enjoyed high prominence during the 1999 to 2001 timeframe. They became the must-have application for sophisticated enterprises wanting to get into e-learning. But they ran into the classic Silicon Valley trap of too many features and not enough functionality, overselling and under performing, alienating customers and trapping themselves in maintenance mode. LMSs are critical to understand and deploy learning, and most organizations should have them. But ultimately, they become supporting players in the value chain that brings the right learning to the right people at the right time. Otherwise, while we need learning management, we might not need learning management systems. (Aldrich, 2001)

Further, Aldrich’s explanation of LMS experience suggests that the LMS market has no leader, and:

The LMS market frustrates buyers, almost defying a company to select the appropriate supplier. It's nearly impossible to compare suppliers because every implementation is different, both at the back-end and at the logic and business-flow level. Meanwhile, high-end options don’t ensure quality, and some low-end solutions provide quick and easy-to-install versions that handle basic functionality. More important, most enterprises buying a system still feel like beta customers. As with most rapidly evolving industries, there's an inverse correlation between the suppliers with the largest customer bases and those with the best architecture. In other words, companies usually have to choose between stability and sophistication, or compromise their needs. (Aldrich, 2001)

Observations of the complex and dynamic nature of the LMS market are also reflected in comments such as the following:

“These are large, complex software programs. They're evolving very quickly, they're expensive, and they're very visible to the organization,” Hall advised his audience. "If you buy the wrong authoring tool, you can always go get another one. Get the wrong LMS and you're going to want to change your business card.”

Another thing trainers must consider—in addition to the product itself—is the health and viability of the vendor. "A lot of these companies are not going to survive, therefore one of the most important things about selecting a system is selecting a company that's going to be around for awhile," says Hall. (Brandon Hall cited in Barron, 2000)

Even though these views are dated (given its dynamic nature, in elearning terms, it may be said that two years are equivalent to 10 years in the evolution of thinking in some more established research disciplines), it should not be assumed that the issues noted have been resolved yet. Egan (2002), in describing the ‘top 10 LMS purchasing mistakes (and how to avoid them)’, suggests that:
All LMSs are not created equal. A lot of money has been wasted on LMSs that don't meet a company's needs or match its business objectives, or never go live because they don't work within the user's environment. The task of researching LMS products and companies is daunting, fraught with difficult decisions and plagued with misinformation.

Despite such observations, Learning Management Systems have become a part of standard components of elearning technology. It would seem that, though there is agreement on the standard administration, tracking and reporting functions of an LMS, in the broader LMS market, gaps exist between market needs and expectations, and the technologies on offer.

11.3.5 Virtual learning environments

A learning environment encompasses the systems and settings that provide the context for learner interaction with elearning content. A learning environment can also facilitate interaction with other learners. TechTarget (2003) explains a virtual learning environment as follows:

A virtual learning environment (VLE) is a set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the learning process. The principal components of a VLE package include curriculum mapping (breaking curriculum into sections that can be assigned and assessed), student tracking, online support for both teacher and student, electronic communication (e-mail, threaded discussions, chat, Web publishing), and Internet links to outside curriculum resources. In general, VLE users are assigned either a teacher ID or a student ID. The teacher sees what a student sees, but the teacher has additional user rights to create or modify curriculum content and track student performance. There are a number of commercial VLE software packages available, including Blackboard, WebCT, Lotus LearningSpace, and COSE.

The terms virtual learning environment (VLE) and managed learning environment (MLE) are often interchanged.

This explanation of VLE overlaps elements of the functionality of an LMS, as discussed previously. The existence of variability and interchangeable explanations and definitions of elearning technologies reflects elearning’s nascent state and lack of standardisation.
11.4 Elearning Standards and Compliance

_History has clearly shown that revolutionary changes do not “take off” or hit their inflection point without widespread adoption of common standards. In the case of electricity, this was the standardization of voltage and plugs; for railroads, the standard gauge of the tracks; and for the Internet, the common standards of TCP/IP, HTTP, and HTML. Common standards for metadata, learning objects, and learning architecture are mandatory for the similar success of the knowledge economy and future._ (Hodgins, 2001:15)

The service, content and technology providers as the major market sectors in the elearning ecosystem effectively act as intermediaries between organisations and individuals implementing elearning. Over time, their role in understanding and addressing the needs of a variety of organisations, and their actions in matching and differentiating their offerings from competitors, should help create industry- and market-wide conceptual convergence on the nature and importance of certain elearning technologies, functions and services.

This convergence process can also be accelerated by the formation of ‘cooperative technology organisations’ (Rosenkopf & Tushman, 1998:315) that participate ‘in technological information exchange, decision-making or standard setting for a community’, and in this way provide a means to enable ongoing improvement of technologies (Rosenkopf, 2001). A range of organisations are fulfilling this role in the elearning market (e.g. EdNA, SCORM, Cetis, IEEE, EduSpecs and OASIS). Their relationship to elearning practice, however, needs to be clearly understood. Lichstein (2002) suggests the following:

_The iron [clad] rule in the story of standards is that standards follow practice, they don’t lead. That is, a standard does not burst forth fully formed, causing a revolution on a clean sheet of paper or out of whole cloth. What eventually becomes a standard typically begins as limited practice that is nurtured and then promoted. Once a practice gains traction, it is subjected to the give and take of a marketplace, and is eventually accepted by a community of users. A community grows up around a practice, and the community influences and then controls its evolution. Some form of committee process is created, within certain boundaries. It is a process fraught with peril: defined too tight, a standard cannot grow; defined too loose, a standard does not yield sufficient benefit. A standard will survive and evolve over time only if it attracts adherents and offers them value._

The interplay between organisational learning needs, competitive pressures amongst providers, and collaborative technology and standards organisations will continue to shape elearning technologies. For example, elearning technology providers are driven to differentiate and value-add their offerings in what is a very competitive and dynamic elearning marketplace. This tends to lead to them to offer features that are unique, and therefore unavailable to organisations using alternative technology providers. Their uniqueness, however, is at the same time an advantage and a major weakness. Since a primary benefit of elearning can be the availability of content from external sources, unique features can compromise the access to such content, thereby decreasing the value of the features.
In terms of standards, the main focus of elearning at present is technology centred. The emerging recognition that organisational outcomes are more important than technology will probably shift the emphasis back to the learning-centred issues and language. For the moment, however, it seems that technology remains at the centre of debate, as evidenced by the following comments on SCORM standards:

_The SCORM spec is going to be successful almost by default, but unless all e-learning specifications turn the focus from infrastructure to pedagogical soundness, they are in danger of becoming instructionally irrelevant.* (Thor Anderson, cited in Welsch, 2003)_

**Standards organisations**

Eduworks (2003) identifies almost 30 elearning-related standards organisations. These cover a range of issues from Internet standards (XML, HTML) to issues such as learner information, learner accessibility preferences and learning design. The table below provides encapsulated information on the nature of these organisations.

**Table 11.2 Elearning standards organisations**

<table>
<thead>
<tr>
<th>Web Address</th>
<th>Organisation</th>
<th>About Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.adlnet.org">www.adlnet.org</a></td>
<td>Advanced Distributed Learning (ADL)</td>
<td>The Advanced Distributed Learning (ADL) Initiative, sponsored by the Office of the Secretary of Defense (OSD), is a collaborative effort between government, industry and academia to establish a new distributed learning environment that permits the interoperability of learning tools and course content on a global scale. ADL’s vision is to provide access to the highest quality education and training, tailored to individual needs, delivered cost-effectively anywhere and anytime.</td>
</tr>
<tr>
<td><a href="http://www.aicc.org">www.aicc.org</a></td>
<td>Aviation Industry CBT Committee (AICC)</td>
<td>An international association of technology-based training professionals. The AICC develops guidelines for aviation industry in the development, delivery, and evaluation of CBT and related training technologies.</td>
</tr>
<tr>
<td><a href="http://www.alic.gr.jp/eng/index.htm">www.alic.gr.jp/eng/index.htm</a></td>
<td>Advanced Learning Infrastructure Consortium (ALIC)</td>
<td>Advanced Learning Infrastructure Consortium (ALIC) is established so as to bring cooperation among industry, the government and academia, and contribute to the development of learning infrastructure including learning technology standards. ALIC also follows up the global standardization in ISO/IEC JTC1, which has started a subcommittee on learning technologies since March 2000 to promote system interoperability and content reuse.</td>
</tr>
</tbody>
</table>

*Thor Anderson is the director of developer support at the Instructional Management System Global Learning Consortium (IMS) in Burlington, Mass., and technical editor of two major specifications that went into SCORM, which stands for the Sharable Content Object Reference Model.*
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.ansi.org">www.ansi.org</a></td>
<td>American National Standards Institute</td>
<td>A private, non-profit organisation that administers and coordinates the U.S. voluntary standardization and conformity assessment system. Its mission is to enhance both the global competitiveness of U.S. business and the U.S. quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems, and safeguarding their integrity.</td>
</tr>
<tr>
<td><a href="http://www.ariadne-eu.org">www.ariadne-eu.org</a></td>
<td>Ariadne</td>
<td>The ARIADNE Foundation was created to exploit and further develop the results of the ARIADNE and ARIADNE II European Projects, which created tools and methodologies for producing, managing and reusing computer-based pedagogical elements and telematics supported training curricula.</td>
</tr>
<tr>
<td><a href="http://www.cleolab.org">www.cleolab.org</a></td>
<td>Customized Learning Experiences Online (CLEO Lab)</td>
<td>The Customized Learning Experience Online (CLEO) Lab is a research collaboration between Cisco Systems, IBM, Microsoft and Thomson-NETg. The CLEO Lab goal is to conduct focused, applied research on technical and pedagogical issues related to the ADL Sharable Content Reference Model (SCORM), an important compilation of e-learning interoperability specifications.</td>
</tr>
<tr>
<td><a href="http://www.dublincore.org/">www.dublincore.org/</a></td>
<td>Dublin Core Metadata Initiative</td>
<td>The Dublin Core Metadata Initiative is an open forum engaged in the development of interoperable online metadata standards that support a broad range of purposes and business models. DCMi's activities include consensus-driven working groups, global workshops, conferences, standards liaison, and educational efforts to promote widespread acceptance of metadata standards and practices.</td>
</tr>
<tr>
<td><a href="http://www.ebxml.org">www.ebxml.org</a></td>
<td>e-business XML</td>
<td>Provides an open XML-based infrastructure enabling the global use of electronic business information in an interoperable, secure and consistent manner by all parties.</td>
</tr>
<tr>
<td><a href="http://www.edna.edu.au">www.edna.edu.au</a></td>
<td>Education Network Australia</td>
<td>EdNA is a service that aims to support and promote the benefits of the Internet for learning, education and training in Australia. It is organised around Australian curriculum, its tools are free to Australian educators, and it is funded by the bodies responsible for education provision in Australia - all Australian governments. As a communications service, EdNA Online aims to promote collaboration and cooperation throughout the Australian education.</td>
</tr>
<tr>
<td>Web Address</td>
<td>Organisation</td>
<td>About Organisation</td>
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<tr>
<td><a href="http://www.eicaonline.com">www.eicaonline.com</a></td>
<td>Energy Industry CBT Alliance (EICA)</td>
<td>Encompassing professionals from both energy companies and vendors, the EICA is the energy industry's largest network of technology-based training (TBT) professionals. It is an industry specific consortium that pools the technology-based training resources and knowledge of the largest energy companies to create new cost savings, widen each company’s training resources, strengthen relationships with suppliers, and increase each company's ability to compete on a national and international basis.</td>
</tr>
<tr>
<td><a href="http://www.masie.com/masie/default.cfm?page=consortium">www.masie.com/masie/default.cfm?page=consortium</a></td>
<td>Masie e-Learning Consortium</td>
<td>The e-Learning Consortium is a collaboration of major corporations, government agencies, and e-Learning providers focused on the future of e-Learning. Through our e-Learning Consortium, members network, learn, and share their experiences, best practices, and lessons learned. They actively participate and collaborate on dynamic benchmarking of their e-Learning activities (e.g., what and how specific e-Learning technology is being implemented within their organizations) and in targeted research (e.g., the attitudes and preferences of learners toward e-Learning).</td>
</tr>
<tr>
<td><a href="http://www.hr-xml.org/channels/home.htm">www.hr-xml.org/channels/home.htm</a></td>
<td>HR-XML Consortium</td>
<td>The HR-XML Consortium is an independent, non-profit organization dedicated to the development and promotion of a standard suite of XML specifications to enable e-business and the automation of human resources-related data exchanges.</td>
</tr>
<tr>
<td>ltsc.ieee.org</td>
<td>IEEE Learning Technology Standards Committee</td>
<td>The Learning Technology Standards Committee (LTSC) is chartered by the IEEE Computer Society Standards Activity Board to develop accredited technical standards, recommended practices and guides for learning technology. The LTSC coordinates formally and informally with other organisations that produce specifications and standards for similar purposes. Standards development is done in working groups via a combination of face-to-face meetings, teleconferences, and exchanges on discussion groups.</td>
</tr>
<tr>
<td><a href="http://www.ietf.org">www.ietf.org</a></td>
<td>The Internet Engineering Taskforce (IETF)</td>
<td>A large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.</td>
</tr>
<tr>
<td>Web Address</td>
<td>Organisation</td>
<td>About Organisation</td>
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<tr>
<td><a href="http://www.imsglobal.org/">www.imsglobal.org/</a></td>
<td>IMS Global Learning Consortium</td>
<td>Involved in developing and promoting open specifications for facilitating online distributed learning activities such as locating and using educational content, tracking learner progress, reporting learner performance, and exchanging student records between administrative systems. IMS has two key goals: defining the technical specifications for interoperability of applications and services in distributed learning, and allowing distributed learning environments and content from multiple authors to work together.</td>
</tr>
<tr>
<td><a href="http://www.iso.ch/iso/en/ISOOnline.frontpage">www.iso.ch/iso/en/ISOOnline.frontpage</a></td>
<td>International Organisation for Standardization (ISO)</td>
<td>ISO is a non-governmental organization established in 1947. The mission of ISO is to promote the development of standardization and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity.</td>
</tr>
<tr>
<td>jtc1sc36.org</td>
<td>Information technology for learning, education and training (ITLET)</td>
<td>Develops international standards in information technology in the areas of learning, education, and training.</td>
</tr>
<tr>
<td><a href="http://www.ja-sig.org">www.ja-sig.org</a></td>
<td>Java Architectures Special Interest Group (JA-SIG)</td>
<td>The Java Architectures Special Interest Group (JA-SIG) is an independent organization promoting the use of Java technologies and architectures within the higher education community. JA-SIG supports the development and adoption of low-cost, flexible, open source solutions that adhere to best practices and open standards.</td>
</tr>
<tr>
<td><a href="http://www.oasis-open.org/home/index.php">www.oasis-open.org/home/index.php</a></td>
<td>Organization for the Advancement of Structured Information Standards (OASIS)</td>
<td>OASIS is a not-for-profit, global consortium that drives the development, convergence and adoption of e-business standards. Members themselves set the OASIS technical agenda, using a lightweight, open process expressly designed to promote industry consensus and unite disparate efforts. OASIS produces worldwide standards for security, Web services, XML conformance, business transactions, electronic publishing, topic maps and interoperability within and between marketplaces.</td>
</tr>
<tr>
<td>web.mit.edu/oki/</td>
<td>Open Knowledge Initiative</td>
<td>The Open Knowledge Initiative is defining open architectural specifications to support the development of educational software. Its architecture will provide a modular and extensible development platform for building both traditional and innovative educational applications while helping institutions leverage existing infrastructure. It is designed for broad adoption in the university setting, and aims to simplify the methods of assembly, delivery and access to educational technology resources, while creating a large collaborative community.</td>
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<td>Web Address</td>
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<td>About Organisation</td>
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<tr>
<td>prometeus.org</td>
<td>Promoting Multimedia access to Education and Training in European Society (PROMETEUS)</td>
<td>Amongst its activities, PROMETEUS aims to improve the effectiveness of the co-operation between education and training authorities and establishments, users of learning technologies, service and content providers and producers within the European Community including the Commission of the European Communities (the Commission), to foster the development of common European and international standards for digital multimedia learning content and services.</td>
</tr>
<tr>
<td><a href="http://www.sifinfo.org">www.sifinfo.org</a></td>
<td>Schools Interoperability Framework</td>
<td>The Schools Interoperability Framework (SIF) is an industry initiative to develop an open specification for ensuring that K–12 instructional and administrative software applications work together more effectively. SIF is not a product, but rather an industry-supported technical blueprint for K–12 software that will enable diverse applications to interact and share data seamlessly, now and in the future.</td>
</tr>
<tr>
<td><a href="http://www.sisostds.org">www.sisostds.org</a></td>
<td>Simulation Interoperability Standards Organization</td>
<td>The Simulation Interoperability Standards Organization (SISO) originated over ten years ago with a small conference held April 26 and 27, 1989, called, &quot;Interactive Networked Simulation for Training&quot;. The original conference attracted approximately 60 people. The group was concerned that there was activity occurring in networked simulation, but that it was occurring in isolation. The group believed that if there were a means to exchange information between companies and groups that the technology would advance more rapidly. The group also believed that once the technology begins to stabilize then there would also be a need for standardization. The technology and the consensus of the community would be captured in the standards as networking or simulation technology matured.</td>
</tr>
<tr>
<td><a href="http://www.w3.org">www.w3.org</a></td>
<td>World Wide Web Consortium (W3C)</td>
<td>The World Wide Web Consortium (W3C) develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential. W3C is a forum for information, commerce, communication, and collective understanding.</td>
</tr>
<tr>
<td><a href="http://www.webdav.org">www.webdav.org</a></td>
<td>Web-based Distributed Authoring and Versioning</td>
<td>WebDAV.org is developing DAV, a specification for collaborative work over the Web. It has submitted its work to IETF for open standardisation.</td>
</tr>
<tr>
<td>xml.org</td>
<td>xml.org</td>
<td>XML.org provides XML information and XML schemas and is maintained by OASIS.</td>
</tr>
</tbody>
</table>
11.5 Trends and Emerging Technologies

The sections below explain some of the key elearning trends, emerging technologies and issues.

11.5.1 Peer-to-peer

Peer-to-peer technologies allow files to be shared between computers via the Internet. While this is a function that the Internet inherently allows, peer-to-peer systems such as Napster, Gnutella and others have allowed computer users (permanently or temporarily) connected to the Internet to share their files in a simple manner, directly from their personal computer. There is considerable potential in this area for sharing learning objects. Hodgins (2001) points to some of the possibilities, as follows:

Imagine what it means to have no concept of "servers," where everything is "just" a node on the net. A world where every person and every file can be connected directly, one to one. Think of the impact on learning, learners, and learning content. Think about every learning object connected to every other learning object, able to communicate, pass data, and manipulate the other. Think about a world where control of content is truly put into the hands of every individual, where everyone in need of a given piece of content can be connected directly with those who have it. What will it mean to have potentially billions of authors and publishers? (Hodgins, 2001: 20)

Some aspects of such a model — such as unfettered sharing of files and learning objects, and issues with copyright and ownership — may be undesirable for organisations looking to retain control over their knowledge assets.

11.5.2 Virtual classrooms

Virtual classroom technology represents a communications- and technology-enabled version of the traditional classroom environment. The communications and technologies involved can include:

♦ Voice over IP (VoIP);
♦ Videoconferencing;
♦ Shared whiteboards, application screen sharing and live feedback;
♦ Archiving classes as learning objects;
♦ Interconnectivity with LMS and LCMS.

However, such models attract some criticism due to the limited success of the traditional ‘sage on a stage’ approach (Greenagel, 2002). Koolen’s (2001) comments raise similar questions:
Virtual classrooms continue the delivery of learning in what we call synchronous learning (learner and educator involved simultaneously) and applies the Internet, rather than the physical walls of a classroom, to deliver the session. This can make sense, as up to 40 percent of corporate training budgets are spent on logistics of classroom training, but does not invalidate the drawbacks of relying on the classroom model only. Making an ineffective process more efficient does not necessarily solve the problem, or: rowing harder does not help if the boat is headed in the wrong direction.

... All of these first-generation e-learning applications fulfil their role, but the true potential of e-learning still eludes us. Even if we apply these products to their full potential, it does not mean that we are serving the needs of the learner today — and certainly not tomorrow. (Koolen, 2001:5)

11.5.3 Bandwidth

Bandwidth refers to the amount of information (typically measured as bits per second) that can be sent or received at a point on a computer network. Bandwidth is a major issue in the development and deployment of elearning technologies. Basically, the higher the quality and quantity of sound, video, interaction and processing tasks that need to flow across a network, the more likely that the ceiling capabilities of existing communications technology will be reached. Bandwidth also costs money, so apart from constraints imposed by technologies, there is an impetus to manage the amount of bandwidth used for elearning.

The most common way of dealing with bandwidth constraints is to minimise the amount of information to be communicated. Other strategies, however, such as data compression and caching files, are also used.

Bandwidth impacts elearning in that there are varying types of communications infrastructures across the globe; so while it may be easy to operate elearning in Canada, in the U.S. and on Australia’s east coast, delivery in regional areas — where some forms of modern communications infrastructure are not available — can be costly, difficult or even impossible.

11.5.4 Wireless/mobile elearning

Beyond the ‘fixed Internet’, comprising computers physically connected to the Internet, an increasing amount of attention is being focused on the ‘mobile Internet’, which relates to access to the Internet via handheld or mobile devices. This area is also recognised as an avenue of opportunity for elearning. At present, however, this may be another case of the possibilities or advances in the technology moving ahead of the learning needs in organisations. Technologies have been available for Internet communication via mobile devices for more than five years; the highly anticipated take-off of this area, however, has thus far failed to eventuate.

Some possible reasons for this lack of progress are that mobile Internet devices:

- Are not able to gain access to the same amount of bandwidth as fixed Internet devices;
♦ Are smaller, and tend to have less refined means of presentation and interaction with data (e.g. small screens and keypads of mobile phones and versus their up-market cousins for keeping personal information);

♦ Involve a different context of need and use than fixed Internet devices and no ‘killer application’ has emerged to define the nature and deliverables of this different context of need and use.

Certainly the prospect of having mobile access to learning materials — in a right here, right now context — seems appealing. However, it seems likely that organisations pursuing their learning needs in this area will need to develop technologies for themselves or partner vendors as early adoption test beds (examples exist of this already occurring in greater numbers; for instance, Harvard students accessing a wireless broadband loop; see http://www.news.harvard.edu/gazette/2002/09.19/28-wireless.html; and examples such as the eSat Pty Ltd satellite broadband gateways advancing community, elearning and ehealth in regional Australia by landed broadband that is then moved across wireless local loops out 14 km near line of sight or relayed out to 100 km).

11.5.5 Personalisation

Part of the ultimate vision of elearning is that learner-customised content can be delivered using mass production and distribution technologies. Martinez (2001:1) outlines this vision and some hurdles in its realisation.

The Web offers the perfect technology and environment for individualized learning because learners can be uniquely identified, content can be specifically personalized, and learner progress can be monitored, supported, and assessed. Technologically and technically, researchers are making progress toward realizing the personalized learning dream with adaptive learning object technology. However, two important considerations are being ignored or overlooked in accomplishing the personalization dream. One missing consideration concerns a whole-person understanding about key psychological sources that influence how individuals want and intend to learn online. Conventional, primarily cognitive solutions (which focus on how learners process, build, and store knowledge) offer a restricted view of how people learn and too often lead to unstable or ineffective online learning solutions. A more whole-person perspective includes emotions and intentions as critical factors in the learning process. Also missing is the integration of instructional purpose, values, and strategies into the design, development, and presentation of content (objects). Up to now, developments have focused on technology rather than more important learner-centric issues.
However, Martinez (2001:24) does not regard these issues as insurmountable:

_The dream to deliver personalized learning using learning objects that fits the real-time, anywhere, anytime, just-enough needs of the learner is about to become a reality. Today, along with many important developments in instructional psychology, open standards, structured markup languages for interoperable data representation, and the shift of instructional flow control from the client to the server-side, an entirely new foundation is making truly personalized online learning possible. The most obvious benefit of these innovations is the creation of a learning ecology that shares resources from large reservoirs of content where learning objects are shared individually, widely, and more economically._

These approaches may ultimately overcome the concerns of Russell (1997):

_Individual differences in learning styles dictate that technology will facilitate learning for some, but will probably inhibit learning for others, while the remainder experience no significant difference. Therefore, when lumping all the students together into a fictional "mass," those who benefit from the technology are balanced by a like number who suffer; when combined with the no-significant-difference majority, the conglomerate yields the widely reported "no significant difference" results._

The potential for personalisation is, without doubt, one of the major selling points of elearning. Accepting that people are different, and that we can cater for differences in learning styles and learning needs, it seems reasonable that catering for a high degree of personalisation is an effective way of advancing the knowledge and performance of individuals, and thereby the organisation as a whole. However, there will need to be some degree of reconciliation or integration of accelerating individual learning and capabilities and achieving collective (i.e. organisational) outcomes. This will be one of the most interesting areas to monitor as elearning progresses, especially as learning increasingly moves from the classroom to the work environment.
11.6 Summary

Elearning has emerged as a marriage of technology and learning. At present, elearning discussion is only beginning to shift from one centred on technology issues to one focused on learning or learner issues. This is happening only now, in part, because the scale and complexity of the technologies surrounding elearning were beyond the experience of many learning professionals. It is, however, worth noting that the increased volume of literature appearing in 2002 by pedagogues working in elearning would suggest some encouraging changes (see Chapters 4 and 8). This experience gap exists also from the technology providers’ point of view; while similar technologies have been developed and applied in other industries and contexts, their application to learning outcomes presents new and quite different challenges to the technology providers.

The perceived potential of elearning for both sides (technological and pedagogical) has led to a high degree of readiness to explore and invest in its business possibilities. There seems to be much ‘hype’ and noise — for example, with respect to elearning ROI — mainly coming, understandably, from elearning vendors and technology providers. News from learning developers, or even learners themselves, is considerably harder to locate. The danger for organisations participating in (or contemplating) elearning is that, in the elearning literature at least, the prospects of elearning may be well in advance of the deliverables of elearning. In this setting, the most appropriate strategy seems to be to build elearning initiatives incrementally on the basis of the needs and results expected by individuals and organisations.

For large organisations, the ‘low hanging fruit’ for elearning technologies — reducing training logistics and opportunity costs — may be an adequate and prudent first goal of elearning. At present it seems unlikely that technologies will effectively deliver on prospects of just-in-time learning or full integration with knowledge initiatives in the short to medium term.

A recurring discovery of Internet businesses is that content is what drives and differentiates useful services for customers (the ‘content is king’ paradigm), and that content is the most costly thing to develop and maintain; technology gets you to the ballpark, content determines how well or what you play. It is unlikely that elearning will be any different. If anything, the cost and centrality of content in elearning is likely to be higher than traditional learning. Therefore five immediate strategies become apparent in undertaking an elearning initiative. These are ensuring that:

1. Technology allows existing content to be migrated online;
2. Third-party content can be accessed or cost-effectively migrated into the elearning system;
3. Compliance with standards is utilised as a means to reduce the possibility of content being incompatible with new or emerging technologies;
4. Elearning development is cost-efficient; and
5. The larger proportion of the elearning budget is devoted to elearning content rather than elearning technology.
The last point is particularly significant. The higher the number of individuals that can utilise the content for information, knowledge and learning needs, and the greater the utility value, the more technology will share its investment costs across a greater number of operational users or business outcomes. It can be expected that benefits will proportionately scale with this approach.

Based on research of the literature, this chapter notes a number of observations:

**Observation 11.1**
Given the limitation of instructional and systems designers to build electronic content and environments that can accommodate all the variables impacting how individuals learn in a given situation, the second wave of elearning is focusing on how elearning technologies can respond to an individual's needs and preferences.

**Observation 11.2**
In the absence of 'grounding' in known use and experience, standards may even undermine the immediate needs-led evolution and innovation in elearning by (for example) ignoring new technologies or tacit knowledge. Standards organisations necessarily build compliance requirements on the basis of past experience and future expectations. However, past experience is not particularly either deep or diverse in elearning at this stage, and the future of elearning still appears as a quickly moving target. Elearning's early current stage of evolution means that few organisations have the experience to participate in standards decisions, meaning that the entire industry may be directed by a narrow spectrum of elearning interests and uses. This risk is more likely to be pronounced in elearning-specific areas than in areas that already have an extensive community of user-participants in standards setting (e.g. in the HTML, XML standards for the Internet).

**Observation 11.3**
It can be argued that elearning technologies, such as LMS and LCMS, are more to do with vendors seeking discrete market differentiation than they are real divisions in a supply chain or elearning operation. This arbitrary separation of functions compounds the complexity and costs associated with better integration of content, learning, performance, knowledge and human capital management functions within large corporations and across organisations within a community.
11.7 References


Kraan, W. & Wilson, S. (October 2002). *Dan Rehak: “SCORM is not for everyone”*. Sourced 02.02.2003 from [http://www.ceits.ac.uk/content/20020102000737](http://www.ceits.ac.uk/content/20020102000737)


Chapter 11  Elearning Technology, Standards and Compliance


**Abstract**

This Investigative Research Report makes apparent that learning to elearn requires reinvestigation of systemic issues impacting the management of knowledge, performance, learning and human resources. Despite extensive review of available research, no one has either devised an integrated view or recognised the need for a view that straddles the many contemporary disciplines and fields of endeavour that affect the optimal implementation of elearning into organisations. The study presents the following formula as a conceptual framework to tackle this issue:

$$L + P + KM + HR = HCM.$$ 

In this formula L is Learning, P is Performance, KM is Knowledge Management, HR is Human Resources, and they equate to Human Capital Management (HCM). HCM also leads to:

$$HCM + SC + IC = KC.$$ 

In the second formula SC is Social Capital, IC is Infrastructural Capital and KC is the resulting Knowledge Capital.

The Investigative Research Report illustrates how elearning contributes to knowledge capital across all the levels represented in the above equations. The following graphic overview of the chapter illustrates schematically the strategic framework for these concepts.

This chapter is divided into two parts.

Firstly, it sets forth the case for an elearning implementation strategy and reiterates why management intervention is required.
Secondly, it proposes a blueprint for implementing an efficient and effective elearning strategy. This involves the deconstruction of research data and reconstruction of observations from the fields of knowledge management (KM), human resources (HR) and training, and information technology (IT) into a blueprint of principles to underpin any elearning strategy.

Research confirms that 10 main deliverables are sought from elearning interventions: control, rapid scalability, integration, modularised or object-based packaging, mobility, personalisation, assessment/testing and recognition, access, timeliness and relevance, and equity. Inhibitors and pre-conditions are also identified and need to be addressed as does the design for effective elearning interventions. Implementation of an elearning strategy requires a focus on systematic processes.

Instructional design (ID) is the systemic process for translating general principles of learning and instruction into plans that ensure quality instruction to improve a learner’s performance and to close learning gaps. Various ID models are evaluated and consolidated into a hybrid approach integrating the best features of the ADDIE, Rapid Prototyping Design and Empathic Instructional Design models. This amalgamation results in a proposed four-stage ABII process (analysis, build, implement and improve cycle).

The concept of evaluation is also reinvestigated and found to reinforce the importance of evaluating and improving elearning outcomes across all four levels of Kirkpatrick’s model: reaction, learning, behaviour and business results.

Having reconfirmed the basis for strategic elearning interventions, the second part of this chapter examines the 37 observations that emerge from the entire Investigative Research Report. A blueprint for implementing an elearning strategy is extrapolated from those observations.

As the research was conducted, it became apparent that resolving the following four challenges represent critical success factors for effective and efficient elearning:

- Discontinuity between the organisational needs and preferences and the elearning strategy;
- Discontinuity between the individual needs and preferences and the elearning solution;
- Discontinuity between the different needs and preferences of individuals collaborating or formed in a learning community and the elearning solution;
- Discontinuity between the expected return on investment based on the organisation’s perceived and actual readiness to either exploit or measure the real impact of the intervention on business results and organisational transformation.

The report, which should be seen as a work in progress, presents an integrated approach to designing effective elearning interventions including eight principles. These are aligned to the observations; each of the principles is discussed in turn.
The second part of this chapter identifies strategies for individuals, communities and organisations to maximise elearning effectiveness and efficiency. The proposed blueprint includes the implementation process, business transformation maximisation, packaging for learning or knowledge transfer, enhancement of individual learning and performance, community collaboration, assistance for organisations to learn, and open content and architecture technologies and infrastructure.

Each of these topics is discussed in connection to the rationale and strategic significance.

Conceptual models are provided to graphically depict elearning strategic relationships and to clarify the processes involved in implementing the blueprint. A suite of integrated tools and an application are proposed as important considerations for the phase Build Applications, which follows this Investigative Research Report in the Learning to Elearn Project. The suite of products involves building a capability-based HR management application and a series of elearning capability benchmarking index tools. The system would be modular so that the tools can operate independently of the application, and each tool would be self-contained; use of the application or system, however, would enhance cross-platform and cross-functional analysis and reporting.

More specifically, the proposed suite comprises the organisational elearning capability benchmarking index tool; the elearning individual capability benchmarking index (including knowledge passport) tool; the elearning collaborative capability benchmarking index and decision-making tool; and the elearning investment calculator benchmarking tool. An end-to-end capability-based mapping, tracking and reporting system is also proposed.

The eight principles are presented not as definitive absolutes but as emerging 'guidelines' to help stakeholders understand the dynamics of elearning interventions in relation to the need to accommodate cultural, literal and numeracy variables. Technology aspects are equally crucial in the distributed elearning context.

**Chapter Proposition**

**Proposition 12.1**

An implementation blueprint for efficient and effective elearning can be mapped and applications or tools built to improve elearning outcomes for individuals, communities and organisations.

**Key Themes**

A model to building knowledge capital using elearning; the case for strategic elearning summarised; a proposed blueprint for implementing elearning strategy; identifying the core imperatives; identifying the inhibitors and barriers to success; the need for structured elearning interventions; models for instructional design for elearning evaluated; integrated instructional and system design process; balanced evaluation of elearning outcomes; the 37 observations on strategic implementation; the critical success factors and the eight principles for designing effective intervention design; a revised design and implementation process; the eight factors to position elearning for transformation; an elearning journey and an organisational readiness scorecard; capability-based elearning reporting, analysis, and evaluation tools; a
model for end-to-end capability mapping; the advantages of open architecture and platforms; the need for field research into differentiated elearning characteristics.
12.1 Introduction

One cannot see the way up a mountain, it can only be climbed by trial and error. The intellectual mountaineer makes false starts, gets stuck, gets into blind alleys and cul-de-sacs, finds himself in untenable positions, has to backtrack, has to descend and to start again. Slowly and painfully with innumerable errors and corrections, he makes his zigzag way up the mountain. It is only when he reaches the summit, or the height he desires that he will see that there was a royal road to it. In publications he takes his readers along this royal road, but this bears no resemblance to the crooked tortuous process by which he constructed a path for himself. (Hermann von Helmholtz, 1866, as cited in Sacks, 1997:167)

Elearning is a strategic intervention. If it is reduced to an activity that is consistent with the prevailing mental models associated with most training functions its contribution and overall return on investment (ROI) would be lessened.

This Investigative Research Report examines how to make elearning more efficient and effective for individual, communities and organisations. In completing this study, it has become apparent that relearning how to elearn requires reinvestigation of systemic issues impacting management of knowledge, performance, learning and human resources.

Understanding and implementing effective and efficient elearning requires placing it into a strategic framework that enables investors to determine its value-add using current metrics. In the current and emerging organisational paradigm, this means elearning has to be judged on every level, from a simple return on investment to higher-level outcomes within building Human Capital Management (HCM) and overall Knowledge Capital (KC) value creation.

Implementing elearning, particularly in organisations, straddles many contemporary disciplines and fields of endeavour. As research for this Report progressed, this approach has been presented in formulas constituting Human Capital Management, or HCM, and Knowledge Capital, or KC:

\[ L + P + KM + HR = HCM \]

where L is Learning, P is Performance, KM is Knowledge Management, HR is Human Resources, and which together equate to Human Capital Management (HCM). HCM also leads to:

\[ HCM + SC + IC = KC. \]

In the second formula SC is Social Capital, IC is Infrastructural Capital and KC is the resulting Knowledge Capital.

Elearning contributes to all the dimensions represented in the formulas and does so at individual, group, organisational and cross-organisational community levels. This study of elearning illustrates that the foundations of elearning are shaped by these other dimensions and, in turn, that elearning can provide an integrated activity that enhances each of these dimensions for HCM and KC.
Because elearning intersects many disciplines, the field of elearning research and practice has not developed a theoretical foundation that makes explicit its role and relationship across the ‘alphabet soup’ of components constituting HCM and KC.

12.1.1 The original scope for this report

The overall Learning to Elearn project is concerned with individual transactions that involve learning within an electronically enabled context. More specifically, within this context, collaboration activities address the dual areas of:

♦ Learning — where the focus is on individuals seeking new capabilities and on a transaction process that can nurture new and/or enhanced mental models in one or more collaboration participants; and

♦ Service transactions — including collaboration that focuses on eservice transactions (e.g. online communities, elearning, ebanking).

Essentially, the project focuses on assisting organisations and individuals to engage in more efficient and effective elearning, which enables them to achieve better outcomes in their personal roles and role relationships. Outcomes from the data collected in previous chapters are applicable at multiple levels. Key dimensions requiring examination during the research phase included:

♦ The relationship between learning and knowledge management;
♦ Comparing, measuring and reporting performance, learning and behavioural outcomes;
♦ Organisational transformation and the need to respond to change; and
♦ Electronic transactions and specifically the relationship between elearning and eservice transactions.

The overall research data can now be used to examine elearning at individual, group, community and organisational levels.

This chapter reviews some of the key observations and research to provide insights into what an implementation process for efficient and effective elearning strategy may look like.

The chapter is divided into two parts:

Part 1 — The Case for an Elearning Implementation Strategy; and

Part 2 — A Blueprint for Implementing an Effective and Efficient Elearning Strategy.

The first part summarises why management intervention is required in elearning. The second proposes how the observations in this report, drawn from many disciplines, especially the fields of KM and HR, training, and IT, can be deconstructed. The observations are then reconstructed as the eight principles underpinning effective and efficient elearning, including a proposed blueprint for implementation of elearning.
Part 1 — The Case for an Elearning Implementation Strategy

12.2 Imperatives for an Elearning Strategy

Organisations need elearning for reasons that vary enormously. The Research Report has confirmed some of the core imperatives, including the following.

Control

For learners and managers the most intimidating issue in elearning is the confusion over options and making the ‘best’ choice. Elearning involves many types of technologies, content and services all of which vary in terms of complexity, cost and purpose. Humans tend to be adverse to risk. Early adoption of elearning is therefore often focused on costs of an elearning solution. This includes costs associated with training people to promote and use elearning technologies, cost of content conversion and development, and overall cost of technologies associated with implementation. While some individual learners also embrace the ability to control their own learning process, others prefer to be in a ‘controlled’ learning process led by instructors.

Rapid Scalability

Learning is dynamic. One of the unquestionable advantages of elearning is the ability to rapidly repurpose content and learning architecture to accommodate or facilitate change. Elearning solutions at all levels must be scalable. This becomes a major consideration for an organisation as more content is developed, numbers of learners increase, and system architecture has to manage learning, content, reporting and interfaces with other IT systems (e.g. customer relationship management, personnel reporting, payroll).

Integration

Integration is a key issue in elearning implementation. The search for seamless integration touches on:

♦ Individuals’ prior learning and capabilities and the elearning plan;
♦ Back-end (human resource, knowledge, performance and financial) management systems and front-end delivery systems;
♦ Elearning technologies and tools within the learning environment (i.e. whether the elearning environment can accommodate certain ‘plug-and-play’ devices or assessment models);
♦ Relevance of learning content to real-world performance;
♦ Global delivery across cultures and national regulatory jurisdictions;
♦ Content and its ability to be transferred across converging technologies (i.e. TV, Internet and computer);
♦ Individual and collaborative learning methodologies; and
♦ Data collection and reporting.
Packaged — modularised or object based
Packaging ‘courses’ to individual and situational needs is of paramount importance to elearning sponsors. The dilemma is how to create elearning ‘courses’ and ‘programs’ that can be disaggregated into smaller ‘bite-sized’ learning modules while controlling and reporting the learning and information objects in use. All learning is composed of learning objects that not only can be packaged into personalised modules relevant to an individual’s needs and completed as required, but also can maintain their relationship to a recognisable program or course. Recognition relates to a qualification, vendor certification or organisation-endorsed professional development pathway.

Transferability and portability of learning
Recognition processes for capabilities required by individuals enable transferability of acquired learning as learners move from one level to another, from one education or training program to another, or between occupational areas. All results are recorded and formally reported.

Personalisation and prior learning
This refers to consistent tools and frameworks for recognising each individual’s prior learning and personal learning attributes. Credit for workplace elearning is linked to formal qualification frameworks, and individual learning plans reflect their learning styles, self-efficacy and the learning they need to complete. Content can be contextualised and customised to individual learners’ needs and preferences. As the learners’ ability to learn and perform evolves, the learning outcomes can be reported and content presented in a manner that best accommodates their capabilities.

Assessment, testing and recognition
Recognition involves the formal issuing of a qualification or part of a qualification for capabilities as they are completed. Assessment and testing processes are linked to agreed recognition for formal qualifications, vendor or employer certification regimes, or informal learning outcomes. Unless elearning employs fingerprint access or retinal scans, photo ID or ‘live’ synchronous exchanges between parties who know each other, it cannot accurately verify that the learners being assessed really are who they say they are. Tracking and reporting of individual learning, on the other hand, work effectively. Results from learning can be reported to facilitators, learners and managers.

Access
Elearning and assessment can be built into what individuals do on or off the job. The technology facilitates greater access to learning and overcomes limitations experienced by instructor-led training (for example, timing, location and availability to individuals such as shift workers and people with disabilities). Barriers such as bandwidth requirements and lack of technology (hardware and software), and firewalls remain issues for content delivery.

Timeliness and relevance
Timeliness impacts both the user and the elearning content developer. Existing systems promote structured classroom-based delivery or hardcopy and video-based distance learning. Timeliness and relevance is built into how, when and where
elearning content is delivered. Elearning can be provided in multiple modes and accessed on demand by the user. Once developed, elearning content can also be more flexible in how it is provided to learners. Individual learners can select the information and learning they need to complete. Content can also be tailored or customised not only to their personal needs and preferences, but to the time frame they have available. Concepts such as modules of full qualifications are now being even further disaggregated to accommodate ‘bite-sized’ learning with durations of less than 5 minutes. Equally, the cycle time for the development and replacement of such content is shortened. Content for knowledge workers and those typically accessing online learning has a very short life cycle. Where content for classroom-based learning may have taken months to develop and been updated in timeframes often measured in years, elearning content has to be developed rapidly and updated or replaced in cycle times usually measured in weeks.

**Equity**

Structural barriers such as age, gender, ethnicity, access, arbitrary prerequisites, location and other such barriers were limiting equity in learning. Elearning offers new tools and technologies that address equity issues. Content and learning environment can for instance be customised for individual learners’ preferences, including different languages, text and appearance to suit individuals with visual disabilities and so on. Content can also be packaged and moved in ways that enable individuals with low-bandwidth connections to access digital materials (i.e. sending content as smaller packets of data over dial-up connects at off-peak times).

**12.2.1 Inhibitors and preconditions for a successful elearning strategy**


> There is currently no universally accepted wisdom on the best method for implementing on-line learning, either in Australia or internationally. (However) early indicators of success are beginning to emerge as a significant cohort of innovators implement and evaluate a variety of models (of on-line delivery) . . . (and) most anecdotal reports about the success of on-line delivery are positive.

One approach to assessing effectiveness is to review the comment by Brennan, McFadden and Law (2001) on a finding by Muhammad Betz that ‘Every hour of web instruction is costing about 100 hours of preparation’ (Brennan et al., 2001:49). This approach represents a primary focus on cost-effectiveness. A major study of cost-effectiveness is by Curtain (2002) who, despite difficulties encountered in calculating costs, found that establishment and recurrent costs were considerably higher for elearning delivery than more traditional distance education delivery, and, indeed probably significantly more than face-to-face delivery. This is the down-side of elearning delivery. It must be weighed against the claim (Curtain, 2002, based on a student questionnaire) that such delivery may generate better learning outcomes and higher levels of learner satisfaction.

Another approach is to compare the exit grades of elearning students with those of students who studied through other modes. This enables comparative evaluation of different students across modes of delivery and over time. Williams (2001)
demonstrated that take-up of web-based key skills at the University of North London correlated positively with academic success.

Jordanov (2001) evaluated elearning by American undergraduate students undertaking an on-campus education course on the life span of human development, which used an interactive website, substantive elearning course material and elearning discussion rooms. He adapted David Kolb's well-known Learning Style Inventory (see, for example, Jordanov, 1999) and found that regardless of their general learning style or preferences, students moved toward more active styles when using the Internet. This means students tend to employ 'active experimentation' more than 'reflective observation', and 'concrete experience' more than 'abstract conceptualisation' while engaged in elearning more than when they learn in more conventional ways. In other words, while engaging in elearning students tend to become more like what Kolb called 'accommodators', demonstrating risk-taking and achievement. This is good evidence of effectiveness; however, the study is based on a rather narrow premise: that learning and therefore delivery are effective if students are actively engaged in their learning.

These sorts of approaches appear to be limited, since 'effectiveness' is a multifaceted construct and, therefore, requires multifaceted evaluation using quantitative and qualitative methodologies (Brennan et al., 2001).

Cooke and Veach (1997:205) took a somewhat broader view and found that when engaged in elearning:

. . . students achieve a greatly enhanced learning experience more closely aligned to a seminar-type environment. Interaction is greatly increased. Since interaction is all-electronic, and void of face-to-face queues, comments are more freely provided, albeit in a respectful and thoughtful manner. Written responses demonstrate a great deal of thought and very careful crafting.

Cooke and Veach (1997) also found great savings in paper-based materials, greatly shortened lead times, less ephemerality of course materials, less pressure to select textbooks at an early date.

A review of quantitative studies led Brennan et al. (2001:38) to conclude:

. . . there are few clear examples of technology contributing to improved student outcomes. The most significant results indicate that outcomes achieved using technology are at least the same as those for students in traditional settings.

Nevertheless, Brennan and his colleagues indicate that qualitative studies that focus on enhanced interactivity, better communication, real-life simulations and so on, which are characteristic of online delivery, may paint a better picture of the effectiveness of elearning delivery.

On the basis of a review of the literature, Brennan et al. (2001) found a major set of prerequisites to achieve the main goal of improved learning outcomes for students/users in an elearning environment:
Acknowledge and take into account differences in student/user backgrounds in every phase of the design and delivery of elearning materials and support;

Strenuously apply the lessons already learnt about good teaching and learning;

Cater for the differences in learning styles and preferences of student/users;

Accept that student technological skill and comfort is located along a continuum of proficiency and plan to accept these and design materials and environments accordingly;

Recognise that there are huge differentials in access to the new technologies and work towards reducing these;

Evaluate the effectiveness of elearning programs using a variety of methodologies and time frames;

Prepare teachers/trainers to use new technologies flexibly and beyond minimum levels of competence;

Seek to explicitly enhance information literacy skills;

Focus on the communicative and interactive dimensions of the new environments; and

Don't expect technology to solve all hard problems (Brennan et al., 2001:8).

Chapter 3 identifies many contradictions in the literature on what need to be accommodated to effectively implement elearning. Many of these contradictions reflect differences in how online learning is advanced in the corporate and educational sectors. Harper et al. (2000:65), reviewing online vocational education and training (VET) in Australia, noted:

Online delivery of VET creates learner isolation versus online delivery of VET creates a community of learners;

Online delivery promotes a transformational view of learning versus the medium perpetuates a transmission view of learning;

Online delivery is socially and politically liberating versus online delivery is an expression of cultural domination;

The medium encourages choice of information and learner autonomy versus the medium strictly controls information and learning;

Online delivery facilitates new and exciting modes of communication between learners and facilitators versus online delivery further isolates those already isolated by distance, ethnicity or socioeconomic circumstances;

Online delivery facilitates the growth of learner independence versus online delivery demands and encourages the learner to become an evolving and multidimensional individual with new skills and aptitudes;
The site of online delivery establishes and builds a valuable learning culture versus online delivery is objective and disembodied;

Online delivery focuses on the quality of the learning versus online delivery achieves quantifiable and sometimes narrow outcomes;

Online delivery requires completely new ways of teaching and training versus online delivery requires small modifications to previous pedagogies;

Online delivery can solve most education and training problems versus online delivery is restricted in its capacity to solve the major problems confronting education and training;

Online delivery of education and training is engaging, intrinsically motivating and inclusive versus online delivery of education and training discriminates against certain kinds of learners and their backgrounds and leads to disaffection with learning;

Online delivery of education and training is predominantly a mass distributive activity versus online delivery of education and training is focused on communication, collaboration and interactivity; and

Online delivery of education and training is a liberating opportunity for learning versus online delivery of education and training is characterised by low take-up rates.

Structuring elearning interventions requires consideration of the contradictions that must be accommodated for effective intervention.

12.2.2 Structuring elearning interventions

A number of research reports covered in previous chapters note the importance of the process involved in developing the elearning environment, and that the process is in fact a deliberate one, where the facilitators and organisation are implementing an intervention. Gunawardena, Nolla, Wilson, Lopez-Islas, Ramirez-Angel and Megchun-Alpizar (2001), for example, note that there is a need for conscious development of an elearning community of inquiry, and that the instructor must facilitate this. Newton, Hase and Ellis (2002) state that there must be structured times to engage in elearning while Crawford (2001) recognises the importance of building in opportunities for social interactions in learning situations. Brennan et al. (2001) describe the elearning process as a continuum of proficiency, and it is in this latter sense that the research on interventions sheds new light on the characteristics and profile of culture, language and literacy requirements in effective elearning.

It is important to emphasise, therefore, that elearning initiatives (delivery, courses, cycles of learning, etc.) follow the structure of a social intervention (Argyris, 1971; Falk, 2003, Falk & Smith, 2001; Mulford, 1998; Whelan, 1994). Mulford identified four sequential stages or phases that small groups move through in professional development settings. These are forming, storming, norming and performing/reforming (Mulford, 1998:625-626).

Argyris (1971:22) discussed strategies for interventions, namely:
Generating and helping the clients to generate valid information that they can understand about their problems;

Creating opportunities for the clients to search effectively for solutions to their problems, to make free choices; and

Creating conditions for internal commitment to these choices and apparatus for the continual monitoring of the action taken.

Blake and Mouton (1976:4–5) noted five kinds of interventions:

- **Acceptant** (give the client a sense of personal security);
- **Catalytic** (assist the client to be better aware of the nature of a problem and how to handle it);
- **Confrontation** (challenge the assumptions underpinning the client's current thinking);
- **Prescription** (provide a solution to the client); and
- **Theories and principles** (offer these to the client to help them ‘internalize systematic and empirically tested ways of understanding’).

In considering the intervention of elearning, it is important to note that all five kinds of Blake and Mouton’s (1976) interventions converge in the one learning experience, especially if the characteristics of the rich elearning experience identified in the literature are accounted for. However, apart from Mulford’s attention to the progressive nature of group interaction, none of these researchers examined the structure of the interventions themselves, and it is this structure that bears most relevance for elearning effectiveness. Mulford’s work is based on relatively small and manageable groups of ‘students’ in, for example, professional development courses, while more recent research (Falk, 2003; Kilpatrick, Johns, Mulford & Falk, 2002; Falk & Smith, 2001) elaborates on Mulford’s work by examining the staged structure of interventions in relation to complex and dynamic settings, and the profiles of capacities required at each of those stages. In essence, the design of effective interventions is portrayed in Figure 12.1.
This figure illustrates that an effective intervention does not connect with a stable and unitary capacity of something called 'elearning', and 'elearning' does not have a unitary capacity to 'be effective'. Rather, each stage of the elearning intervention is a variable and dynamic interrelationship between the member components for that stage of that intervention at that time. Elearning delivery conceived as a ‘top-down’, fixed and unitary entity, even if it is designed to fulfil a known need, does not automatically engage with the local and individual components of the intervention, because local perceptions of needs and local capacity to respond to those needs may not exist.

In practical terms, the cultural, personal and situational needs of users at each of the above four stages differ. Ways of engaging learners virtually and in text form differ depending on the stage. The next section addresses some of the practical ramifications of using elearning as staged interventions, and describes the principles underlying effective elearning design processes. However, it is important to note that no research currently exists on the differentiated characteristics of elearning at each of the four stages, and that this work should be conducted as a matter of urgency to shed light on truly effective elearning.
12.3 An Elearning Implementation and Design Process

Implementing an elearning strategy requires a focus on processes. Yet, within any organisation seeking to continuously improve outcomes, processes must involve more than just a set of tasks. The process of elearning needs to be systematic and replicable and form part of the organisation’s knowledge assets (Rothwell & Kazanas, 1997:10). The elearning process must focus on building a culture and a ‘way individuals think’ to ensure that processes, people and strategic frameworks are integrated within a continuous search for the means to improve customer satisfaction.

Structured elearning is ultimately aimed at using learning within an electronic context to achieve specific goals or outcomes. The elearning implementation process therefore needs systematic adherence to planned outcomes.

One of the most common structured and systematic approaches to implementation and decision making in organisations has been the plan, do, check, act (PDCA) cycle — or the Shewhart Cycle after the original author who depicted it in 1932 (Shewhart, 1988), or most commonly as the Deming Cycle.

**Figure 12.2  Deming PDCA cycle**

( Deming, 1986)

Usually, an organisation achieving a competitive advantage means the most efficient use of resources in the production of goods or services. This involves scientific management principles to analyse the way resources are used, for example, businesses endeavouring to find the most efficient way of serving the most customers in the shortest period of time. Accounting principles emphasise unit price and how to reduce them. There is a focus on each of the steps in the production process, and a belief that an increase in efficiency to one of the steps renders the whole production process more efficient. Quality management systems in use at the turn of the century, meanwhile, have shifted the focus from the processes used to the outcomes to be achieved and the need to satisfy customers.

Quality systems therefore place an emphasis on the end users of products and services and relate the ability of the production processes to meet customer or end-user expectations.
Initial quality improvement strategies employed measures and tools such as quality assurance, which have led to a focus on and an improvement in the outputs of organisations. The focus on quality has led to the development of quality programs that engender a whole management system. This is because quality improvement is seen as a holistic process (see Chapter 10) that involves the interaction of all the steps in the production of goods and services. Hence it requires a systems level consideration of all components that influence attainment of a specified outcome.

Implementation models for elearning are based on models from previous fields of learning. In education and training, the most widely used methodology for systematic development of content and supporting technologies have been instructional design (ID). This includes variations such as:

- Information/instructional systems design (ISD);
- Instructional systems design and development (ISDD); or
- The systems approach to training (SAT) (Kruse, 2002b:1).

**Instructional design for elearning** is the systematic process of translating general principles of learning and instruction into plans that ensure quality instruction, which in turn improves the learners' performance and closes learning gaps.

Many ID processes can be deployed for elearning. Most ID approaches essentially explain a process commencing with analysis of learning needs and goals, and end with the development of a delivery system to meet those needs and goals. Approaches vary with different instruction and learning theories, or philosophies on what is involved in the learning process.

The following table outlines some of the key ID models. The information is drawn from numerous sources including the instructional design models website ([http://www.student.seas.gwu.edu/~tlooms/ISD/id_models.html](http://www.student.seas.gwu.edu/~tlooms/ISD/id_models.html)) and an overview of ID approaches provided by George Siemens (September 2002).

### Table 12.1 Comparative elearning instructional design approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Web Source</th>
<th>Description in Brief</th>
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<tbody>
<tr>
<td>ADDIE</td>
<td><a href="http://distance-ed.fullerton.edu/pages/faculty_staff/online_guide/guide24.htm">http://distance-ed.fullerton.edu/pages/faculty_staff/online_guide/guide24.htm</a></td>
<td>ADDIE refers to analyse, design, develop, implement, evaluate. This is possibly the best known design model, and is frequently used in academic circles.</td>
</tr>
<tr>
<td>Algo-Heuristic</td>
<td><a href="http://tip.psychology.org/landa.html">http://tip.psychology.org/landa.html</a></td>
<td>This approach is based on Landa’s (1976) theory that all cognitive activities can be analysed into operations of an algorithmic, semi-algorithmic, heuristic or semi-heuristic nature. Once discovered, these operations and their systems can serve as the basis for instructional strategies and methods.</td>
</tr>
<tr>
<td>Dick and Carey Model</td>
<td><a href="http://www.umich.edu/~7Eed626/Dick_Carey/dc.html">http://www.umich.edu/~7Eed626/Dick_Carey/dc.html</a></td>
<td>The Dick and Carey model (Dick, Carey &amp; Carey, 2001) prescribes a methodology for designing instruction based on a reductionist model of breaking instruction down into smaller...</td>
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<tr>
<td>Approach</td>
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<tr>
<td>Robert Gagné’s ID Model</td>
<td><a href="http://www.gsu.edu/~Emstswh/courses/it7000/papers/robert.htm">http://www.gsu.edu/~Emstswh/courses/it7000/papers/robert.htm</a></td>
<td>Gagné’s (1977) approach to instructional design is considered a seminal model that has influenced many other design approaches and particularly Dick and Carey’s systems approach. Gagné proposed that events of learning and categories of learning outcomes together provide a framework for an account of learning conditions.</td>
</tr>
</tbody>
</table>
| Minimalism       | [http://tip.psychology.org/carroll.html](http://tip.psychology.org/carroll.html) | The minimalist theory of J. M. Carroll (1990) is a framework for the design of instruction, especially training materials for computer users. The theory suggests that:  
1. all learning tasks should be meaningful and self-contained activities,  
2. learners should be given realistic projects as quickly as possible,  
3. instruction should permit self-directed reasoning and improvising by increasing the number of active learning activities,  
4. training materials and activities should provide for error recognition and recovery and |
### Approach

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<th>Web Source</th>
<th>Description in Brief</th>
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<tr>
<td><strong>Kemp, Morrison, and Ross</strong>&lt;br&gt; <a href="http://www.student.seas.gwu.edu/~tlooms/ISO/jk_design.html">http://www.student.seas.gwu.edu/~tlooms/ISO/jk_design.html</a> or <a href="http://www.personal.psu.edu/faculty/s/j/sjm256/portfolio/kbase/IDD/kemp.htm">http://www.personal.psu.edu/faculty/s/j/sjm256/portfolio/kbase/IDD/kemp.htm</a></td>
<td>Kemp, Morrison and Ross (2001; originally published 1998) expand Carroll’s (1990) general list of elements in their instructional design plan to nine, but stress that every project and every instructional designer is unique and would employ the elements differently. They build on earlier works by Kemp (1985) and consolidate ADDIE as a more in-depth and iterative cycle. Their elements are:&lt;br&gt;&lt;br&gt;1. Identify instructional problems, and specify goals for designing an instructional program.&lt;br&gt;2. Examine learner characteristics that should receive attention during planning.&lt;br&gt;3. Identify subject content, and analyse task components related to stated goals and purposes.&lt;br&gt;4. State instructional objectives for the learner.&lt;br&gt;5. Sequence content within each instructional unit for logical learning.&lt;br&gt;6. Design instructional strategies so that each learner can master the objectives.&lt;br&gt;7. Plan the instructional message and delivery.&lt;br&gt;8. Develop evaluation instruments to assess objectives.&lt;br&gt;9. Select resources to support instruction and learning activities. (Kemp et al., 2001:5).&lt;br&gt;&lt;br&gt;All these are placed in a context of formative and summative evaluation, which continually improves the elements of the instructional design.</td>
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<tr>
<td>Approach</td>
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<tr>
<td>Rapid Prototyping</td>
<td><a href="http://www.personal.psu.edu/users/g/e/gep111/html/M4L1%20-%20ISD/M4L1P1.htm#rapid_proto">http://www.personal.psu.edu/users/g/e/gep111/html/M4L1%20-%20ISD/M4L1P1.htm#rapid_proto</a></td>
</tr>
</tbody>
</table>
Approach | Web Source | Description in Brief
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Empathic Instructional Design (EID) | [http://www.elearningpost.com/features/archives/001003.asp](http://www.elearningpost.com/features/archives/001003.asp) | EID is a five-step process:
1. Observe
2. Capture data
3. Reflect and analyse
4. Brainstorm for solutions
5. Develop prototypes.

Many critics of ADDIE suggest the process is too rigid and has not adapted to reflect the changing times. Dorothy Leonard and Jeffrey Rayport (1997) promoted a focus on the practice of empathic design in many successful and innovative companies. EID promotes ID based on an understanding of the needs, desires and methods of the potential learner.

While the approaches vary, many of the models such as Kemp (1985), Morrison et al. (1998 & 2001), Gagné (1977) and Dick, Carey and Carey (2001) provide detailed variations to the ADDIE model. Others have emerged as direct counterpoints to ADDIE. ADDIE has been criticised for being too systematic and reliant on an approach likely to work only if there are unlimited time and resources and a primary focus on content development. Models such as Empathic Instructional Design, in contrast, promote ID driven by the users’ needs and preferences. Alternatively, Rapid Prototyping responds to the time constraints facing elearning ID.

### 12.3.1 The ADDIE model

The ADDIE model stands for analysis, design, development, implementation, and evaluation. Each step has an outcome that feeds the subsequent step.

**Figure 12.3 The ADDIE process**
Table 12.2  ADDIE and elearning instructional design activities

<table>
<thead>
<tr>
<th>Phase</th>
<th>Typical activity</th>
<th>Deliverables</th>
</tr>
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</table>
| Analysis | • Prepare project plan  
• Conduct needs assessment  
• Conduct audience analysis  
• Conduct content/task analysis  
• Conduct technical analysis and select authoring/media tools  
• Set learning goals and structure | • Analysis report |
| Design | • Write instructional/learning objectives  
• Prepare instructional strategies and lesson designs  
• Prepare interactive design and media treatments  
• Design evaluation | • Design document with paper or electronic prototypes |
| Development (Production & Pilot Testing) | • Obtain and create required media  
• Program/code  
• Establish appropriate interactions  
• Author and integrate media elements  
• Pilot test (field trials) and revise as needed | • Tested (instructionally and technically valid) courseware ready for implementation |
| Implementation | • Install and maintain course  
• Duplicate and distribute courseware  
• Report and track  
• Complete logistics and maintenance | • Implemented course  
• Student learning |
| Evaluation | • Evaluate learning and effectiveness | • Evaluation report and recommendations |

(Cited from Bowles, 2001; ADDIE Instructional Design Model; 2002; Thiagarajan, 2000; TeleEducation Canada; http://teleeducation.nb.ca/content/web-guides/english/NewMediaSurvey/design_process.htm © Tele Copyright 2002)

Criticisms of the ADDIE approach in elearning are often hard to separate from general problems with elearning. For instance, Elliott Masie (2001) in *No More Digital Page-Turning* stated ‘About 98 percent of the e-learning content that is now offered to adult, corporate learners, is modeled after a textbook or classroom metaphor’. Blaming ADDIE as the sole cause ignores the wider problems, as uncovered by this Research Report, such as instructional designers and organisations failing to understand the full capability of elearning.

The attack on the conventional ADDIE approach to ID/ISD came to a head in April 2000, when *Training* featured six major online training experts criticising the approach (Thiagarajan, 2000). Four of the criticisms levelled were:

1. ISD is too slow and clumsy to meet today's training challenges — created in World War Two to advance military instruction, ISD was too slow for the industrial world and a modestly skilled labour force, not to mention the New Economy, which demands greater speed and flexibility;
2. There's no ‘there’ there [sic] — ISD is more a project management system than an instructional development algorithm, with inviolable steps that assure the development of successful training programs;
3. Used as directed, ISD produces bad solutions — even if applied as guidelines the ISD approach is too rigid. It is tied to specifiable, observable outcomes that make both the process and results in training and learner outcomes conform to a homogeneous model. This model lacks the flexibility and creativity required in the modern workforce;
4. ISD clings to a misguided or outmoded worldview — the ISD model is an ‘experts-based’ system that lacks a focus on the users’ needs and
preferences. It assumes that learners are stupid and experts are smart. ISD ignores how adults learn from unstructured events and that learning can be based on their own actions (action learning), context (situational learning) and investigation (experiential learning and self-directed learning). Such learning processes are often the most rewarding for individuals and organisations.

The criticisms of highly structured, systematic approaches to ID/ISD suggest that investigation of alternatives, or at least integration of solutions that improve user focus, speed and flexibility, is warranted.

### 12.3.2 The need for customer focus — the EID model

Maish Nichani (18 February 2002) cross-referenced Leonard and Rayport’s (1997) article and applied it to elearning. The result is a five-step Empathic Instructional Design process, which was intended to be incorporated into traditional ID processes. These alternative EID models may still pursue quality outcomes but embrace a systems level approach (systemic) rather than process level systematic approaches, and ignore more appropriate holistic, iterative approaches (Kruse, 2002b).

#### Table 12.3 Nichani five-step empathic instructional design

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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</table>
| 1    | **Observe**  
Observe users performing their daily tasks with the goal of identifying learning needs to real performance problems, and studying contexts under which they occur. If it is possible, instead of just observing, perform the tasks to get firsthand experience of the problem and needs of the task.  
The observers should be from multidisciplinary fields such as instructional design, graphic design, human factors design, etc., to get a rich understanding of the problem.  
Example: When designing a training solution for a call centre, send out a team to observe learners-to-be in action. Watch their actions, their expressions and identify their unarticulated needs. Empathise with them. |
| 2    | **Capture Data**  
Capture the practice using photographic and video toolsets. Record the sounds of the working environment. Ask open-ended questions. Make notes of problems faced and solutions rendered. Chart daily routines.  
Example: For the call centre training above, photograph the call centre environment. Listen to questions asked and answers rendered (live or tape playback). Video the search for solutions to new problems. Capture the interactions between workers. |
| 3    | **Reflect and Analyse**  
Share the captured data in its many forms with the team. Analyse the data. Picture the current state of performance. Visualise the desired state of performance. Identify ‘real’ learning needs and ‘gaps’. Many times a discrepancy in performance might not be due to a learning need; it might just be the case of misaligned motivational issues.  
Example: For the call centre training, rework the collected data and create scenarios of performance, problems and solutions. Build workflow diagrams and identify discrepancies. Share these with call centre representatives. |
4 Brainstorm for Solutions
Start the brainstorming session once learning gaps are identified. Discuss solutions for their appropriateness to learners and their contexts. Cross-pollination of ideas from different domains such as video games, sports-training, televisions, etc. will broaden the search horizon.

Search far and wide. Does the learner need just-in-time information? Would the Macromedia-type knowledge base suffice? Is it better to have a print supplement? Would the learners be more attuned to audio streams? Would a Harvard-type case study be a viable option? Would a small simulation be appreciated? Can we adopt a Disney movie style? Would a blended solution fit in? Can the work environment be a part of the solution?

Example: In the call centre training above, assume the designers noticed that the workers didn't like to work with their computers during breaks. Instead, workers would gather in groups at the office lounge to cool off and discuss work-related problems. Just by these observations, solutions could be designed that are a) available at the lounge, b) not too gruelling and c) problem-based.

5 Develop Prototypes
Once a set of solutions are decided upon, small working prototypes are built and tested with learners to determine their learnability — the effectiveness of the solution in enabling learning.

12.3.3 The need for speed — the rapid prototyping model
Sivasailam ‘Thiagi’ Thiagarajan outlined as early as 1993 a Rapid Instructional Design process (1993). The process was an express attempt to replace more conventional ISD/ID instructional design strategies, which focused on delivering solutions ‘just in time’. Thiagi recognised that some forms of learning, particularly electronic simulations, had to evolve very rapidly and neither the resources nor the time existed to follow an ADDIE approach. The following table summarises Thiagi’s core strategies and the guidelines behind his rapid prototyping approach.

Table 12.4 Thiagi Rapid Instructional Design (RID) strategies

<table>
<thead>
<tr>
<th>Strategy 1. Speed up the process</th>
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<tr>
<td>Guideline 1. Use shortcuts in various phases of the instructional design process.</td>
</tr>
<tr>
<td>Guideline 2. Combine different phases of the instructional design activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy 2. Use a partial process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guideline 3. Skip phases in the instructional design process that are unnecessary or superfluous.</td>
</tr>
<tr>
<td>Guideline 4. Produce a lean version of the instructional package for immediate use and continuously improve it after implementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy 3. Incorporate existing instructional materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guideline 5. Use a systematic approach to analyse learner and delivery variables to adapt the content and activities in existing instructional material.</td>
</tr>
<tr>
<td>Guideline 6. Deliberately design generic instructional materials for local completion.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy 4. Incorporate existing non-instructional materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guideline 7. Use non-instructional materials to present the basic content. Design suitable activities and feedback systems to reinforce this content.</td>
</tr>
<tr>
<td>Guideline 8. Design instructional packages around job aids.</td>
</tr>
</tbody>
</table>
Strategy 5. Use templates
Guideline 9. Use templates to specify the content, sequence, activities and feedback requirements for different types of learning.
Guideline 10. Use standard procedures for designing small-group instructional activities.

Strategy 6. Use computers and recording devices
Guideline 11. Use suitable software packages to speed up various aspects of analysis, design, writing, illustration, evaluation and revision.
Guideline 12. Use audio and videotape recording equipment to save time on analysis and production.

Strategy 7. Involve more people
Guideline 13. Use an emergency team to rapidly work through all phases of systematic instructional design.
Guideline 14. Use vertical teams to specialise on different phases of instructional design or horizontal teams to specialise in different modules of the instructional package.

Strategy 8. Make efficient use of subject matter experts
Guideline 15. Train and support subject matter experts to become performance-oriented trainers.

Strategy 9. Involve trainees in speeding up instruction
Guideline 17. Use interactive techniques to shift instructional design responsibilities to the trainees.
Guideline 18. Use peer tutoring to maximise mutual learning and teaching.

Strategy 10. Use performance support systems
Guideline 19. Facilitate learning through individualised systems of instruction.
Guideline 20. Use suitable incentives to reward learning.

12.3.4 An integrated elearning instructional design model

The advantage of an ADDIE approach to ID is its ability to control resources, timelines and progress. Weighed against this decision-making certainty is that the process has become obsolete for organisations operating in markets that require high degrees of responsiveness. This situation supports rapid prototyping and empathic instructional design over an ADDIE approach.

Instructional/Information Systems Design (ISD) has been subject to criticism and continual refinement by the field of information systems since the mid-1970s. For many years, professionals and experts in the Information Systems field argued for ISD process to be shaped with more sensitivity — not just the activities, but also how the overall process created an interface between design, development personnel and end users. How well this interface was built often determined the end product and service’s appeal to users (or whether the end product and service was embraced by the users) (Hirschheim & Klein, 1989; Seels & Glasgow, 1990; Hirschheim & Newman, 1991; Orlikowski & Baroudi, 1991; Hirschheim, Iivari & Klein, 1997; Fitzgerald, 2000).

This Investigative Research Report has observed that the evolutionary path taken by elearning is similar to those of other technologies. The same can be said of elearning
ISD/ID. The report also observes that organisations should view transactions between internal and external individuals (suppliers and staff, ISD staff and customers) as a means to learn and continually improve.

For Rapid Prototyping or any other ISD/ID approach, management is more likely to promote elearning where control systems are in place and the needs and preferences of the end user are being met (Lambe, 2001:2–3). This argues for a systemic approach such as Rapid Instructional Design (RID) or Rapid Prototyping Design (RPD). It is possible to accommodate RID within a modified ADDIE model (Kruse, 2002b:1); for example, by treating the overall process as one of improvement and responsiveness. Equally, the design process would focus on the ‘build’ issues, which would permit it to include PID/RPD activities.

RID/RPD and EID can be included in the design stage. This obviates the need for testing and validation to occur as a separate, later development stage. Testing customer acceptance of quickly assembled content or supporting technologies and resources occurs not as a separate, additional development stage after design, but as an integral part of design and development. By integrating these activities, feedback on the design can be collected and the prototype improved. This iterative process can occur rapidly and continue until the elearning content, technology or service is ready for the wider audience. The final product or service is therefore delivered in a more complete form, based on user needs, and final programming and technical configuration commenced only after its efficiency and effectiveness have been demonstrated.

Integrating RID and EID has resulted in some experts and major corporations, both vendors and users, advancing modified ID/SDI processes based on ADDIE. Companies such as PricewaterhouseCoopers, Cisco and Woolworths Australia use processes with the following four steps (ABII):

1. Assess/analyse/research;
2. Build/design and develop;
3. Implement/deliver/operate; and
4. Improve/review/evaluate.

Figure 12.4 illustrates how a four-step process can be implemented to generate a ‘responsive’ ISD/ID process.
The following section examines the importance of evaluating outcomes at all stages of any elearning implementation and design process.
12.4 Evaluating Elearning: Measuring and Improving Efficiency and Effectiveness

With the investment in elearning comes the need to adequately measure the success of the frameworks and strategies implemented. As observed by this report, evaluation of elearning has to move beyond a focus on cost savings and comparisons with traditional classroom-based instruction (see Chapter 10).

The evaluation process occurs throughout the elearning implementation process. It determines the value-adding effectiveness and efficiency of a strategy and program. Evaluation provides tangible proof to a community, an organisation or the individuals (students, teachers, tutors, designers, etc.) who participate that their investment not only has been engaging, but also has generated a result. Reporting and recording attainment of capabilities to fill a known ‘skill’ deficiency is one approach to mapping and reporting that the investment in learning has resulted in tangible improvement. However, the larger challenge for the instructional designer, learning manager or provider is to demonstrate that this value-add has occurred within an efficient and effective elearning strategy that continuously builds sustainable advantage.

Usually, evaluation of education and training concentrates on measuring individual reactions or the effect on specific performance or learning outcomes. This reduces the evaluation effort to ‘happy’ sheets soliciting responses from participants and perhaps broad identification of management satisfaction with the cost and targeting of the initiative. This may not be sufficient for enterprises seeking market responsiveness and competitiveness.

Evaluation of a company’s learning and related systems should encompass the total contribution they make to improvement as determined by the critical, contemporary measurement of business performance and individual development. (Bowles, 1995:3)

The evaluation and measurement of elearning should not be imposed if it offers no value-add. Informal elearning activities may not all require rigorous or comprehensive evaluation and measurement frameworks. For instance data capture and measurement may occur through wider reporting and evaluation regimes. Caution also needs to be taken to avoid overcapitalising on measurement systems at the expense of the value of the data collected. The aim should not be to measure for the sake of measurement. Just because elearning information and communication technologies can promote data capture does not mean they have strategic value. Nevertheless, the literature reviewed for this research report suggests an absence of analytical investigation on how learning content and environments can be assessed in terms of their value-add both to the learner and wider strategic outcomes. There also is little about organisational benefits related to management of knowledge and the growth of human capital as a component of knowledge capital assets.

What the review of literature reinforces is the emerging dichotomy: educational institutions (especially schools and universities) and businesses are respectively evaluating learner satisfaction and ROI/performance-related outcomes. Evidence in the United States suggests educators are focused on measuring student satisfaction (Bonk, 2002a:119–120). While teachers believe web-based course evaluation would be useful, 90 per cent still use ‘pen and paper’ to evaluate course outcomes (Bonk,
Businesses, on the other hand, focus primarily on course evaluation; in particular ROI metrics related to cost, time savings and skills transfer related to job performance (Kruse, 2003; Berry, 2000:2). The promotion of evaluation focuses on learners’ satisfaction (in education) on one hand and cost/skills (business) on the other; but very little attention has been given to measuring organisational performance.

12.4.1 Re-establishing a balance in elearning evaluation

To improve elearning continuously (or at all), it must first be evaluated. If elearning is to be truly strategic in its impact on an organisation, it must be evaluated at all levels of outcome. This includes individual, group, community and organisational outcomes.

In 1959 Donald Kirkpatrick\(^1\) first advanced a four-level model for a ‘balanced’ evaluation of learning. His approach has been very influential within elearning instructional design models (Kruse, 2002a; Horton, 2000; Bonk & Wisher, 2000), and popularised by its success with early adopters of elearning (for instance, AT&T; see Welber, 2002). Kirkpatrick’s approach re-emphasises evaluation of not just the learner’s satisfaction or the cost of training, but also the ultimate outcomes. The aim is to evaluate these factors within an integrated approach that also demonstrates how elearning has improved the organisation and the community.

Kirkpatrick’s Model for Summative Evaluation — and its four levels — has become a classic:

- **Level 1:** Reaction
- **Level 2:** Learning
- **Level 3:** Behaviour
- **Level 4:** Results

**Level 1: Students’ Reaction**

In this first level, students are asked to evaluate the training after completing the program. The aim is to assess the learner’s satisfaction with the session, or program, of learning. While often narrowed down to simplistic surveys completed at the end of a session (so-called happy sheets), this type of evaluation can survey individual responses on matters that can be compared across the student population. This survey or questionnaire could for instance investigate:

- The relevance of the objectives;
- The ability of the course to maintain interest;
- The amount and appropriateness of interactive exercises;
- The ease of navigation;

\(^1\) Kirkpatrick advanced this theory originally in a series of four articles for the American Society of Training and Development Journal in 1959, which were revised in 1988 (with subsequent editions in 1994 and 2001).
The perceived value and transferability to the workplace (Kruse, 2002a).

Institutional educators have found reactions surveys and questionnaires on learner satisfaction especially useful complements to online elearning (Bonk, 2002b: 7). With the available technologies and simple configuration of existing learning content, educators operating in networked, electronic environments have found this type of evaluation easy to adopt and foster.

**Level 2: Learning Results**

This level measures what participants have learnt from a learning program. It seeks to quantify the extent to which participants’ knowledge, skills and other attributes have changed. The results emphasised by Kirkpatrick refer to the learning outcomes from structured modules, programs or courses. This form of evaluation may involve comparative test scores before and after a course, or across different classes (learning teams) and demographic groups. This type of evaluation is not as widely conducted as Level 1, but is still very common.

**Level 3: Behaviour in the Workplace**

Capability retention is an important attribute for the knowledge-based worker. Learners may score well on post-tests, but it is more important to determine whether they can transfer the new knowledge, skills and other attributes to immediate and longer-term job application (Kruse, 2002a; Horton, 2000). Level 3 involves follow-up evaluation over longer periods than Level 2 after the learning programs (training) has been completed. Over three to twelve months, evaluation attempts to answer whether students’ behaviours actually change as a result of new learning.

This data is harder to collect and analyse but has real value in terms of planning future elearning strategies and investment. Surveys or behavioural analysis assessments may be analysed to show how learning outcomes change behaviours in ways that can be evidenced through customer and business outcomes. This evaluation evidence may include how service training has impacted customer satisfaction, changes in customer’s behaviours, or how training for government compliance has resulted in overall compliance of service with government requirements.

**Level 4: Business Results**

The fourth level seeks to evaluate the business impact that results from learning. The results may be organisation wide, or across populations of learners (i.e. an occupational group, team or business unit, or functional unit, for instance, those trained for a specific competency set such as help desk attendants). This level requires evaluation metrics to move beyond the individual learner and examine the contribution in learning to the organisation of the investment.

It is not the place of this research report to overview how the various means of evaluating learning could be applied to elearning. This report, however, points out the significant limitations of Kirkpatrick’s approach. Direct and implicit criticisms include:

- It takes too long to get to Level 4 evaluation, which is the most important one for managers making investment decisions;
There is no substantial research base to prove that a linear progression from Level 1 (learner reactions) to Level 4 (business outcomes) exists (i.e. if you complete one you can move on to the next level) (Dixon, 1990);

The available electronic environments and requirements for knowledge work in the New Economy have progressed so far and are so dynamic that the original Kirkpatrick four levels bear little relevance to measurement of the transfer of knowledge in its many diverse forms (i.e. Dixon, 2000; Weiss, 1998);

The model ignores the situation within which learning transfer occurs and focuses on the learning outcomes or immediate knowledge transfer (Holton, 1995);

As an extension of the above, the evaluation approach needs to accommodate the learning so that it includes learning objects and evaluation of technology design (Wiley, 2000); and

Organisational learning or factors impacting learning capacity and knowledge transfer within organisations and communities are not accommodated or cannot fit within a linear, non-adaptive system model (i.e. Cohen & Levinthal, 1990; Crossan & Hulland, 1997; Ruona & Lyford-Nojima, 1997; Song, 2002).

While surveys consistently show that more than 80 to 90 per cent of training managers use Level 1 forms of evaluations and up to 30 per cent Level 2 approaches, less than 20 per cent Level 3 and fewer than 5 per cent deploy Level 4 forms of evaluation. The review of relevant literature has uncovered no verified framework on how to collect and analyse Level 4 data in a way that separates the effectiveness of learning from situational changes that may alter the learner’s motivation, mental models or overall performance capacity. Chapter 8’s analysis on individual learning variables highlights the absence of research on the overall effect of electronic environments to accommodate the needs and preferences of individuals, prior to a learning exchange.

Many different methods have been used and supported that evaluate organisational effectiveness in terms of return on investment at Kirkpatrick’s Level 4. While Kilpatrick suggests a cost-to-benefit ratio (CBR)

\[
\text{CBR} = \frac{\text{Program benefits}}{\text{Program costs}}
\]

others, such as Phillips (1997), argue for a return on investment (ROI) approach and its addition as an extra level of evaluation. Phillips adds an ROI step. He also identifies 10 strategies to convert data to monetary values depending on the type of data and the particular situation (Wentling, Waight, Gallaher, La Fleur, Wang & Kanfer, 2000:20). The strategies are as follows:

1. Output data is converted to profit contribution or cost savings;
2. Cost of quality is calculated;
3. Wages and benefits are used as value for time;
4. Historical costs are examined;
5. Internal and external experts are sourced;
6. External databases are used;
7. Participants provide estimates;
8. Participants’ supervisors provide estimates;
9. Senior management provides estimates;
10. HRD staff estimates.

Kirkpatrick’s is, at best, an indicative model for elearning to accommodate many levels within the evaluation metrics. It also emphasises the need to evaluate beyond reaction and individual learning. The capture, analysis and reporting of information must enable a picture to be formed of how well elearning is effected at different organisational levels. These levels include:

- The company;
- Major functional or occupational areas (e.g. finance department or clerical work);
- Job-specific requirements (e.g. clerical or accountant);
- The operational unit (e.g. department, team, division); and
- The individual.

Evaluating the impact of elearning on business provides a business with a critical means to assess current investments in elearning (including selecting vendors) (Welber, 2002), and monitoring elearning readiness. Analysis on how to establish elearning readiness is explored in-depth in Section 12.8.2. However, Figure 5 illustrates how advances in elearning’s sophistication and the organisation’s capacity to deploy elearning effectively are directly proportional to strategic business impacts. Evaluation not only determines current progress, but also analyses and reports progress towards improved business results.

**Figure 12.5  Integrating elearning readiness with possible business gains**
12.4.2 Internal and external evaluation

Learning outcomes may also be evaluated by internal and external validation. **Internal validation** involves a series of tests or pilots designed to ascertain whether the training meets stated learning/behavioural outcomes. **External validation** involves a series of tests or pilots designed to gauge whether internal programs or validation efforts are realistic and the company standards set at a ‘competitive’ or realistic level. The question to be resolved is *Does the elearning system deliver the desired outcomes?* This is followed by the qualitative, open-ended question, *How can the elearning system be improved?*

If the Pareto* (or 80:20) principle is applied to quality systems, at least 80 per cent of all issues with product and service delivery can be shown to reside in the management systems, not the individuals completing process level tasks. Systems evaluation therefore is essential if the root causes of problems are to be found, removed or resolved. This can be built into all stages of the integrated elearning design and implementation process (ABII) proposed in Section 12.3.4. ABII also reinforces design development if rapid prototyping is included at the build stage.

### Table 12.5 Types of validation for systems evaluation

<table>
<thead>
<tr>
<th>Type of Validation Activity</th>
<th>Internal validation</th>
<th>External validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review by external experts</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Panel of experts appointed by the organisation to receive evaluation report or conduct evaluation</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Benchmarking known indicators against competitors or set standards</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Pilot/testing conducted by external consultant/project team</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Pilot/testing conducted by internal nominee(s)</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Pilot/testing conducted for a client and evaluated by the client against agreed outcomes</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Structured response and feedback from system managers and users</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Control groups (clients or across a range of delivery scenarios)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Structured reinforcement and feedback on processes and product from managers and users/clients (trainees)</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

*The Pareto principle is named after 19th-century economist Vilfredo Pareto, who describes a phenomenon in which 80 per cent of variation observed in everyday processes can be explained by a mere 20 per cent of the causes of that variation. This principle was represented by J. M. Juran in 1950 to suggest that most effects come from relatively few causes. Effort should therefore be expended on the root causes that cause 80 per cent of resulting problems.
Validation can be as simple as securing feedback on outcomes at some point before, during and after delivery/assessment. This form of validation can be built into the learning or assessment materials. To make this feedback part of an overall systems evaluation strategy, it must be captured as part of an information system that can report variations or non-conformance that requires follow-up and actioning. Such feedback can cover not only elearning materials and processes but also personnel and cost-effectiveness.

Evaluation can also be conducted to record learning management aspects of the elearning delivery system. Elearning systems evaluation may include:

- **Budgets**: Cost projections, actual expenditure and revised cost modelling.
- **Cost-effectiveness**: Budget-related matters such as the cost-benefit analysis of elearning to other factors, including equity and access issues relating to the impact of cost on the demand for elearning.
- **Diversity**: The type and profile of people accessing elearning services/products. With reporting it is possible to profile the diversity of users and, for instance, examine how elearning delivery or assessment is responding to users with special needs or customers within certain demographics (language groups, cultures, locations, age, gender, etc.).

**Figure 12.6  Sourcing and presenting elearning data in evaluation reports**

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Source</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative</td>
<td>Output or outcome of learning (i.e. performance, learner progression, cultural change)</td>
<td>Graphs, charts, data depicting spread (Pareto, histograms, run charts, control charts), etc. Data consistency and problem removal measured over time/courses</td>
</tr>
<tr>
<td>Quantitative (group or class data)</td>
<td>Proportion in marking range (requires further training, competent, excellence, etc.) Feedback sheets Response sheets Learning outcome achieved by class and trainee Numbers of trainees and final pass rate/completion rate Hours teaching for full-time hour/study equivalent</td>
<td>Class percentages, class average, range, median, standard deviation Analysis of response or feedback sheets</td>
</tr>
</tbody>
</table>

Qualitative data is essential when evaluating elearning across an organisation. Data may be gathered based on the following.
### Chapter 12  Building Effective and Efficient Elearning

<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content:</td>
<td>Was it relevant, up-to-date?</td>
</tr>
<tr>
<td>Method of delivery:</td>
<td>Was it appropriate for the subject, mix of methods, context?</td>
</tr>
<tr>
<td>Method of assessment:</td>
<td>Was it appropriate for the subject, mix of methods, context?</td>
</tr>
<tr>
<td>Scope of learning covered:</td>
<td>Was it appropriate for learner and the workplace?</td>
</tr>
<tr>
<td></td>
<td>Could/should the mix be modified to promote earlier/later coverage of some materials? Did it confirm or revise earlier learning?</td>
</tr>
<tr>
<td>Amount of material supporting learning:</td>
<td>Was all the material necessary to support elearning? Was it too much in one package for the learner/trainer/coach and in terms of allocated time?</td>
</tr>
<tr>
<td>Trainer’s skills:</td>
<td>Did the teacher/instructor/trainer/coach possess the skills to present the materials and transfer the learning?</td>
</tr>
<tr>
<td>Learning style and pace:</td>
<td>Was it appropriate to the elearning outcomes and the trainee?</td>
</tr>
<tr>
<td>Learning sequence:</td>
<td>Was the module/session or course sequenced correctly? Were some aspects given too much/too little emphasis?</td>
</tr>
<tr>
<td>Omissions:</td>
<td>Were any essential aspects of the elearning omitted or not given enough emphasis?</td>
</tr>
<tr>
<td>Facilities/location:</td>
<td>Was the environment conducive to elearning? Were all the facilities provided and suitable for the topic?</td>
</tr>
<tr>
<td>Administration:</td>
<td>Was the training delivered appropriate for critical administrative/business measures such as time, cost and service support?</td>
</tr>
<tr>
<td>Relevance/timing:</td>
<td>Was the elearning delivered when it was required? Did the timing of the training ‘fit’ work commitments?</td>
</tr>
<tr>
<td>Application in workplace:</td>
<td>Did the elearning transfer into practices appropriate to the workplace?</td>
</tr>
</tbody>
</table>

The next table indicates some of the quantitative or ‘hard’ data that can be collected to illustrate return on investment derived from elearning delivery and assessment. The aim is to establish elearning evaluation frameworks that report this sort of information.
### Table 12.6  Indicators of business integration

<table>
<thead>
<tr>
<th>Benefits of Training</th>
<th>Indicated By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Performance</td>
<td>Productivity increase</td>
</tr>
<tr>
<td></td>
<td>Increased sales (higher comparative sales revenue)</td>
</tr>
<tr>
<td></td>
<td>‘Better’ quality product/service</td>
</tr>
<tr>
<td></td>
<td>% fit of job incumbent’s current competency profile to job competency profile (by job, occupation, team, site, etc.).</td>
</tr>
<tr>
<td></td>
<td>Reduced variations (waste and error rate reduced)</td>
</tr>
<tr>
<td></td>
<td>Improved ratio of labour cost to production/service costs</td>
</tr>
<tr>
<td>Building commitment and culture</td>
<td>Improved job satisfaction</td>
</tr>
<tr>
<td></td>
<td>Improved work attitude or workforce/teams</td>
</tr>
<tr>
<td></td>
<td>Decreased absenteeism</td>
</tr>
<tr>
<td></td>
<td>Reduced staff turnover</td>
</tr>
<tr>
<td></td>
<td>Greater ability to measure and value of intellectual capital</td>
</tr>
<tr>
<td>Reduced cost and better integrating of learning tools</td>
<td>Integration of, or reduced completion costs for:</td>
</tr>
<tr>
<td></td>
<td>• Training (resources, duration, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Skills audits</td>
</tr>
<tr>
<td></td>
<td>• Skills analysis</td>
</tr>
<tr>
<td></td>
<td>• Training needs analysis</td>
</tr>
<tr>
<td></td>
<td>• Performance appraisals</td>
</tr>
<tr>
<td></td>
<td>• Recruitment and succession planning</td>
</tr>
<tr>
<td>Responsiveness of the workforce</td>
<td>Improved customer satisfaction</td>
</tr>
<tr>
<td></td>
<td>Reduction in (surveyed) complaints</td>
</tr>
<tr>
<td></td>
<td>Adaptability or responsiveness of workforce to market opportunities</td>
</tr>
<tr>
<td></td>
<td>More rapid adoption of innovations, work practices, new technology</td>
</tr>
<tr>
<td></td>
<td>Improved team work</td>
</tr>
<tr>
<td></td>
<td>Ability to adopt new service modes (e.g. petrol, banking)</td>
</tr>
<tr>
<td>Reduced staff-replacement costs</td>
<td>Mobility of existing staff to vacant jobs (part-time, casual and full-time)</td>
</tr>
<tr>
<td></td>
<td>Cost of retraining reduced</td>
</tr>
<tr>
<td></td>
<td>Cost of recruitment reduced</td>
</tr>
<tr>
<td></td>
<td>Number of potential recruits (% fit of employees to a job — recruitment pool)</td>
</tr>
<tr>
<td></td>
<td>Staff retention, promotion and term of employment (by commencement age and employment level or area)</td>
</tr>
<tr>
<td></td>
<td>Volume of part-time/casual staff moving into full-time jobs</td>
</tr>
<tr>
<td>Reduced costs of recruitment, selection and succession planning</td>
<td>Improved recruitment</td>
</tr>
<tr>
<td></td>
<td>Selection targeted to ‘match’ an individual to a job</td>
</tr>
<tr>
<td></td>
<td>Better matching of training to individual job and career needs</td>
</tr>
<tr>
<td></td>
<td>Retention rates for individuals (time and percentage)</td>
</tr>
<tr>
<td></td>
<td>Reduced absenteeism</td>
</tr>
<tr>
<td></td>
<td>Improved relationship between promotion and learning completed</td>
</tr>
</tbody>
</table>

Elearning can be contextualised to produce outcomes central to the legislative compliance requirements that impact organisational performance. This can include completing, recording and reporting assessment for skills and knowledge in areas such as occupational health and safety, food handling, financial advice, security and privacy issues.
12.4.3 Evaluation: getting the right balance

In summary, the evaluation of elearning systems is part of a wider process. It is more than reporting on capability attainment and an individual’s assessment results or crediting performance as learning so that the candidate can receive recognition and eventually a qualification. Capturing, analysing and reporting data is part of any business improvement process. The effectiveness and efficiency of elearning evaluation seem to be heavily influenced by the quality and relevance of the data to organisational decision-makers.

The financial paradigm is a fundamental element of the processes used to evaluate alternative organisational investments. As a consequence, other business concepts have begun to emulate financial language and explanations. Elearning evaluation has to attune to the strong emphasis on the financial paradigm of ‘human capital value’ (see, for instance, Fitz-enz, 2000), or the wider need to transfer and measure intellectual or knowledge capital (for instance Stewart, 1997, Sveiby 1997, Davenport & Prusak, 2000; Bontis, 2001; Dieng-Kuntz & Matta, 2002) and social capital resident in networks or communities (for instance, Cohen and Prusak, 2001).

Measuring elearning success and evaluating content and courses necessitates the selection of indicators that are meaningful to the organisation. This requires careful adaptation of the ROI calculators without losing sight of all four Kirkpatrick levels of evaluation and the broader, non-financial aspects that need to be measured.

Reports on the outcomes of evaluation should not only have clear recommendations, they must be seen as value adding if they are to be actioned. Ultimately the value of training in real terms reflects three major areas:

1. **Overall company performance** evaluated on the basis of
   - return on investment
   - available skills
   - changes in skill levels and profiles (individual, department and occupations)
   - competency matching job performance requirements
   - standards of performance and increased productivity
   - business strategic measures and process quality measures
   - non-training causes of performance problems isolated and removed
   - reduced accidents
   - improvement in products
   - improvement in personal judgment/decision making

2. **The learning culture** as demonstrated by
   - willingness to learn
   - integration of training as a strategic function
   - differentiation of education and training
   - use of action learning to remove operational problems
team cohesiveness  
staff apprising management of training need

3. **Individual learning and satisfaction** as evidenced by
   - enhanced individual satisfaction with personal learning needs
   - motivation to learn
   - confidence about own capabilities
   - sense of well-being and access to pathways to further learning or careers

These factors extend well beyond finding a cost-benefit or human value of training.
Part 2 — A Blueprint for Implementing an Effective and Efficient Elearning Strategy

12.5 Research Observations

At the beginning of each chapter of the Investigative Research Report a proposition sets a broad orientation to the data collected, analysed and reported. Each chapter also includes an abstract and an indication of key themes. These summarise the chapter and the area of focus. While the chapters present an investigation of the research and literature relevant to the given topic, they conclude with observations. These concluding observations translate the research data into actionable items. Many of the fields of review are so large the reader may scan the chapters and miss some of the potential implications of the investigations. For this reason, the 37 observations are consolidated here to provide a guide for further action.

At the same time, the research observations are works in progress. These individual insights are intended to encourage further dialogue on the theory and practice of elearning. They will be further validated and tested by follow-up fieldwork, including case study analysis, surveys and technical review as part of the effort to construct proposed elearning tools and applications.

The following consolidates all the observations in the Investigative Research Report.

1. Observation 2.1
   The research for this report uses a modified grounded theory approach to produce observations based on new and existing research; these are expected to generate substantive findings relevant to implementing efficient and effective elearning. While particularly chartered to examine the corporate context, observations also provide insights relevant to the wider community or educational context.

2. Observation 3.1
   By adopting narrow definitions of elearning that ignore emerging technologies (i.e. non-browser-based, mobile and other innovations), online learning and even more specifically, web-based training technology and content providers needlessly limit future opportunities.

3. Observation 3.2
   The market is maturing to a point where inconsistent, technology-based definitional parameters and vendor and investor forecasts employing definitions from 1998 to 2001 no longer offer a reliable insight into elearning advancement around the globe or any useful user or organisational-level data on the full range of electronic technologies, satisfaction levels, enabling behaviours, needs and preferences, or trends. This is especially the case in Australia and Asia.

4. Observation 3.3
   Learning is a constant, so the elearning debate should shift its focus from the technology perspective to the learning perspective, including what the technology can do for individuals.

5. Observation 3.4
   For the purpose of this Investigative Research Report, elearning can be broadly defined as encompassing a learning experience involving the acquisition or transfer of knowledge delivered or transacted via electronic means.
6. Observation 4.1
The types of learning and knowledge are critical variables influencing how elearning is designed and conducted.

7. Observation 4.2
Assumptions that learning and knowledge are somehow combined to form elearning is flawed. How learning and knowledge in reality affect elearning is dynamic and dependent on the context of application, the individuals involved and the mode of collaboration.

8. Observation 4.3
Improved knowledge transfer and overall skills performance is best achieved when learning in an electronic environment avoids a focus exclusively on ‘skills’ training for performance and instead seeks to additionally build situated meaning and identity creation during the learning exchange.

9. Observation 4.4
It does not matter how far or fast learning practices develop beyond the classroom; whether online, virtual learning or other, good educational pedagogy still influences the effectiveness and efficiency of elearning.

10. Observation 5.1
Elearning has inherited a workplace education and training debate where reporting and distinguishing skills, knowledge, behaviours, culture and roles still remain less than clear.

11. Observation 5.2
Building identity and relevant skills and knowledge not only provides a more effective way to enhance performance but also enhances the willingness of people to learn, change behaviours and deploy tacit and explicit knowledge in a manner that can benefit the organisation.

12. Observation 5.3
Elearning is a form of exchange that can hold meaning, and positively reinforce identity and performance capabilities.

13. Observation 5.4
Elearning has accelerated the need for learning to target, develop and report learning and performance outcomes in terms that can be linked to value as determined by business outcomes. Increasingly this means reporting contributions to growth in knowledge/intellectual capital.

14. Observation 5.5
Elearning can contribute to human capital management only if human capital management is understood to be a component of knowledge capital, which builds overall productive capacity by enhancing both competency and identity capabilities.

15. Observation 5.6
Capabilities provide a common ‘currency’ that is portable and comparable across individuals, occupations, jobs, functions, teams or communities, locations and, indeed, cultures. It is also the currency for reporting these outcomes across performance, knowledge, learning, human resource and human capital management systems.

16. Observation 6.1
Elearning is an enabler of change while subject to stages of evolution evidenced in the progress of information and communication technologies. The efficiency and effectiveness of elearning therefore depend on accurately aligning the organisation’s own evolution to the capacity of the proposed elearning strategy to accelerate learning cycle times that generate improved business results — most importantly the individual’s capacity to learn and overall organisational performance and agility.

17. Observation 7.1
Elearning can at the very minimum accelerate progress of an organisation
along a learning curve and shorten the cycle time for individuals new to a job to reach the required performance proficiency threshold.

18. Observation 7.2
How individuals interface with eservice providers continues to evolve. Not only will needs and preferences of online customer change, but also the technologies for interaction will evolve. For instance the employee and customer interface for eservice or elearning in the future will not necessarily be a fixed computer or browser based, as evidenced by the emergence of mobile devices such as PDAs.

19. Observation 7.3
Elearning is a two-way process. If it is understood as a human transaction it has to be accepted that elearning can convey information as well as collect information from individuals within and outside the organisations.

20. Observation 7.4
Elearning should be seen as an activity enabling both employees and those external to the organisation to participate in an effective and efficient eservice transaction. While scant real research has been done on this relationship, a case can be made for brand positioning and value to be usefully considered within this construct.

21. Observation 8.1
The knowledge, experience, learning and beliefs (trajectory) that individuals have formed before a learning exchange greatly affect elearning outcomes.

22. Observation 8.2
Learning exchange is a form of interaction, which, even in an electronic environment, has a specific situation and meaning for each individual involved.

23. Observation 8.3
Particular types of individual cognitive and metacognitive structures influence how individuals engage in elearning processes and construct and transfer new learning into knowledge that can enhance current performance and future learning proficiency.

24. Observation 8.4
Organisations promoting elearning content and processes that encourage identities inconsistent with an individual’s identity actually promote resistance to learning.

25. Observation 8.5
Reinforcing identity and building self-efficacy in a learning process are stronger forces for sustained learning and performance than competency outcomes linked to performance alone.

26. Observation 9.1
As a broad gauge it seems at least 70 per cent of knowledge held by an individual and therefore by an organisation is tacit and everyday interactions and performance require this form of knowledge so elearning should not be limited to mental models that view elearning as only a means to communicate explicit knowledge in codified content.

27. Observation 9.2
Elearning can maximise collaborative learning exchanges, which are known to greatly enhance the transfer of tacit knowledge held by individuals.

28. Observation 9.3
All learning involves communication, yet outmoded mindsets on communication as a linear sender–receiver process have limited use for elearning transactions. Elearning can encourage communication to build a shared sense of meaning that enhances collaboration and amplifies the purposeful exchange of knowledge.

29. Observation 9.4
Elearning can be used to enable learning communities within virtual or
electronic environments that generate new knowledge networks and relationships with diverse participants within and outside the organisation.

30. Observation 10.1
The elearning process should assist the integration of individual learning (competencies and identity) with the group level (team performance and development of shared identity), and organisational level outcomes (knowledge capital, systems, procedures and culture).

31. Observation 10.2
To sustain organisational agility, identity must be co-oriented and learning used to enhance collective trajectories (mental models).

32. Observation 10.3
Creating learning partnerships, focusing learning on the organisation’s strategic objectives and measuring elearning activities’ contribution to business success create the preconditions for organisational learning.

33. Observation 10.4
Current elearning ROI calculators are limited to cost reduction for etraining, and do not address organisational outcomes such as the formation of knowledge capital or even human capital.

34. Observation 11.1
Given the limitation of instructional and systems designers to build electronic content and environments that can accommodate all the variables impacting how individuals learn in a given situation, the second wave of elearning is focusing on how elearning technologies can respond to an individual’s needs and preferences.

35. Observation 11.2
In the absence of ‘grounding’ in known use and experience, standards may even undermine the immediate needs-led evolution and innovation in elearning by (for example) ignoring new technologies or tacit knowledge. Standards organisations necessarily build compliance requirements on the basis of past experience and future expectations. However, past experience is not particularly either deep or diverse in elearning at this stage, and the future of elearning still appears as a quickly moving target. Elearning’s early current stage of evolution means that few organisations have the experience to participate in standards decisions, meaning that the entire industry may be directed by a narrow spectrum of elearning interests and uses. This risk is more likely to be pronounced in elearning-specific areas than in areas that already have an extensive community of user-participants in standards setting (e.g. in the HTML, XML standards for the Internet).

36. Observation 11.3
It can be argued that elearning technologies, such as LMS and LCMS, are more to do with vendors seeking discrete market differentiation than they are real divisions in a supply chain or elearning operation. This arbitrary separation of functions compounds the complexity and costs associated with better integration of content, learning, performance, knowledge and human capital management functions within large corporations and across organisations within a community.

37. Observation 12.1
Instructional design is to elearning what architectural planning is to building; it is at once the blueprint and the vision of the process, designing the unifying or coherent structure. More specifically, instructional design accommodates learning transfer, customer needs and preferences (useability), as well as information systems design and architecture.
12.6 Coding Observations into Principles of Effective and Efficient Elearning

This Investigative Research Report establishes the individual as the major variable in the elearning process. When examining the individual or collections of individuals (communities or organisations) undertaking learning transactions in an electronic environment, other key variables consistently stand out. These include:

1. Current level of transformation in both the organisation and elearning;
2. Required outcomes;
3. Type of knowledge and learning outcomes; and
4. Technology and infrastructure.

The key variables strongly mirror Chapters 4 to 8, which address the areas of research set by this project sponsors. While the focus of research reinforces the applied experience of the main sponsors (UNITAS and the Commonwealth Bank of Australia), data collection and analysis has presented a far more consolidated view on how variables interact and impact all aspects of elearning.

A parable may illuminate this situation. Imagine a lost hiker trying to triangulate his position from three main reference points (navigation stations). The hiker wants answers to a number of questions, namely: Where am I? Where do I have to go? In the process of answering those questions, the hiker can estimate what efforts have already been expended and determine whether he can reach his final destination. Finally the hiker learns how to avoid this situation and in future reach his destination more effectively.

As the lost hiker tries to triangulate his position he needs to be sure the navigation towers are actually fixed points and not moving and all are communicating
comparable information. Once the hiker knows the towers’ position, he can determine his location and the relative effort to reach his destination and he can progress with more confidence. As the hiker moves, the positioning needs to move with him on his journey until he reaches his destination.

The hiker in this parable may be an individual or many individuals. If they are travelling together, the triangulation must be specific to their context and journey. What is becoming apparent is that elearning is a journey by different individuals, at different levels of progress and in different directions (transformation and change), with different capabilities and very few common elements to allow comparative positioning for one journey, let alone cross-comparative tracking of progress of multiple individuals on different journeys.

A series of solutions are proposed to enable any individual, community or organisation to relearn how to implement effective and efficient elearning.

Reviewing all 37 observations of this Investigative Research Report, the following critical success factors become apparent for developing an elearning implementation strategy.

**12.6.1 Principles and critical success factors for efficient and effective elearning**

Through completion of the research it became apparent that resolving the following four challenges represent critical success factors for effective and efficient elearning:

- Discontinuity between the organisational needs and preferences and the elearning strategy;
- Discontinuity between the individual needs and preferences and the elearning solution;
- Discontinuity between the different needs and preferences of individuals collaborating or formed in a learning community and the elearning solution;
- Discontinuity between the expected return on investment based on the organisation’s perceived and actual readiness to either exploit or measure the real impact of the intervention on business results and organisational transformation.

The following discussion advances eight principles that have emerged from the Investigative Research Report. These principles are not posed as absolute or final. Rather, they are seen as emerging ‘guidelines’ for elearning stakeholders on the dynamics of elearning interventions in relation to the need to accommodate variables identified in this research report. Aspects of technology are equally as crucial in the distributed elearning context, but the human elearning stakeholders are:

- Instructional and systems design personnel (including graphic design and multimedia developers, etc.);
- Delivery organisation personnel (including information system officers, project managers, coordinators, etc.);
- Learners; and
Learning facilitators: instructors, trainers, teachers, mentors, tutors and employers.

A greater understanding of elearning intervention dynamics would help identify benefits and drawbacks that might be alleviated or ameliorated, and thus augment the impact of the interventions on the organisation and individual stakeholders.

The eight principles that have emerged from the investigation of elearning literature suggest that organisations need to relearn to design more effective elearning interventions.

**Learning to Elearn Principle 1**

*Elearning has maximum strategic impact when it is used to enhance both performance and thinking.*

Trivialising elearning to accelerate its adoption has had a major counterproductive effect. The result is a prevailing mental model that fails to either encompass the complexity of elearning or appreciate the true strategic contribution it can make to organisations and societies. In effect, early literature has ‘dumbed down’ elearning to such an extent that its development is being stymied.

Elearning is a major reform involving convergence, integration and exchange between huge areas of endeavour. Much of the elearning research and literature has focused on interchanges between different elements within fields of endeavour. A holistic view on these different areas of exchange or the overall field of endeavour appears to be lacking. This gap means there is no cogent, valid and reliable conceptual framework to separate rhetoric from well-researched studies on elearning.

**Learning to Elearn Principle 2**

*Effective elearning occurs when technology and processes are built to enable improved individual learning. This includes responding to the changing interaction between the type of learning and knowledge, the situated outcomes sought and the individual’s needs and preferences (including the designer, facilitator and user).*

Designing and implementing elearning effectively depends on understanding the dynamics of distributed learning that occur through a specific learning intervention for a given individual or audience. Within this context the individual is the single major variable.

The individual and the organisation form the core of this Investigative Research Report’s focus. The report investigates how elearning impacts the individual, or individuals collaborating within groups, organisations and communities. Groups may include multiple individuals. Organisations may include individuals or groups in collaboration. Communities may encompass all the previous interactions, with individuals, groups, organisations and even other individuals, groups and organisations beyond the main organisation.
Learning to Elearn Principle 3

Elearning is both a process of learning and a means for achieving knowledge transfer.

This principle suggests that elearning is far more than online learning or etraining that delivers knowledge in pre-packaged learning objects and codified content across a World Wide Web network. Learning and the transfer of knowledge are essentially a social activity; to be successful, elearning processes must not only transfer competencies attached to explicit outcomes, but also build a process and environment that encourage the transfer of tacit capabilities associated with building a shared identity. This identity orients individual and group trajectories towards a collective purpose. The purpose provides a sense of meaning that motivates individuals to want to effectively deploy competencies within an organisation or situation.

Learning to Elearn Principle 4

There is a direct and proven correlation between the variables limiting the optimisation of individual and collaborative elearning outcomes and the variables affecting organisational learning, agility and competent performance.

Just as individuals enter learning processes with pre-existing conditions that influence outcomes, so do past elearning experiences shape future learning processes. Completing an elearning process affects more than just learning and performance outcomes. Addressing barriers to individual learning prior to the learning transaction can alleviate anxiety and increase motivation, confidence and commitment. Research demonstrates that addressing these issues and raising elearning effectiveness directly translates into a person’s capacity to learn, future performance and the ability to adapt and effect change. Such findings are consistently reported from diverse research fields (psychology, management, training, etc.), in different locations and cultures, and using a variety of methodologies.

Figure 12.8 Pre- and post-elearning variables
Learning to Elearn Principle 5

Elearning is a strategic activity that integrates both business processes and technologies. Therefore efficiency and effectiveness should be measured in terms of not just performance and learning outcomes, but also overall contribution to an organisation’s potential productive capacity and agility. If this thesis is accepted then the need for new elearning metrics logically follows.

Elearning metrics must fully account for elearning’s contribution to the construction of human capital and overall intellectual or knowledge capital within an organisation. Opinions of many early adopters in the U.S. corporate sector, investors and venture capitalists, and vendors reinforce the perspective that there is parity of efficiency and effectiveness between elearning and existing classroom-based training and education. This perspective assumes that elearning augments and builds on a solid platform and merely requires adapting existing practices rather than transforming them. Adopting this belief would mean the main advantages of new technologies may be missed, ignored or forgotten. Elearning should not be viewed as an extension of what is known and has already been done. Imposing such limitations would restrict possible outcomes and seriously distort investment decisions, especially with regard to elearning technologies, infrastructure and the calculation of expected ROI.

Learning to Elearn Principle 6

Electronic learning (elearning) can be defined as a learning experience involving the acquisition, generation and/or transfer of knowledge delivered or transacted by electronic means.

This broad principle suggests awareness that just as web-based training has superseded CD-ROMs and computer-based training approaches, so the web-based approaches to online learning will be eclipsed in the near future by subsequent innovations. The functions and parameters of elearning will continue to evolve as it is deployed to support organisational and societal change and as elearning technologies themselves evolve.

Figure 12.9 Transformation enabled by generative elearning
Elearning can support an organisation’s transformation. Elearning can also cause transformation while being subject to the forces impacting the evolution of major information and communication technologies.

As more businesses deploy elearning effectively the ‘bandwagon’ effect — doing it because competitors or other major companies are doing it — is replaced by adoption and deployment based on enlightened use and real understanding of the available options. More enlightened adoption usually occurs as the technologies mature. Elearning implementation is only just beginning to progress around the globe to a level marked by rapid deployment and a mature approach to its support for business processes and learning practices (a so-called second wave).

### Figure 12.10  S-curve of elearning transition

![S-curve of elearning transition](image)

**Learning to Elearn Principle 7**

_Elearning is an activity that inherently involves service exchanges between humans moderated by technology in an electronic context._

The study of elearning needs to encompass not only how it is completed but also an understanding that it is resident in all forms of electronic transactions. This recognises elearning as an activity that inherently involves service exchanges between humans moderated by technology in an electronic context. It is an eservice.

### Learning to Elearn Principle 8

_Elearning systems and architecture must support both the content delivery and the design, learning, evaluation and reporting processes for elearning._

Elearning systems are far more than content and learning management systems. Elearning is neither a replacement for workplace training nor an accelerated mechanism to transfer codified knowledge. Evidence suggests that the best elearning solutions assist the transfer of both codified and tacit knowledge. The solutions also have to be open architecture or at the very least interoperable within the overall context of the organisation’s existing information systems. Evaluation of the effectiveness and efficiency of elearning must not be limited to learning outcomes or the ability to manage learning and content. Measuring elearning must interface into the systems analysing and reporting performance, knowledge management, and the human resource capital or overall knowledge capital gains. It also has to use
consistent and comparable metrics when evaluating outcomes across these business systems. Elearning investment accountability must be placed on the same strategic scale as any other effort to improve business results.

Knowledge for information transfer may move down the elearning ‘supply chain’. By enabling elearning, organisations need to recognise that they are investing in improved conduits that can be used for communication of knowledge. However, learning and knowledge have distinct dynamics and should not be seen as being managed using standard elearning technologies and systems. For instance, elearning may involve creation of environments, content and tools that enable collaborative exchanges to encourage flow of explicit knowledge within an organisational context. Meta-tagging and content repositories and many of the technologies that comply with international standards reinforce the need for learning management systems (LMS), learning content management systems (LCMS) and elearning tools to enhance their contribution to user outcomes, particularly businesses requirements, by mapping and managing the flow of knowledge assets across platforms and therefore business functions.

However, this process aligns poorly with the movement and reporting of tacit knowledge. Elearning can accommodate strategies that foster cognitive skills, behaviours or identity creation within a learning context; for instance, experiential learning, simulations, project teams or games may be used. The same solutions may be utilised to accelerate information transfer within an applied situation; for example, collaborative environments, document exchanges or advanced ways of packaging learning objects to facilitate transfer to individuals with certain learning styles, intelligences and levels of self-efficacy. Research suggests some tacit knowledge or content cannot be captured and moved. No amount of meta-tagging can incorporate this form of knowledge into existing approaches to content, or learning, management systems to satisfy the management of tacit knowledge outcomes. All that would be accomplished by structuring the knowledge would be to immediately remove its tacit nature and render it codified and more mobile. This transformation may destroy its inherent value.

The following sections suggest strategies to address how individuals, communities and organisations can maximise the efficiency and effectiveness of elearning. They propose a blueprint and solutions spanning:

1. Building an elearning design and implementation process (see Section 12.7);
2. Implementing elearning to maximise business transformation (12.8);
3. Aligning elearning and eservice (12.9);
4. Packaging elearning for learning or knowledge transfer (12.10);
5. Establishing elearning to enhance individual learning and performance (12.11);
6. Implementing elearning to enhance communities and collaboration (12.12);
7. Implementing elearning to help organisations learn and build knowledge capital (12.13);
8. Enabling open content and architecture (technology and infrastructure); *(12.14)*

9. Measuring and improving elearning return on investment *(12.15).*
12.7 Building an Elearning Design and Implementation Process: The ABII Blueprint

Table 12.7 proposes a strategic framework for systematically completing the design of elearning. This consolidated design is based on the Investigative Research Report’s findings and the alignment of observations and further issues advanced in Section 12.3.4.

Table 12.7  The ABII strategic elearning design process

<table>
<thead>
<tr>
<th>Phase</th>
<th>Typical activity</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analyse</td>
<td></td>
<td>• Elearning readiness (organisation)</td>
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<tr>
<td></td>
<td>a. Establish project plan and timetable</td>
<td>• Capability target and elearning delivery plan</td>
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<tr>
<td></td>
<td>b. Analyse capabilities to be targeted and learning, performance and individual outcomes (skills and knowledge competencies and cultural, roles and behavioural identity attributes)</td>
<td>• Content audit (existing legacy and required digital content and hardcopy to be converted, priorities and plans)</td>
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<tr>
<td></td>
<td>c. Allocate capability outcomes to learning process (learning outcomes/goals/competency standards/performance indicators)</td>
<td>• Metrics and reporting frameworks</td>
</tr>
<tr>
<td></td>
<td>d. Confirm change context and transformational impact on the organisation (sponsor)</td>
<td>• Individual learning ‘trajectory’ profiles</td>
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<tr>
<td></td>
<td>e. Identify audience and individual learning and capability profiles</td>
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<tr>
<td></td>
<td>f. Analyse type of learning required</td>
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<td></td>
<td>g. Establish architecture required to deliver outcomes (tools and technology requirements), i.e. authoring/media tools selection</td>
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<tr>
<td></td>
<td>h. Complete a content audit on existing content and support resources</td>
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<tr>
<td></td>
<td>i. Establish storage and infrastructure requirements for hosting and distributing content</td>
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<tr>
<td></td>
<td>j. Develop metrics to assess, report and evaluate impact on business and process changes (i.e. framework to measure success or program/content on areas such as customer, financial, systems and processes, and performance outcomes)</td>
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<tr>
<td></td>
<td>a. Test learning components and objectives against individual/group learning profiles (‘fit’)</td>
<td>• Individual learning plans</td>
</tr>
<tr>
<td>2. Build (Design, develop and test)</td>
<td>b. Confirm mode of learning/delivery options to satisfy outcomes (including performance and compliance standards)</td>
<td>• Requirements specification</td>
</tr>
<tr>
<td></td>
<td>c. Write instructional strategies and lesson designs</td>
<td>• Repurposed existing content and learning support resources</td>
</tr>
<tr>
<td></td>
<td>d. Determine assessment and reporting systems (administration and delivery)</td>
<td>• Tested (instructionally and technically valid) courseware ready for implementation</td>
</tr>
<tr>
<td></td>
<td>e. Confirm interaction design and media treatments</td>
<td>• Integrated and functional architecture (technologies and tools)</td>
</tr>
<tr>
<td></td>
<td>f. Configure architecture, i.e. authoring/media tools selection</td>
<td>• Best technology for mode of learning appropriate to outcomes to be achieved by individual learners</td>
</tr>
<tr>
<td></td>
<td>g. Set data reporting (evaluation design)</td>
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<tr>
<td></td>
<td>h. Modify or renew existing programs (content and services)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. Apply standards to learning content and technology</td>
<td></td>
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<tr>
<td></td>
<td>j. Write content</td>
<td></td>
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<tr>
<td></td>
<td>k. Develop learning support resources (tests, assessment tools, case studies, etc.)</td>
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<tr>
<td></td>
<td>l. Build and test pilot content and delivery architecture (i.e. media production/sourcing, programming/coding, authoring and integration of media elements)</td>
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<tr>
<td></td>
<td>m. Test interactivity and integration of architecture</td>
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<tr>
<td>3. Implement</td>
<td>a. Provide access to content (load, duplicate, distribute)</td>
<td>• Implemented learning program</td>
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<tr>
<td></td>
<td>b. Provide ongoing maintenance and logistical support for program/content</td>
<td>• Report on student learning</td>
</tr>
<tr>
<td></td>
<td>c. Complete ongoing reporting and tracking</td>
<td>• Qualification or mapped capabilities for all individuals, groups or entities</td>
</tr>
<tr>
<td>Phase</td>
<td>Typical activity</td>
<td>Deliverables</td>
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<tr>
<td>4. Improve (Evaluate)</td>
<td>a. Apply metrics to measure capabilities (skills, knowledge, behaviours, roles, culture, etc. across individual, group or organisation) (efficiency)</td>
<td>• Evaluation report and recommendations for continuous improvement</td>
</tr>
<tr>
<td></td>
<td>b. Compare actual against planned capability outcomes (effectiveness)</td>
<td>• Report on ROI and knowledge capital including human capital growth and overall business impact (productivity capacity increase)</td>
</tr>
<tr>
<td></td>
<td>c. Collect formative and summative evaluation data</td>
<td>• Valid, reliable and authentic content and learning support resources</td>
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<tr>
<td></td>
<td>d. Calculate ROI</td>
<td></td>
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<tr>
<td></td>
<td>e. Confirm overall knowledge capital asset improvement</td>
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<tr>
<td></td>
<td>f. Report and suggest improvements</td>
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</tbody>
</table>

A manual could be devised to translate the principles advanced in this report into a detailed approach to the ABII design and implementation process proposed above.

The production of a manual would be a follow-up activity completed as a component of Phase 3 of the Learning to Elearn project, which includes publication of results.
12.8 Implementing Elearning to Maximise Business Transformation

The Research Report has confirmed that agility and productive capacity are the two key components in an organisation’s development of knowledge capital. Evaluation of outcomes and implementation of elearning must at all stages be based on a realistic match between the organisation’s implementation of elearning to effect change and the progress of elearning technology. Seeking high level business benefits from the investment may not be possible either because the business is not ready to implement elearning or has not appreciated the technological and content limitations.

The preconditions for an organisation being ready to implement elearning reach beyond the factors directly relating to elearning. If there is discord between the organisation’s expectations and the readiness for the transformational evolution of the organisation and elearning, then most likely performance improvement will not occur to agreed levels, and thus impact the organisation’s agility.

If elearning is not enhancing and enabling the organisation’s productive capacity and agility, the strategic benefits of elearning will be suboptimal.

12.8.1 Positioning elearning to effect change

Elearning is at once affected by transformation processes and a factor influencing how organisations, communities and individuals undertake strategic change.

Newton, Hase and Ellis (2002) generated a case study of the Queensland mining industry about implementation of training through elearning. Based on interviews in that industry and literature review, they identified six main factors for effective implementation. These six factors are:

1. **External influences** — variables such as the state of the economy, the extent to which there is a recognised need for compliance with industry-wide competency standards, and an apparently widespread belief that elearning delivery can reduce variability in the quality of instruction.

2. **Organisational culture** — strongly held attitudes, values, assumptions and beliefs in an organisation about the extent to which the bottom line, as measured by cost-effectiveness, return on investment and so on, dominates management's concerns; the extent to which management supports the delivery technique; the extent to which the technique is aligned with a corporate goal or problem; and the extent to which training is valued rather than seen as merely a legislative requirement.

3. **Organisational structures** — the extent to which elearning delivery is incorporated into an organisation's strategic planning rather than being a 'bandaid' approach and the extent to which access is available to suitable computers and speedy Internet services at work.

4. **The training environment** — two examples, the first of which is the extent to which trainers can change their attitudes and behaviours from instructor-centred delivery to an often more appropriate student-centred approach. The second is the significance of learners, facilitators and...
management viewing the cost of failure during learning and practice as low. The fear of failure or the perceived cost should not be so high that action is seen as high risk.

5. **Learners' needs** — aspects include levels of computer literacy, reading literacy, motivation to learn unsupervised, access to supervisor as mentor, provision of structured times to engage in elearning.

6. **The quality of the elearning environment** — the extent to which students' learning preferences are catered for, the extent to which trainers and workers are involved in planning courses, the ease of access to and navigation through the Internet site, and the extent of the 'inherent interactive advantages' of elearning.

This work by Newton et al. (2002) makes clear that elearning delivery is not merely a technological or indeed a student or instructor matter. Rather, it strongly indicates the need for managers and others to perceive the introduction of elearning as an 'innovation' at the organisational level. Viewed this way, all the knowledge that has been generated about effective implementation of change over the past three or four decades is important, and some of the key questions for managers become:

- To what extent is elearning actually congruent with the external environment pressures facing the organisation?
- To what extent does the organisational culture actively support elearning and integrate it into its strategic planning and management?
- To what extent does the organisation establish structures that facilitate elearning?
- To what extent is the current training environment congruent with an ideal elearning environment?
- To what extent do planning, implementing and evaluating elearning address the learners' needs?
- To what extent is the elearning environment conducive to quality elearning?
- To what extent do managers, facilitators and learners answer these questions in similar ways?

**12.8.2 Organisational elearning readiness**

Implementation of strategic elearning requires the organisation to have an appreciation for the alignment of their business systems and the elearning strategy being advanced.

The elearning strategy may be viewed as an evolution. Cisco conceptualise elearning as a journey (Bauer, 2002) and identifies four phases in the journey:

- **Phase 1** — Investment;
- **Phase 2** — Cost savings;
- **Phase 3** — Standardisation;
- **Phase 4** — Business impact.
The four phases reflect respectively an inward focus on cost rationale, resultant outward reward, inward focus on business processes and outward reward.

Figure 12.11 provides a detailed view of how an organisation may progress through different stages of elearning readiness. While developed independently, the Cisco four levels could align to the four levels proposed below.

**Figure 12.11  S-curve of elearning readiness**

![S-curve of elearning readiness](image)

**Level 1 — Awareness:** Awareness of the need for elearning but only basic advancement. Static transfer of information in electronic environment using web pages (content on the Internet), CD-ROMs or computer-based instruction on computer platforms. Limited or no networking of individual learning and inability to capture, analyse and report data in real time. Main focus on implementation is cost reduction and wider distribution and access.

**Level 2 — Enablement:** Search for interactivity and real-time data capture across networked electronic learning mediums. Users can search and navigate content storage devices to get appropriate learning at the right time. Increased role of collaboration and knowledge transfer between learners. At this stage, cost savings drive immediate advancement of the strategy elearning.

**Level 3 — Integration:** Personalised products and services with integrated architecture. Desire for open architecture in order to maximise front-end and back-end systems’ integration and to permit learning to translate into improved business processes and customer value. Integration of elearning with knowledge.
management, performance management, personnel (human capital), and continuous improvement.

**Level 4 — Maturity:** Innovation and extended deployment of elearning to leverage core business as well as learning to anticipate and help redesign core services, supply chains and business processes to better meet customer needs and preferences. Elearning is embedded into achieving the organisation’s unique competitive advantage.

Organisations will be at different stages of readiness and will progress at different speeds. Elearning is not the panacea for all problems. It is a transformation process that requires a longer-term view on return on investment, impact on business strategy and capacity of staff to effectively transfer knowledge using the medium.

In recognition of the importance of recognising different levels of elearning readiness a conceptual design for a tool to measure the organisation’s current state of transformation and benchmark its readiness is presented.

The chosen criteria are critical to elearning success and align with those normally used in balanced scorecard, service excellence and quality benchmarking tools. This would permit cross-referencing and alignment of findings. Feedback would be sought in the following categories:

- Leadership;
- Client focus;
- Planning;
- Information and analysis (including reporting and integration);
- Organisational performance;
- Elearning needs and preferences;
- Technology and infrastructure;
- Evaluation and improvement.

The tool, which would be designed for use online, would draw on research completed in this Investigative Research Report and concentrate on elearning criteria using the above categories.

A weighted report would be generated in both digital (online) and hard copy.

A central coordinator would use data to inform and update weighted indices or customise weighting to sectors, locations, companies and so on.

An organisation or community could use the report to inform vendors and strategic partners of current elearning readiness and stages of organisational transformation. This would permit greater alignment and evaluation of specific interventions on aspects of the organisation’s elearning capability benchmark index.
Figure 12.12 Organisational learning capability benchmark index with data capture and reporting mechanism

Notes
- Capacity for process to be customised so multiple users (business units, communities, sectors) can complete index individually then have separate or collated report (comparative benchmarked report).
- Attachment of artificial intelligence to database can enable Index to learn and present reports to individual's context.
- Reports can be generated over time with comparative analysis continually map improvements.
12.9 Aligning Elearning and Eservice

The principles of effective and efficient elearning also promote an understanding of service within an electronic environment. The principles of how individuals learn in this environment apply both to internal service transactions and external customers accessing an organisation.

The service exchange is an opportunity for the organisation to learn. Equally, how individual employees complete the service transaction can be framed to reinforce not just the skills and knowledge for competent performance, but also the behaviours and identity attributes that are unique to that organisation and their eservice transactions. There is significant mutuality in the elearning field of study and research on eservice transactions. Elearning reinforces how every eservice transaction involves a two-way learning process. Eservice confirms the principles of service exchanges involved in every elearning transaction. When combined, the needs and preferences of the individuals involved (including not only customers, service providers and those managing and designing the exchange) become a central focal point — a focal point with outcomes that must be accommodated within the technology and business processes being developed.

While this field of study needs more extensive research, the following integrated view is presented (Figure 12.13). It does not at this stage provide the basis for the design of specific applications or tools. This integrated view, however, assists with the development of other tools and the capability-based mapping and tracking application or system.

Figure 12.13 Embedding elearning to enhance eservice transactions
12.10 Packaging Elearning for Learning or Knowledge Transfer

Table 12.7 reinforces the importance of recognising how objects can lose not only their association with the learning pathway, but also their relevance to an individual’s learning style or orientation.

Table 12.8 Strategies and guidelines for three learning orientations

<table>
<thead>
<tr>
<th>Learning Issues</th>
<th>Transforming Learners</th>
<th>Performing Learners</th>
<th>Conforming Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Relationship</td>
<td>Prefer loosely structured, mentoring relationships that promote challenging goals, discovery and self-managed learning.</td>
<td>Prefer semi-complex, semi-structured, coaching relationships that stimulate personal value and provide creative interaction (hands-on).</td>
<td>Prefer safe, structured, guiding relationships that help them avoid mistakes and achieve easy learning goals in a simple fashion.</td>
</tr>
<tr>
<td>Goal-Setting and Standards</td>
<td>Set and achieve personal challenging short- and long-term goals that may exceed goals set by others; maximise effort to reach personal goals.</td>
<td>Set and achieve short-term, task-oriented goals that meet average to high standards; situationally minimise efforts and standards to reach standards.</td>
<td>Follow and try to achieve simple, task-oriented goals assigned by others; try to please and conform; maximise efforts in supportive relationships with safe standards.</td>
</tr>
<tr>
<td>Learner Autonomy and Responsibility</td>
<td>They are self-motivated to assume learning responsibility and self-direct goals, learning, progress and outcomes. They experience frustration if restricted or given little learning autonomy.</td>
<td>They are situationally self-motivated to assume learning responsibility in areas of interest. Will give up control and extend less effort in areas of less interest or in restrictive relationships.</td>
<td>They are cautiously motivated, prefer less responsibility and self-directed learning, like to be more compliant, and are ready to follow others.</td>
</tr>
<tr>
<td>Knowledge Building</td>
<td>Commit great effort to discover, elaborate and build new knowledge and meaning.</td>
<td>Selectively commit measured effort to assimilate and use relevant knowledge and meaning.</td>
<td>Commit careful, measured effort to accept and reproduce knowledge to meet external requirements.</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>Preference for case studies and complex, whole-to-part, problem-solving opportunities.</td>
<td>They prefer competitive part-to-whole problem solving.</td>
<td>They prefer scaffolded support for simple problem solving.</td>
</tr>
<tr>
<td>Adapted Presentation</td>
<td>They prefer occasional mentoring and interaction for achieving goals (MENTORING).</td>
<td>They prefer continual coaching and interaction for achieving goals (COACHING).</td>
<td>They prefer continual guidance and reinforcement for achieving short-term goals (GUIDING).</td>
</tr>
<tr>
<td>Strategies to Achieve Objectives</td>
<td>Enable high-standard, strategic goal-setting and planning, support realistic personal goals and ensure putting theory into practice.</td>
<td>Foster personal value (intrinsic benefits) and holistic thinking, offer hands-on, practical support to encourage planning and effort into continual improvements.</td>
<td>Provide time and comprehensive, structured support for adapting training and transitioning skills for improved performance.</td>
</tr>
<tr>
<td>Feedback</td>
<td>They prefer inferential feedback.</td>
<td>They prefer concise feedback.</td>
<td>They prefer explicit feedback.</td>
</tr>
</tbody>
</table>
Given Martinez’s indications, strategic elearning has to ensure that the packaged content is consistent with the type of knowledge and learning and is appropriate to the learner’s needs and preferences.

A revised approach to managing content is therefore proposed. It is worth making explicit the fact that learning objects may be used for knowledge exchanges as part of unstructured and structured elearning.

Knowledge for information transfer may move down the elearning ‘supply chain’. Moreover, enabling elearning for wider learning and knowledge purposes makes sense for an organisation seeking to learn. Not only can elearning manage knowledge for both its learning and its informational value, but the investment in establishing elearning can be gauged against both knowledge and learning benefits. For instance, elearning may involve creation of environments, content and tools that enable collaborative exchanges to encourage flow of tacit knowledge within a learning context. Elearning may also require the development of strategies that encourage cognitive skills, behaviours or identity creation within a learning context. For instance, simulations, project teams or games may be used. The same solutions may be utilised to accelerate information transfer. These may include collaborative environments, document exchanges, or advanced ways of packaging learning objects to facilitate transfer to individuals with certain learning styles and self-efficacy. Designing these solutions provides valuable insights into how knowledge should be presented as an informational object.

Research suggests that some tacit knowledge or content cannot be captured and moved. No amount of meta-tagging can incorporate this form of knowledge into existing approaches to content. Again, elearning, if it follows the observations uncovered in this research report, should provide environments, tools and contexts within which tacit knowledge can be shared. These solutions provide a framework for
delivery and evaluation that can be grafted onto the transfer of knowledge as information objects that do not necessarily involve structured learning.

Historically, learning content has been organised to correspond with course units; thus, the content for a course was organised into classroom sessions or self-contained blocks of information that covered the entire scope of that course. In contrast, elearning contemplates units of learning content (i.e. learning objects) that are much smaller in scope and amount of content. The purpose of adopting this paradigm is to encourage the reuse of common elements of learning courses, thereby decreasing costs and streamlining and improving learning content (see Chapter 11, Section 11.3.1).

The process by which individuals receive information objects that have no relationship to learning outcomes can be reverse-engineered. Learning that has not been recognised as a component on a pathway to formal qualifications can be reoriented through assessment of prior learning, current capabilities or formal credit transfer processes. Before registering/enrolling in a structured elearning course, individuals can be assessed and their competencies or prior learning recognised. This is especially useful if the same knowledge repository or content management system can record and report when and to what level the individual has previously accessed the knowledge assets or objects and if there have been assessable outcomes (i.e. they completed a problem-solving exercise, analysed a case study).

Figure 12.14 depicts a content management approach that separates information objects and learning objects. The depiction does not propose a specific application but rather a conceptual design for tools and an application presented in this chapter; this is intended to promote discussion on the implications for management of knowledge assets that are repurposed from learning to information transfer and may lose their link to assessed learning outcomes.
Figure 12.14 Strategic elearning content model (revised Learnativity Model)

Environment
- Instructor-led
- Learner-led
- Structured-Unstructured
- Community–Individual
- Classroom, Distance

Electronic Access
- Internet (browser and non-browser)
- Computer (CD-ROM or CBT)

Learning Components
- Courses
- Programs
- Modules
- Short courses

Learning Objects

Information Objects
♣ = Text
♥ = Audio
♦ = Video/Movie
♠ = Graphic
☻ = Animation

Content/ Knowledge Repository

Information Packaged for Learning Transfer

Information Exchange Continuum

Information Packaged for Knowledge Transfer

(Based on Wenger, 2002:5)
12.11 Establishing Elearning to Enhance Individual Learning and Performance

For learning, and no less particularly elearning, to achieve maximum advantage for an individual, organisation or community, it must be based on a full appreciation of the different types of knowledge and how that knowledge is structured and can be transferred. Learning also must deal with knowledge that may be invisible or not ‘known’ to the individual who is required to harness it to achieve personal, customer or community outcomes. In this sense, the type of learning may also vary. It may be structured to known learning outcomes or unstructured to achieve what is more akin to the communication of information.

Learning within an organisation is not about converting information into knowledge that individuals can hold and competently deploy for an organisation. Nor is it contrived to develop knowledge that only the organisation will own and deploy to maximise productive capacity or profit. Learning is more a means to absorb, generate and transfer all available forms of knowledge in order to enhance an organisation’s human and productive potential. To understand this, the relationship between learning and knowledge has to be understood in far greater depth and some lessons extrapolated and applied to the deployment of elearning.

Learning is a lifelong process; it is ubiquitous, occurring in every aspect of work and life. Further, each individual designing, completing or implementing elearning shapes the learning transaction by drawing on past experience and current skills and knowledge. These experiences and overall perceptions shape future elearning activities; this shaping may be called elearning trajectories.

Figure 12.15 Individual elearning trajectories

Learning has to accommodate the individual’s needs and preferences before, during and after the elearning transaction. The Investigative Research Report has highlighted how individual perceptions and capabilities prior to a learning exchange are very influential not only to satisfaction of learning outcomes, but also to future learning. The report has found that to develop an individual’s learning and thinking capacity, consideration is needed of metacognition and how to use learning processes to encourage self-efficacy, self-reliance, flexibility, reflective practices, strategic thinking and so on. This means that the design, delivery and evaluation of any learning process must include individual and collective insights from the users of the content and the process. It must include the transfer of capabilities to achieve desired learning and performance outcomes and the individual's improved learning and thinking capacity. Figure 12.16 depicts the combination of competency and behavioural aspects of an individual’s learning trajectory and how these influence elearning before, during and after the transaction.
Figure 12.16 Individual elearning trajectories

Figure 12.17 provides a conceptual design for a tool to benchmark individual elearning capability and a digital ‘passport’ for recording individual learning and performance attributes. The process would profile, map and report the attributes associated with the factors known to influence an elearning trajectory. The tool would profile the individuals’:

- Learning styles;
- Mental models (multiple intelligences, emotional intelligence);
- Self-efficacy/learning anxiety profile; and
- Technical skills (elearning technology use).

The tool would report outcomes in the form of a digital ‘passport’. This would permit employers to use the data to orient elearning to the needs and preferences of the individual. It could incorporate an integration/intelligent agent (AI) to enable the user to show the ‘passport’ to elearning providers, especially online, to re-orient elearning to the individual’s needs and preferences. At a very basic level, students or teachers could use the tool to gauge suitability of different elearning products, environments and content. This could occur by aligning the individual and collective ‘passports’/profiles with the vendor or training provider’s content, technology or learning environments to determine whether the supplier can accommodate the needs and preferences of the individuals involved (e.g. does the technology suit the learning styles of the students, can it promote learning exercises prior to the experience that enhance the learner’s self-efficacy).
Figure 12.17 Individual eLearning capability benchmarking index and knowledge passport tool

- Digital knowledge and learning passport
  - E-learning trajectory profile
    - Including:
      - Learning styles
      - Mental models (including multiple intelligences, emotional intelligence)
      - Self-efficacy/self-assessed anxiety profile
      - Technology skills
  - Categories of profiling
    - Including:
      - Personal details
      - Personal security settings
      - Current progress (in courses)
      - Training needs
      - Career details
      - Prior courses
      - Prior experience
      - Current capabilities/competencies

- Central capability mapping and tracking database
  - Profiles (including profile tools and storage of passport)
    - Secure access
    - Intelligent agent management and recognition
    - Possible artificial intelligence to assist continual re-design of data capture and reporting.

- Notes
  - Capacity for process to be used by individual UNITAS clients, or on a fee-per-use basis by individuals, groups, organizations or learning vendors.
  - Multiple business models can be used to exploit compatibility. Rights to use could be sold to eLearning vendors able to show how their site will customise and respond to a learner’s preferences in the passport. UNITAS could license capabilities.
12.12 Implementing Elearning to Enhance Communities and Collaboration

Collective learning is shaped by the individual’s entire prior learning and perceptions of purpose and benefits from completing learning. Collaboration is a basic activity in human society.

Figure 12.18 Promoting shared identities through elearning exchanges

Individual purpose and learning trajectories vary. However, learning is a means not only for collaboration but also for the co-orientation of behaviours and the alignment of personal capabilities to group and organisational outcomes. Within this frame of reference, learning reinforces not only performance outcomes but also a sense of identity. Reinforcement is built on activities that hold meaning both for each individual and on a shared basis.

Figure 12.19 Orienting individual trajectories towards organisational purpose

The early limitations of elearning have included the lack of capacity (bandwidth, technologies and tools) to actually promote human interaction and two-way learning exchanges. However, some of these limitations relate to poor cost-benefit analysis.
and business cases that overestimated the elearning outcomes resulting from improved technology or infrastructure.

A basis for making a decision on how to maximise elearning outcomes requires the designer or elearning sponsor to understand:

- Type of knowledge;
- Type of learning;
- Desired performance and learning outcomes;
- Technology and infrastructure;
- Individual learning and performance capability profiles of the individuals.

Assuming the first tool (individual elearning capability benchmarking index) is available to better profile individual elearning capabilities, a decision support tool can then be designed to allow the other variables to be identified and compared. For instance, planners should be able to examine which approach to learning would maximise both knowledge and learning outcomes. They should also be able to determine how changes in the mix of available technology or infrastructure would influence collaboration given the learning profiles of those involved.

The impact on outcomes of not adopting certain technologies or accommodating certain learning styles with the chosen content must be appreciated prior to the decision to invest (or not invest) in the collaborative elearning intervention.

To achieve these outcomes, community or collaborative learning should be integrated into a planned strategy adopted by the organisation and understood by all individuals and key external strategic partners. A conceptual plan for such a tool follows.
Figure 12.20 Elearning collaborative capability benchmarking index and decision-making tool

**Notes**

- This tool is designed to establish the 'fit' between the technology to be used, the individuals participating in the collaborative process, and the type of learning and knowledge for the required outcomes. A sponsor or elearning can use this tool to maximise outcomes evaluation, and as an investment and decision guide.
12.13 Implementing Elearning to Help Organisations Learn and Build Knowledge Capital

As a natural extension of the evolution of related technologies and processes, organisations seek greater integration of elearning and business processes. Integration of elearning with other business processes has resulted in contemporary approaches emphasising the metric of human capital value. A human capital emphasis links elearning with technologies, processes and practices supporting the drive to expand the overall capital value of the human resources within the organisation. This is often represented by the formula

\[
\text{Learning + Performance + Knowledge Management + HR} = \text{Human Capital Management.}
\]

Elearning intersects all the components in this formula. Fortunately, elearning can usefully contribute as a strategy for reporting or stimulating outcomes across all dimensions of the human capital management equation. Reporting metrics have to identify not only an individual’s precise learning requirements, but also outcomes in terms of organisational learning, knowledge, performance and HR issues such as human capital and overall knowledge capital gains. Where consistent metrics exist, elearning can target outcomes and be evaluated to determine its direct contribution to an organisation’s potential productive capacity and agility.

To measure the effectiveness and efficiency of elearning, a common ‘currency’ that can be used to judge success is needed. If the contribution of elearning to knowledge capital is to be fully appreciated, it is essential to create a structure and taxonomy for defining and measuring capability.

Chapter 5 identifies an individual's potential contribution to organisational performance using the term capability. Capabilities are defined as a combination of the factors included in a study of competence and identity. As Figure 12.21 depicts, while each aspect may be related together they provide a more complete view of the capabilities required to learn and perform: capabilities that elearning can target, transfer, generate and enhance.
Management information systems provide the focus for capability management. Data-collection systems — that can map the development of skills, educational qualifications, experience and expertise gained externally to provide information on individual and group capability to reach outcomes within the organisation — provide an analytical framework to decide upon future capacity to meet organisational performance outcomes and knowledge repositories for sourcing and building capability profiles.

Figure 12.22 illustrates a capability-based approach to creating and managing learning and performance.
Matching capability profiles across individuals, work or career, with learning can integrate individual, job and business outcomes. This is managed by a database permitting managers and nominated individuals to ensure that staff are both aware of job requirements and focused on completing training that meets either immediate job needs or career development requirements.

The use of a capability-based reporting system would also permit an organisation to ensure that all elearning delivery and assessment activities:

1. Relate to on-the-job outcomes wherever possible;
2. Recognise an individual’s current capabilities;
3. Map learning requirements against potential work placements;
4. Maximise the placement of an individual in work to fulfil the employer’s job performance requirements (when, where, how, etc.);
5. Generate cost profiles for workplace development activities;
6. Maintain a resource schedule (physical, human and time based);
7. Generate capability profiles for any mix of individual, group, enterprise or strategic partners;

Figure 12.22 Integrated capability-based analysis, reporting and management inventory
8. Manage suitably qualified elearning vendors and providers, assessors, coaches and mentors; and

9. Integrate existing elearning with tools and procedures used in the workplace.

Organisations seeking to enhance their human and knowledge capital can deploy elearning to target capabilities and thence build pools of knowledge capital. As represented in Figure 12.22, the three pools of capital are infrastructural, human and social. These pools form the basis on which elearning draws to enhance capabilities that impact identity and competent performance. That is, these three forms of capital are inputs to the organisation, and the outputs are potential performance capacity and agility, the determinants of the value that the organisation’s knowledge capital will hold.

Investigations have shown that some aspects of an integrated end-to-end (i.e. spanning all aspects of knowledge, learning, performance and associated HR reporting) capability-based mapping, tracking, analysis and reporting system has been implemented (see Chapter 10 for reference on this at Woolworths Australia and the Australian Public Service on a much smaller scale) but is apparently not available in any readily available commercial form. A conceptual design for this application follows (Figure 12.23).

It is noted that this application would support and integrate all the tools proposed in this chapter. While this application is not strictly necessary, it would serve as a nexus, contributing cohesion to the tool suite and allowing an effective and integrated solution.
Figure 12.23  End-to-end capability-based mapping, tracking, analysis and reporting system

Individual profiles
- Personal details
- Learning passport - profile
- Learning in progress
- Learning needs

Work profiles
- Position descriptions
- Selection criteria
- Performance appraisals
- Careers

Learning and knowledge profiles
- Learning components (courses, programs, modules, short courses, qualifications and curriculum)
- Information and knowledge objects
- Legacy courses and knowledge
- Recognition of prior learning
- Attached assessment for each outcome

Administration profiles
- Organisation details/identification
- Capability, industry and occupational, and learning classifications
- Regional identification
- Vendor identification
- Compliance reporting, security, data access rules
- Reporting, version control

Includes profile tools and storage of passports:
- Skills
- Knowledge
- Culture (value, attributes, qualitative outcomes, etc.)
- Behaviours
- Roles and titles

Possible Artificial Intelligence to enable continual re-design of data capture and reporting.

Knowledge Capital
- Human Capital
- Social Capital
- Infrastructure Capital

Capability mapping and tracking repository

Assessment and evaluation repository

Content Management System
- Knowledge Assets Repository

Learning Management System

Knowledge Management System

Performance Management System

Audio
- Visual
- Text
- Animation
- Other
12.14 Enabling Open Content and Architecture (Technology and Infrastructure)

It is beyond the scope of this Investigative Research Report to survey all available communications infrastructure, technology and software to establish how best to deliver specific types or learning, to specific types of learners, with given forms of content.

The mix of these variables is unimaginable. No simple yet elegant model has been developed to bring all of these variables into focus. What this report has endeavoured to do is bring the individual variables into perspective. Successful implementation of an organisational elearning strategy is dependent on the situational context of the organisation and the staff or customers completing elearning. As suggested by the examination of the instructional design/information systems design (ID/ISD) in Section 12.3, the analysis, build, implementation and evaluation should be systematic yet flexible enough to meet current and anticipated future needs.

12.14.1 Comparative advantages of tools, technology and learning environments

A number of commercial organisations have completed comparative analyses of available elearning technologies, tools and environments. Analyses of LMS, LCMS and standard technologies abound. The specific focus of this Research Report, however, has been to source comparative analyses on the learning tools and environments that promote more advanced forms of interactivity, knowledge transfer and types of learning. The following reports have proved most useful. While the Brandon-Hall reports cannot be reproduced and extracts cannot be made available due to copyright restrictions, the reports have been secured by the research team and made available to project sponsors.

<table>
<thead>
<tr>
<th>Report</th>
<th>Attachment</th>
</tr>
</thead>
</table>

12.14.2 Stages in content selection and management

Ellen Wenger’s Steps to creating a content strategy for your organization in The e-Learning Developers’ Journal (2002) provides a good guide to navigating the
contemporary ‘maze of content enabled learning and knowledge management opportunities’ (2002:5). Wenger’s steps are to:

1. Conduct a content audit to evaluate current content assets (i.e. existing learning components such as courses, curriculum, case studies, etc., and learning objects, information objects and content assets — text, graphics, audio and visual data);
2. Determine which legacy content (e.g. printed, extant learning materials) should be converted to digital content;
3. Determine the storage requirements for an object base for digitised content assets;
4. Determine the network infrastructure, server and database requirements to host and efficiently distribute content in meaningful packages;
5. Determine how object interoperability and reusability are likely to affect the elearning strategy (i.e. consideration of SCORM and IEEE learning object metadata standards);
6. Consider staffing and resource requirements;
7. Develop a plan that ensures the greatest ‘reusability’ of content by:
   - Developing a content map for each learning component (course, module, program) in a curriculum
   - Determining which learning components have the greatest likelihood of reuse
   - Comparing the content map with the enterprise learning map to determine priorities for creating learning objects;
8. Select the best tools for conceptualising, creating and maintaining the elearning content, distributing it to users, and managing content (Wenger, 2002:5–6).

Figure 12.24 depicts a concept for the tools and content mapping and tracking solution proposed previously. The architecture supports the necessary open access to the service and facilitates synchronisation, loading and data entry across offline and online access.
The tools and capability mapping and tracking (CMT) solution is intended to be cross-platform and -system and allow operations compatible with Microsoft® and browser environments. This would enable broadband-heavy functions to be accessed from the desktop and synchronised with the central Web accessible repository. Equally, all users, management and administration would use familiar Microsoft look-alike interfaces.
12.15 Measuring and Improving Elearning Return on Investment

There is a need for an elearning cost calculator and investment measurement instrument that covers all levels of an organisation’s investment in elearning and addresses individual, group and organisational outcomes. It should be modular with components that can be removed or added based on the organisation’s elearning needs and readiness. The tool must accommodate the outcomes that the investment can realistically achieve. For instance, measuring human capital growth for an organisation at the awareness stage of elearning implementation and with no capacity to link learning outcomes to knowledge capital growth may not be an appropriate starting point.

The metrics must be meaningful to both the outcomes to be evaluated and the overall contribution of elearning to the business’s level of development.

The components can most usefully evolve from the following base models. This calculator should be available online and the data captured online. It should be able to plot overall progress in investment terms and progress of elearning readiness.

Phillips’ ‘fifth level’ of evaluation suggests three new ROI formulas:

\[
\text{ROI} = \frac{\text{Total cost for present training} - \text{total cost of new training}}{\text{Total cost of training}}
\]

\[
\text{ROI} = \frac{\text{Total cost of training}}{\text{Number of students}}
\]

\[
\text{ROI} = \left( \frac{\text{Net benefits of training \([\$]\)}}{\text{Total training costs}} \right) \times 100
\]

Figure 12.25 Integrated elearning evaluation and planning cycle

<table>
<thead>
<tr>
<th>Planning — Elearning strategy, parameters and targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROI (Profit)</td>
</tr>
<tr>
<td>Products offered</td>
</tr>
<tr>
<td>Profit Margin</td>
</tr>
<tr>
<td>Services sold</td>
</tr>
<tr>
<td>Total investments</td>
</tr>
<tr>
<td>—</td>
</tr>
<tr>
<td>Services sold</td>
</tr>
<tr>
<td>Capabilities transferred</td>
</tr>
<tr>
<td>Investment (cost of doing business)</td>
</tr>
<tr>
<td>—</td>
</tr>
<tr>
<td>Cost to supply</td>
</tr>
<tr>
<td>Effectiveness</td>
</tr>
<tr>
<td>ROI to user (individual/organisation)</td>
</tr>
<tr>
<td>Capabilities acquired</td>
</tr>
<tr>
<td>Impact (value-add)</td>
</tr>
<tr>
<td>—</td>
</tr>
</tbody>
</table>
The previous figure indicates types of calculators and basic equations. Many ROI calculators exist online. These include:

5. [http://www.intellinex.com/m0/index.asp](http://www.intellinex.com/m0/index.asp) (Cost calculator link, requires Flash player plug-in)
7. [http://fastrak-consulting.co.uk/tactix/Features/tngroi/tngroi.htm#Calculating%20return%20on%20investment](http://fastrak-consulting.co.uk/tactix/Features/tngroi/tngroi.htm#Calculating%20return%20on%20investment)

Some elearning vendors offer cost calculators or provide ROI metrics and reporting with certain applications. However, research suggests that while vendors building ROI calculators into their products may be well intentioned, they may be unable to justify their equations based on the wider issues identified in this report relating to the contribution of elearning to an organisation’s potential productive capacity and agility. Indeed, they may have issues beyond the obvious conflict of interest. One of the most important issues of online calculators is the additional cost and difficulty for the buyer to establish the correct metrics and configure technology (Nucleus Research, 2003:9).

It is suggested the *Elearning Investment Calculator Benchmarking Tool* will be:

- A simple digital tool with ‘flat’ capability, indicative of a logic and design rather than delivering all of the capabilities that more interactive and functional tools may provide;
- An ROI calculator that extends calculations of return on investment from basic ROI, through cost-benefit analysis to human capital calculations. Tool will have sections across each level of ROI calculation and enable organisations to select ROI based on their level of elearning progress/readiness and needs;
- An Excel spreadsheet with an online dynamic interface;
- Designed in conjunction with an expert in accounting and financial modelling, based on existing tools uncovered by the Investigative Research Report.
Figure 12.26  Elearning investment calculator benchmarking tool — including HCM and cost benefit tool
12.16 Summary

This Investigative Research Report has not sought to advance a definitive theory of elearning. Its focus has been to investigate, compare, contrast and make observations based on a survey of the literature, including data and insights offered by researchers and practitioners. The parameters for this study were set by the overall research Design Brief.

The authors of this Investigative Research Report were presented with the challenge to conduct investigations in light of the project sponsors’ belief that:

_The efficiency and effectiveness of elearning is not well understood and as a result implementation has failed to deliver desired levels of performance improvement and agility within organisations and societies._

As framed, this statement could be viewed as a working hypothesis. If this is accepted, then this Investigative Research Report would conclude that the hypothesis as proposed has significant evidence to support the accuracy of this statement.

The Investigative Research Report is a work in progress. Chapter 12 concludes the core data collection, analysis and reporting component of the research effort. As indicated in the overall project plan as shown, other phases of the Learning to Elearn project remain to be completed. These include Stages 2 and 3 field validation testing and reporting — case studies will be included as Chapter 13 and direct surveys will become Chapter 14. As fieldwork is completed, research will be translated into the Phase 2 applications build.

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### Overall Project Plan: Learning to Elearn (L2eL)

**Pre-Project: Project Design Specification (September 2002)**

**Phase 1: Investigative Research Report**

- **Stage 1**
  - Use grounded theory to develop a meta-model or understanding of the foundations and parameters for research on elearning and then investigate, explore data across core parameters, and subsequently validate (October to March 2003)

- **Stage 2**
  - Conduct case studies (May 2003)

- **Stage 3**
  - Complete interviews (June to July 2003)
  - Variables analyses and final updated Investigative Research Reports (July 2003)

**Phase 2: Application Build and Prototype**

- Various applications, programs (1 July 2003 to 1 February 2004)
- Trialling (November 2003)

**Phase 3: Publish and Promote Findings**

- Public publication of findings, ‘How-to manual’, and internal reports (June 2003+)

**Phase 4: Commercialisation and Implement Products**

- Commercial presentations and revenue from publications (2004+)
- Roll-out of tool(s) and application(s) (2004+)
Chapter 12 begins with a quotation by Hermann von Helmholtz to moderate expectations that research outcomes can quickly translate into action. The research process for this report has endeavoured to balance the research process with the desire to provide observations and findings highly relevant to applied outcomes.

By the conclusion of Chapter 12, readers should be able to judge whether the report has translated research into actionable items. The observations, principles and blueprint for implementation, and proposed capability-based tools and applications all are advanced as ways to effect more effective and efficient elearning.

Nevertheless, the major effort of the report has been to ‘cut a trail’ through the dense field of literature in order to present a more informed perspective.

The Investigative Research Report was chartered to:

1. Establish how different learning and knowledge transfer variables impact individual, group and organisational change;
2. Accelerate and enable better transformation of existing learning strategies and individual behaviours to more effectively use elearning approaches;
3. Improve customer acquisition and retention by more effective consideration of how needs and preferences of external customers can be met through electronic transactions;
4. Confirm how elearning can impact external customers and especially the impact on internal human capital value and capacity as it directly relates to provision of brand promise and service excellence;
5. Accelerate effective compliance training;
6. More rigorously classify and maximise relationships between competencies, capabilities, behaviours, culture, values and the like;
7. Provide invaluable insights into how technology, standards and systems design can individually and collectively impact an elearning design, delivery, assessment and record-keeping solution; and
8. Provide a filter to sort complex and hard-to-understand issues or move elearning research into actionable knowledge (i.e. synthesised and summarised abstracts, action-oriented observations and diagrams).

The grounded theory approach was adopted to support the Investigative Research Report data-selection and analysis process. As the field under study covers so many disciplines and sources of insights, grounded theory offered a logical methodological approach. As research for this Report progressed, generalising and integrating categories of research presented by other authors on the main issues under investigation (chapters) soon indicated that the analytical rationale needed to respond to some quite profound insights.

By modifying the grounded theory approach, the data collection and the analysis of the literature could be tied to topics, issues, dimensions and variables presented in each chapter. Clearly the substance in each chapter when considered in isolation or collectively provides substantial insights into all eight of the above chartered objectives.
The substance of research in the body of this report undoubtedly supports the conclusion that elearning is not yet sufficiently understood theoretically to underpin current practices. Organisations, individuals and communities are therefore required to devise solutions without being fully apprised of all the variables influencing elearning design or its successful implementation. While this Investigative Research Report is not intended as a public document, the substantial analysis and investigation completed would greatly inform both theoretical development and applied practice across the field of elearning. (To put this research effort into perspective, the contributors to this report note that they would have loved to have had a document like this as their starting point.)

For organisations to advance effective and efficient elearning with a capacity to continually learn from their experiences and the environment, critical reflection on the findings of this report must be fostered. If such reflection is to significantly advance the theory and practice of elearning, this report must continue towards the envisaged ‘more concise public text’. This is of obvious importance as the research can assist transformations under way in other parts of society, including educational providers, governments and learning communities (especially in the school–industry pathways projects).

It is important to point out the limitations that have become apparent in this investigative review of elearning. Significant areas of importance are marked by an absence of robust research. These areas can be signalled for intensive consideration. They include, but are not limited to:

♦ Influence of culture, numeracy and literacy on elearning needs and preferences and the flow of knowledge in an electronic context;

♦ The implications that the transition to mobile learning (mlearning) or non-browser-based technologies have for elearning design, development and completion;

♦ Metacognitive profiling and assessment;

♦ The relationship and influence of elearning on e-service, particularly in relation to brand positioning, brand value and qualitative and quantitative improvement to service excellence;

♦ A manual to translate the principles advanced in this report into a detailed approach to the ABII design and implementation process proposed. Any such manual should differentiate the characteristics of elearning at each of the four stages of effective interventions and examine how highly structured, systematic approaches to ID/ISD could be modified, or at least integrated with solutions that improve user focus, speed and flexibility;

♦ How learning content and environments can be assessed in terms of their value-add both to the learner and wider strategic outcomes. Also about organisational benefits related to management of knowledge and the growth of human capital as a component of knowledge capital assets;

♦ How different types of elearning interventions affect the capture, transfer and generation of different types of knowledge;
Reliable elearning market data on technologies in use across Australian and Asian businesses, the satisfaction levels of managers and users, the needs and preferences of users, the imperatives or barriers influencing adoption, and the actual size of the market for all forms of elearning content, services and technologies; and perhaps . . .

A theory for elearning.

This report is a work in progress and will continue to evolve and be refined over the course of the entire Learning to Elearn project. The concept of double-loop learning and the necessity to learn from experience in order to inform future actions apply as much to this overall project as they do to the science and art of elearning.

A final observation that has arisen in this chapter and has been included in the overall observations (in Section 12.5) is this:

**Observation 12.1**

Instructional design is to elearning what architectural planning is to building; it is at once the blueprint and the vision of the process, designing the unifying or coherent structure. More specifically, instructional design accommodates learning transfer, customer needs and preferences (useability), as well as information systems design and architecture.
12.17 References


13 Glossary

13.1 Key Terms — Acronyms: Communication and Technology

**3G/Third-generation** — the International Mobile Telecommunications Services (IMTS:2000), which began roll-out in late 2000 and is an evolution in mobile wireless communications services.

**ADSL** — Asymmetric Digital Subscriber Line — allows high-speed data transmission over copper pair (standard phone line); asynchronous because download speeds greatly exceed upload speeds.

**ATM** — Asynchronous Transmission Mode — method of sending data in irregular time intervals using a code such as ASCII. ATM allows most modern computers to communicate with one another easily.

**B2A** — Business to Application — such as in interface between business applications.

**B2B** — Business to Business — transactions that are effected via the Internet between corporations.

**B2C** — Business to Consumer — transactions that are effected via the Internet between corporations and consumers.

**B2G** — Business to Government — such as in tender applications.

**CDMA** — Code Division Multiple Access — a mobile telephony technology that allows a handset to be used as a fixed line phone replacement and a mobile phone. Implemented in 800 and 1900 MHz systems around the world.

**CDMA (second-generation mobile)** — USA-developed system to be compatible with old AMPS (analog) services. It is a very different technology to GSM. A SIM card is not used so identity of handset is tied to identity of account owner. CDMA network operators argue that it is better than GSM because it requires less network investment, has better noise suppression, a reduced incidence of dropped calls and involves more efficient spectrum utilisation. It works up to about 50 km from a base station or further if boomer cells are introduced. Tasmania received CDMA from Telstra in 2000 and Telstra are extending in other rural regional areas.

**cdma2000** — a radio transmission technology and backbone technology for the evolution of cdmaOne/IS-95 to 3G.

**CDR** — Call Data Recording — a feature in a telephone system that allows it to collect and record information on incoming and outgoing calls.

**CDPD** — Cellular Digital Packet Data — digital communications service that breaks data into packets.

**CGI** — Common Gateway Interface — interface-creation scripting program that allows web pages to be made on the fly based on information from buttons, checkboxes, text input, etc.

**D-AMPS** — Digital Advanced Multiple Access — a digital version of AMPS (Advanced Mobile Phone Service), the original analogue standard for cellular telephone service in the United States. Both D-AMPS and AMPS are now used in many countries. D-AMPS adds time division multiple access (TDMA) to AMPS to get three channels for each AMPS channel, tripling the number of calls that can be handled on a channel. D-AMPS is the Interim...
Standard-136 from the Electronics Industries Association/Telecommunication Industries Association (EIA/TIA).

**DCME** — Digital Circuit Multiplication Equipment — technique for deriving voice circuits from a high-capacity digital circuit using higher bit-rate encoding and silence suppression.

**DCOM** — Distributed Component Object Model — platform to support objects distributed over a network.

**DCS** — Demand Collection System — online auction system.

**EbXML** — Electronic business Extensible Markup Language — emerging global standard for ecommerce.

**EDGE** — Enhanced Data for GSM Evolution — extends the data capabilities of GPRS through more sophisticated modulation techniques to increase the data capacity of the radio bearer (rates up to 384 kbit/s).

**EPOC** — an operating system platform standard with full application suite for wireless devices including Palm Pilots and other wireless devices, specifically mobile multimedia terminals developed by Symbian (a joint-venture between Ericsson, Matsushita, Nokia, Motorola and Psion).

**GEO** — geostationary satellite — positioned 37,784 km above equator — stationary shadow over specific area that can broadcast or enable communication within the area covered.

**GPRS** — general packet radio service — packet-based data protocol for GSM mobile phones. GPRS differs from GSM by increasing data transmission rates (up to 114 kbit/sec). The global GPRS market is now beginning to take off. The introduction of GPRS is one of the key steps in the evolution from the GSM network to 3G.

**GSM** — (second-generation digital mobile) — European implementation based on frequency division of carrier channels and time division in each channel — involves TDMA. Operates in the 900–1800 GHz bands, with data rates 9600 to 14,400 bit/s/second — GSM has an inherent range limit of 35 kilometres, although it can be extended to 70 km in rural areas by halving available service slots. Vodafone and Ericsson are conducting trials to extend range of GSM further — up to 120 km.

**HAPs** — High Altitude Platform station — balloons in stratosphere that can provide a large transmission shadow for high bandwidth services to urban or regional areas — or act as base stations.

**HSDL** — High-Speed Data Services — services for next generation mobiles (see 3G) with speeds that exceed current 2G and 2.5G wireless networks and even fixed line connections. Solutions use on the service can include Virtual Private Network (VPN) technology and secure data services.

**HSCSD** — high-speed, multi-slot datacom platform for GSM networks. It removes the barrier to mobile datacom of low network performance, bringing phone users the same — or even higher — performance than wire-line connections.

**HTML** — HyperText Markup Language — coding language used to create hypertext documents for use on the Web. HTML resembles old-fashioned typesetting code, in which a block of text is surrounded by codes that indicate how it should appear. HTML allows text to be ‘linked’ to another file on the Internet.

**HLR** — Home Location Register — main database of permanent subscriber information for a mobile network.

**IP** — Intellectual Property — includes patents, trademarks, copyrights, industrial designs, integrated circuit topographies, plant breeders' rights.
Glossary

**IP** — Internet Protocol — the transport layer network protocol that is used as a basis of the Internet.

**IRC** — Internet Relay Chat — worldwide network of people talking to each other in real time.

**ISDN** — Integrated Services Digital Network — digital network that moves data up to 128,000 bits-per-second over a regular phone line at approximately the same cost as a normal phone call.

**LAN** — Local Area Network — a system that links together electronic office equipment, such as computers and word processors, and forms a network within an office or building. See also **WAN**.

**LCMS** — Learning Content Management System — a system that is used to create, store, assemble and deliver personalised elearning content in the form of learning objects

**LMDS** — Local Multi-point Distribution Service — two-way point-to-multipoint distribution service using microwave frequencies 25–40 GHz intended for localised delivery of video (pay-TV) data or telephony and Internet.

**LMS** — Learning Management System — software application that automates the end-to-end administration, tracking and reporting of classroom and online training events, enabling prioritisation of resource allocation and detailed analysis of the effectiveness of the intervention and investment.

**MeT** — Mobile electronic Transactions — The MeT initiative is a global cooperative body spearheaded by Ericsson, Nokia and Motorola to foster common open-core technology for the mcommerce market. The objective of the initiative is to avoid market fragmentation by defining an mcommerce framework based on the most appropriate key technologies and a unified concept of the mobile ecommerce environment. The initiative is not set up to create new standards or specifications but rather to ensure that the groundwork for mcommerce is built on existing technologies such as WAP (Wireless Application Protocol) and WPKI.

**Organisational learning** — while organisations are not usually built to learn they do organise functions and processes to complete transactions between individuals within and outside their structure. Such transactions stimulate relationships that can be deliberately managed to encourage organisational learning through the capture, transfer and generation of knowledge. This knowledge has the potential to advance individual, group and organisational outcomes

**PDC** — Personal Digital Cellular — a Japanese standard for digital mobile telephony in the 800 MHz and 1500 MHz bands.

**PHP** — One of the fast growing scripting languages to be found on the Internet. It is increasingly being used by web programmers to overcome some of the difficulties presented by many other languages. PHP code can be inserted directly alongside HTML which makes the language much easier to use and programs to be generated. Access and use is free.

**POP** — Point Of Presence — geographical locations at which an ISP provides local call access to its Internet service.

**SMS** — Short Message Service — a service for sending messages of up to 160 characters (224 characters if using a 5-bit mode) to mobile phones that use Global System for Mobile (see GSM) communication.

**T-1** — high-speed (1.54 megabits/second) network connection.

**T-3** — even higher speed (45 megabits/second) Internet connection.
**TCP/IP** — Transmission Control Protocol/Internet Protocol — communication language that computers with different operating systems use to communicate on the Internet.

**TDMA** — Time Division Multiple Access — a digital radio technique that divides radio spectrum into ‘timeslots’ for users rather than (only) frequency separation or codes, used in GSM and TDMA (IS-136) mobile networks. TDMA is also the term used to describe the digital enhancement of the AMPS analogue standard, formerly known as **D-AMPS (Digital Advanced Multiple Access)**.

**UMTS** — Universal Mobile Telephone service — European approach to third-generation mobile technology — uses CDMA at 2GHz.

**VRML** — Virtual Reality Modeling Language — protocol for creating ‘navigable, hyperlinked 3-D spaces on the Web’ (*Wired Style*). In other words, images of objects the user can spin around or a scene the user can spin around the centre point of view, sometimes allowing user to zoom in and out. VRML can also serve as links like image maps.

**VSAT** — Very Small Aperture Terminal, an earth-based satellite receiver able to receive or send data, voice and video signals.

**WAN** — Wide Area Network — (from whatis): geographically dispersed telecommunications network. The term distinguishes a broader telecommunication structure from a local area network. A wide area network may be privately owned or rented, but the term usually connotes the inclusion of public (shared user) networks. An intermediate form of network in terms of geography is a metropolitan area network.

**WAP** — Wireless Application Protocol — open global specification that allows high-speed, easy Internet access and other broadband services on mobile wireless devices.

**WASP** — Wireless Applications Service Provider — provider of ASP services over wireless networks.

**WCDMA system complete with commercially available 3G products** — demonstrated by Ericsson at CeBIT 2001 in Hannover, Germany (March 2001). Ericsson has the industry’s most comprehensive portfolio of products and services for fast roll-out of 3G networks. The core network includes the Mobile Switching Center (MSC), the Gateway GPRS Support Node/Serving GPRS Support Node (GGSN/SGSN), the Media Gateway (MGw) and Packet Backbone Network.

**WCDMA Wideband Code Division Multiple Access** — the radio interface technology that will be used in most 3G systems around the world. WCDMA is optimised to support multiple high-speed mobile multimedia services such as full-motion video, Internet access and videoconferencing.

**WISE** — program, developed by Ericsson, intended to help GSM operators create new data-related solutions in their GSM networks. By introducing more datacom functionality in the GSM network, the power of the Internet is made available to GSM users and new application possibilities can be created for GSM operators’ mobile portal.

**WLL** — Wireless Local Loop — sometimes called radio in the loop (RITL) or fixed-radio access (FRA), WLL is a system that connects subscribers to the public switched telephone network (PSTN) using radio signals as a substitute for copper for all or part of the connection between the subscriber and the switch. This includes cordless access systems, proprietary fixed radio access and fixed cellular systems.
13.2 Key Terms — Elearning

**Analog (Analogue)** — signal that is received in the same form as it is transmitted, while the amplitude and frequency may lose quality with each generation.

**Application Service Provider (ASP)** — company that provides access to applications on a subscription basis. MediaSeek and LearningStation.com are examples of ASPs.

**Application sharing** — allows more than one person to use a software application. Multiple users can add and delete items from the document. The application is launched from one person’s computer and that person is the gatekeeper who can determine which users can make changes to the document and which ones can only view it.

**Asynchronous** — communication in which interaction between parties does not take place at the same time.

**Asynchronous Collaborative ELearning (ACEL)** — term coined to indicate asynchronous, but also collaborative, experience. The collaboration does not occur in real time, however.

**Asynchronous learning** — learning, in which interaction between teachers and students occurs intermittently with a time delay (as opposed to synchronous). Examples are self-paced courses taken via the Internet or CD-ROM, Q&A mentoring, email, listservs, audiocassette courses, videotaped courses, correspondence courses and Internet courses.

**Authoring software/tools** — allow users to create and adapt content to the Web for use in an online course. Assists in creating elearning courses. High-level computer programs designed for creating computer-based training, interactive presentations and multimedia. Commands are often presented as simple terms, concepts and icons. Authoring software translates these commands into programming code (e.g. Authorware, WebCT, Director).

**Authoring systems** — the software specially designed to let people create online learning modules that include all of the key learning elements: text presentations, graphics, questions (links to appropriate learning material based on learners' responses) and tracking of student performance. See authoring software/tools.

**Bandwidth** — information-carrying capacity of a communication channel. The greater the bandwidth, the greater the carrying capacity. Often used in reference to Internet access.

**Bluetooth** — short-range 10–100 metres low-power radio technology available for a range of mobile and fixed devices: enables devices to communicate with each other via local area networks for small offices, etc. wirelessly.

**Broadband** — high-speed data transmission. The specific speed used to define broadband is subjective; the word often implies any speed above what is commonly used at the time.

**Browser** — application program that provides a way to look at and interact with all the information on the World Wide Web, for example, Mosaic, Internet Explorer, Netscape Navigator. See also search engine.

**Capability** — combination of knowledge assets in the form of competence attributes (skills and knowledge) plus identity attributes (culture, roles, behaviours and traits) that support individual and collective performance.

**Certificate or certification** — form of recognition of achievement for a defined set of learning outcomes (for a module/program or a course) by a credential not linked to formal qualifications (i.e. vendor- or company-endorsed credential).
**Channel** — aggregation of content with a common theme, made available by a content provider.

**Chat (Internet Relay Chat or IRC)** — real-time, interactive on-line conversations on the Internet, allowing Internet users to join theme discussions or post comments on their screen at the same time as other participants. Chatting can also include communication in virtual reality environments using avatars (the virtual representation of the user by a 2D or 3D character).

**Chat room** — real-time text-based conversation with other learners over the Internet. Whatever a user types is displayed on the other users’ screens as it is being typed.

**C-learning** — classroom learning; the traditional form of learning in which learners attend class at a specific location, at a set time and with a learning advisor.

**Competencies** — specification of the knowledge and skills and the application of that knowledge and skill to the standard of performance required in a level of employment.

**Computer-Assisted Instruction (CAI)** — teaching process in which a computer is used to enhance the learning environment by assisting students to gain mastery over a specific skill.

**Computer-Based Training (CBT)** — umbrella term for the use of computers in both instruction and management of the teaching and learning process. CAI (computer-assisted instruction) and CMI (computer-managed instruction) are included under the heading of CBT. Some people use the terms CBT and CAI interchangeably. Both involve training materials and content delivered via software applications that are installed on the learner’s computer.

**Computer-managed instruction** — see computer-based training.

**Content** — see learning content.

**Content Service Provider (CSP)** — company that provides data and information for inclusion on the Web. Encyclopaedia Britannica, McGraw Hill and Oz New Media are examples of CSPs.

**Convergence** — increased unity of service across TV, computer, Internet, telephony, video and other media.

**Course** — sequence of modules that leads to a credential being issued to provide formal recognition through a qualification or professional accreditation.

**Credit transfer** — establishes the value or credit a person may receive in recognition of prior experience, current competence or completed training or education when seeking to transfer into a formally recognised course or program of learning. This credit can be applied towards a qualification.

**Curriculum** — formal document that structures and packages criteria, learning outcomes or competencies into learning ‘package’, such as a course, module or program.

**Data** — the basis for forming information.

**Delivery** — any method of transferring offerings to learners. Variants are instructor-led training, web-based distance learning, online laboratory, CD-ROM and books.

**Digital** — electrical signal that varies in discrete steps in voltage, frequency, amplitude, location, etc. Digital signals can be transmitted faster and more accurately than analog signals. Digital does not lose quality in duplication or quality over distance.

**Discussion list** — Discussion Board/Threaded Discussions — online conversation in which one person sends a question or comment to a list of people who have signed up for discussions on that topic (hence the name discussion list). Respondents view the messages at
Distance education — learning situation in which the instructor and students are separated by time, location, or both. The interaction between a learner who strives to acquire knowledge or skill by instruction or study with a remote knowledge source: one that is physically separated from the learner. Education or training courses are delivered to remote locations via synchronous or asynchronous means of instruction, including written correspondence, text, graphics, audio- and videotape, CD-ROM, online learning, audio- and videoconferencing, interactive TV, radio and facsimile. Distance learning does not preclude the use of the traditional classroom. The definition of distance education is broader than and encompasses elearning. Elearning is a subset of distance education and training.

Distance learning — the desired outcome of distance education.

Ebusiness — conducting business on the Internet.

Ebusiness services — services comprising consulting, design, integration, support, management and outsourcing services associated with the development, deployment and management of Internet sites.

Ecommerce — electronic commerce or the conduct of transactions over the Internet.

Elearning — covers a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV and CD-ROM.

Elibrary — wealth of digital resources for learners to use for learning purposes. Elibrary companies help find, organise and mine the content for learners.

Electronic mail (email) — messages sent from one computer user to another.

Etest — ability to provide assessment and evaluation over the Internet.

Experiential learning — learning through short, structured and targeted exercises where individuals learn through performance and investigation. Unlike action learning the tasks may not necessarily be related to the workplace but learning opportunities are structured to combine competency, cognitive and emotional aspects of an individual or team’s experience in a manner that promotes learning.

Extranet — World Wide Web–like network available only to people chosen by the organisation, including people outside of it (hence, the term ‘extra’).

File Transfer Protocol (FTP) — protocol that allows files to be moved from a distant computer to a local computer using a network such as the Internet.

Firewall — security barrier between a company intranet and the larger Internet to protect systems from viruses and other unwanted digital intrusions.

Flash — multimedia technology developed by Macromedia to allow much interactivity to fit into a relatively small file size.

Floor control — feature in a synchronous learning environment that allows one person to know what is going on with all the participants. The person with floor control can look at other learners’ screens, control the whiteboard and run the class. The learning advisor is typically the one with floor control, but control can be transferred to other learners. The term is probably taken from television directing, floor director.

Formal (national) qualification — consistent and portable credential recognising an individual’s attainment of all the competency units nominated as requirements for
competency to be recognised at a given level on the Australian Qualifications Framework. This may be through the completion of a course or through direct assessment or a combination.

**Fully interactive video** — two sites interact with audio and video as if they were located in the same place (two-way interactive video).

**Graphical User Interface (GUI)** — interface that incorporates a variety of media, especially text and graphics. Often graphical user interfaces have icons that represent actions that the system can perform and that make extensive use of visuals. Windows and the Mac Operating System (OS) are examples of programs that have a graphical user interface.

**Groupware** — software that promotes synchronous and asynchronous online collaboration, by letting users send email, share work files, conduct online chats, and similar activities. See application sharing.

**Host** — (from whatis.com) in Internet protocol specifications, any computer that has full two-way access to other computers on the Internet. A host has a specific ‘local or host number’ that, together with the network number, forms its unique **IP address**. If you use **Point-to-Point Protocol** to get access to your access provider, you have a unique IP address for the duration of any connection you make to the Internet and your computer is a host for that period. In this context, a ‘host’ is a **node** in a network.

**Hot link** — see Hyperlink.

**Hyperlink** — on the Web or other hypertext systems, hyperlink is a synonym for both link and hypertext link. Possibly, the term originated because ‘link’ was not felt to be specific enough. And it’s shorter than ‘hypertext link’.

**Hypermedia** — derived from hypertext, extends the notion of the hypertext link to include links among any set of multimedia objects, including sound, motion video and virtual reality. It can also connote a higher level of user/network interactivity than the interactivity already implicit in hypertext.

**Hypertext** — any text that can be chosen by a reader and which allows another document to be retrieved and displayed.

**Hypertext Transfer Protocol (HTTP)** — set of rules for exchanging files (text, graphic images, sound, video and other multimedia files) on the World Wide Web. Relative to the TCP/IP suite of protocols (which are the basis for information exchange on the Internet), HTTP is an application protocol.

**Identity** — the sum of cultural attributes, roles, traits and behaviours. It involves the sense of past experiences, current capabilities and a trajectory towards a desired future.

**Individualised Education Plans (IEP)** — learners can design how, when and what they want to learn. The Internet simplifies this process by offering a variety of choices and learning options.

**Information** — data + meaning.

**Information object** — any digital resource that can be used to support learning object (see Knowledge Nugget) See Learning Object.

**Instructor-Led Training (ILT)** — training in which learners are taught by an actual person, or instructor, usually in a classroom setting, synchronously or asynchronously.

**Intellectual capital** — See knowledge capital.

**Interactive communication** — interactive communication brings people together, speeds up information dissemination and learning processes, and enables users to interact in real time.
without distance being an obstacle. Today, two people can develop a product from opposite ends of a continent, benefit from another person’s expertise even though they are thousands of kilometres away, use multimedia elements such as sound, video or fixed image and text, share software and much more.

**Internet** — system of linked computer networks that facilitates communication and transfers information among users.

**Internet Service Provider (ISP)** — company that provides the facilities necessary for individuals or organisations to access the Internet via dial-up or dedicated lines.

**Intranet** — private network that links a group of computers, usually within a company. Functions like the Internet but is not available to the public. It involves a LAN or WAN that can transport information. See also LAN and WAN in acronyms section.

**IP address** — multi-digit number that relates to a website.

**IP multicast** — transmission of information from services to clients where the information is broadcast to clients who have subscribed to the service.

**IP telephony** — use of IP networks such as the Internet to provide telephony services. Known as Voice Over IP (VOIP).

**Knowledge** — data + meaning + purpose (also embedded and migratory, tacit and explicit, embrained and encultured, focal, etc.).

**Knowledge assets** — capabilities and knowledge or information components accessible by an individual group or organisations.

**Knowledge capital** — total capabilities available to an organisation in pools of knowledge resources including social capital, human capital and infrastructural capital. Together the pools of capital resources determine knowledge capital, which has a value through the potential for productive capacity and agility. The term is used to also encompass intellectual capital.

**Knowledge management** — capturing, organising, and storing knowledge and experiences of individual workers and groups within an organisation and making it available to others in the organisation. The information is stored in a special database called a knowledge base.

**Knowledge nugget** — can be used to delineate a ‘chunk’ that is an original knowledge asset, information object or learning object that is a component of a more extensive learning program but no longer maintains its formal relationship to a learning outcome or a course or short course.

**Learning content** — best thought of as knowledge assets packaged into materials, activities and supporting resources to support learning components. They enable a learner to complete learning to the outcomes attached to a learning component. They may include case studies, challenges, assessment tools, experiments and so on.

**Learning Management Systems** — software that tracks student progress in a course and indicates completion. At minimum, learning management systems track individual student progress, record scores of quizzes and tests within an online learning program, and track course completion. Learning management systems may also transfer this information to other record management software, such as PeopleSoft, so that permanent educational records reflect progress in online learning. Although originally sold as separate software that worked in conjunction with authoring tools, many authoring tools now include learning.
**Learning nugget** — can be used to delineate a ‘chunk’ that is an original knowledge asset or learning object; this chunk maintains its ability to credit transfer an individual’s learning towards an agreed outcome that is linked to a course or short course.

**Learning object** — these have been defined as modular digital resources, uniquely identified and meta-tagged, which can be used to support learning. Learning objects have the potential to provide learning customised for each specific learner at a specific time, taking into account their learning styles, experience, knowledge and learning goals. In addition they can be disaggregated to permit the same objects to be used for different courses, or be reusable in how different individuals access the same content.

**Learning organisation** — under a learning organisation approach the individual within the organisation, and the organisation as a whole, has to commit to learn, to continually seek to change existing practices through knowledge acquired by learning, and to respond to the sources of information that stimulate new knowledge and learning.

**Learning portal** — any website that offers learners or organisations consolidated access to learning and training resources from multiple sources. Operators of learning portals are also called content aggregators, distributors or hosts.

**Learning Service Provider (LSP)** — specialised ASP offering learning management and training delivery software on a hosted or rental basis.

**Link** — electronic connection between two websites (also called ‘hot link’, hotlink or hyperlink).

**Listserv** — email program that automatically sends messages to all subscribers, creating an online discussion.

**Message boards and discussion threads** — asynchronous communication tool that allows learners to post comments and questions to a common location on the Internet. Learners and learning advisors can read the messages and post responses at their leisure.

**Metadata** — method to organise data into ‘nuggets’ so that the user can locate, evaluate, access and manage online information.

**Meta-tag** — Tags affixed to learning objects to explain what's inside: its content, objectives, author, language, date, version, level, assessment, and more.

**Modem** — equipment that allows computers to interact with one another via telephone lines by converting digital signals to analog for transmission along analog lines.

**Module** — stand-alone unit of learning that offers credit transfer into a program or formally recognised course.

**Multimedia** — any document that uses multiple forms of communication such as interactive text, images, sound and colour. Multimedia can be anything from a simple PowerPoint slideshow to a complex interactive simulation.

**Multipoint** — communication configuration in which several terminals or stations are connected. This differs from point-to-point, where communication is between two stations only.

**Network** — series of points in different locations connected by communication channels.

**Nugget (of information)** — delineates a ‘bite-sized’ component of learning that is a component of a module or program of learning but no longer maintains its formal relationship to a learning outcome that is linked to a formal course.
**Nugget (of learning)** — delineates a ‘bite-sized’ component of learning that is a component of a module and maintains its ability to credit transfer an individual’s learning towards an agreed outcome that is linked to a formal course or certificated short course.

**Off-the-job training** — training, education and development that is structured and conducted outside the ‘normal’ workplace situation and performance of tasks related to job completion. This may include lectures, classroom activities, case studies, self-paced learning, games, simulations, programmed instruction and special training sessions within a workplace context structured outside normal job/task completion.

**On-the-job training** — training, education and development that is structured and conducted in the workplace and based on activities completed as part of a student’s normal workplace activities and job. This usually includes learning by ‘doing’, coaching, skills tests and learning completed as part of normal job/task completion.

**Organisational learning** — while organisations are not usually built to learn they do organise functions and processes to complete transactions between individuals within and outside their structure. Such transactions stimulate relationships that can be deliberately managed to encourage organisational learning through the capture, transfer and generation of knowledge. This knowledge has the potential to advance individual, group and organisational outcomes.

**Page** — all websites are a collection of electronic ‘pages’. Each web page is a document formatted in HTML (HyperText Markup Language) that contains text, images or media objects such as RealAudio player files, QuickTime videos or Java applets. The ‘home page’ is typically a visitor’s first point of entry and usually features a site index. Pages can be static or dynamically generated. All frames and frame parent documents are counted as pages.

**Performance** — application or deployment of capabilities to achieve an outcome. It may also include the composite outcomes or end results which emerge when an individual, group or organisation pursues actions that may be measured to determine if they are optimal (minimised or maximised).

**Portal** — location on the Web that serves as a central source for information and content targeted to a specific group. Serves as a gateway to information and elearning from a variety of different sources. Although the term was initially used to refer to general purpose sites, it is increasingly being used to refer to vertical market sites that offer the same services, but only to a particular industry such as banking, insurance or computers.

**Program** — sequence of modules that does not result in a qualification but offers credit transfer into a course (i.e. multiple modules but less than a course).

**Qualification (formal, national)** — consistent and portable credential recognising an individual’s attainment of all the criteria, learning outcomes or capabilities nominated as requirements for recognition at a given level of accreditation (i.e. the Australian Qualifications Framework). This may be through the completion of a course, direct assessment or a combination.

**RCC** — see Recognition of Current Competency.

**Real time** — processing of information that returns a result so rapidly that the interaction appears to be instantaneous. Telephone calls and videoconferencing are examples of real-time applications. Real-time information not only needs to be processed almost instantaneously, but also needs to arrive in the exact order it is sent. A delay between parts of a word, or the transmission of video frames out of sequence, makes the communication unintelligible. See Synchronous.
Recognition of Current Competency (RCC) — the formal process of mapping competencies held by an individual against benchmark competency standards, or competencies that compose formal qualifications. RCC is closely related with RPL, but distinct, especially when associated with determining actual performance capacity as opposed to learning held, i.e. as in performance reviews.

Recognition of Prior Learning — RPL is the formal process and means by which workers can gain formal recognition for skills and competencies they already possess, through life experiences, or learning elsewhere, without having to undertake further training.

Repository — The repository is a database of learning objects. A LCMS can deliver these as required by a specific situation.

RPL — see Recognition of Prior Learning.

Search engine — (from whatis.com) on the Internet, a search engine is a coordinated set of programs that includes:

- A spider (also called ‘crawler’ or a ‘bot’) that goes to every page or representative pages on every website that wants to be searchable and reads it, using hypertext links on each page to discover and read a site’s other pages
- A program that creates a huge index (sometimes called a ‘catalog’) from the pages that have been read
- A program that receives your search request, compares it to the entries in the index, and returns results to you.

Self-directed learning — process of learning where the individual takes full responsibility for diagnosing their needs, priorities, learning goals, the structuring and completion of study to meet learning needs, and follow-up evaluation of the progress they have made through study.

Self-Paced ELearning (SPEL) — the learner uses the Internet to search for static documents that provide information and content. The engagement is self-paced and self-directed, enabled by the Internet but not including an organised course or program.

Self-paced learning — offering in which the learner determines the pace and timing of content delivery.

Server — machine that makes services available on a network to client programs. A file server makes files available.

Sharable Content Object Reference Model (SCORM) — set of standards that, when applied to course content, produces small, reusable learning objects. A result of the U.S. Department of Defense's Advance Distributed Learning (ADL) initiative, SCORM-compliant courseware elements can be easily merged with other compliant elements to produce a highly modular repository of training materials.

Short course or session — refers to a stand-alone module or sequence of training that does not offer credit transfer into a course but may result in certification.

Streaming — live radio, audio and video — this ‘continuous’ broadcast mode, called streaming, can be found on the Internet and intranets to process data (display images or video, or play sounds or music) before it is fully downloaded or uploaded. The information is compressed at the source, usually in MPEG format, and then decompressed by the user. Several users can simultaneously view or listen to the posted files. Streaming technology allows the user to listen to, view and even interact with (while viewing or listening) multimedia files. The streaming mode is essential for listening to conferences and radio or television programs live or in delayed broadcast, although the video broadcast quality is
entirely dependent on the telecommunication network and the user’s hardware (modem, processor, etc.).

**Synchronous** — through modern technology, the learners log into class at a regularly scheduled time and date and engage in real time with the learning advisor and other learners, much like a real classroom. Assignments are given, questions are asked and answered, and exams and pop quizzes are taken.

**Synchronous Collaborative ELearning (SCEL)** — term coined to indicate that the experience was synchronous — two-way — but also collaborative. Common forms of synchronous learning include video teleconferencing, audio conferencing and computer conferencing and/or chats.

**Teleconferencing** — two-way electronic communications between two or more groups in separate locations via audio, video and/or computer systems.

**Videoconferencing and desktop videoconferencing** — using video and audio signals to link participants at different and remote locations. There are two kinds of videoconferencing: personal (or face-to-face) via personal computers, and group (person or persons talking to a group of persons) using a dedicated videoconference system via monitors or televisions. Desktop occurs through use of a personal computer.

**Video teleconferencing** — teleconference including two-way video.

**Virtual backpack** — software or service that allows learner to organise information that they have collected on the Web. It helps learners to know what information they have and organise it in such a way that they can find it again or transform it into another form such as a presentation or report.

**Virtual classroom** — online learning space where students and instructors interact.

**WAN** — Wide Area Network — (from whatis) geographically dispersed telecommunications network. The term distinguishes a broader telecommunication structure from a local area network. A wide area network may be privately owned or rented, but the term usually connotes the inclusion of public (shared user) networks.

**Web-Based Training (WBT)** — training that occurs using the Internet. Learners must connect to an intranet or Internet to access the information.

**Web page** — file written in a programming language that enables it be read on the World Wide Web. See also Page.

**Website** — collection of one or more web pages linked together.

**Whiteboard** — application that allows documents and content materials to be posted on the screen for all learners to see. The learning advisor can then make changes to the document or post additional information just like with a traditional blackboard. It is used in a synchronous learning situation. The learners see the information being changed on their screens in real time.

**Whiteboarding** — term used to describe the placement of shared documents or material on an on-screen ‘shared notebook’ or ‘whiteboard’. Desktop videoconferencing software includes ‘snapshot’ tools that enable one to capture entire windows or portions of windows and place them on the whiteboard. The user works with familiar tools to mark up the electronic whiteboard much like with a traditional wall-mounted board.

**Wisdom** — data + meaning + purpose experienced in a specific context.

**World Wide Web (WWW)** — hypermedia system (digital data, audio, video and other media used as hypertext elements) that facilitates searches for information on the Internet. The information available on the Web is presented as web pages; a set of web pages
constitutes a website. A web page can contain text and still-frame images, animations, video, sounds, etc., and links to other pages. Those links allow users to explore information in a specific order (or randomly) and to interact with the contents of the web page. Documents on the WWW are published in HTML (hypertext markup language) and other protocols (dynamic HTML, stream, Java, etc.). See also HTML, hypermedia, hyperlinks, etc.
# 14 Attachments

## 14.1 Attachment 1 Australian Providers of Elearning Services, Technology and Content 2001

As at September 2001 (Mitchell, 2001d)

### Adelaide Global

<table>
<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Deb Bennett</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Adelaide Institute of TAFE</td>
</tr>
<tr>
<td>Street Address:</td>
<td>120 Currie Street, Adelaide, SA 5000</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 82078234</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>08 82078249</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.adelaideglobal.com">http://www.adelaideglobal.com</a></td>
</tr>
<tr>
<td>Contact person's name, title, phone, mobile phone, fax:</td>
<td>Deb Bennett Business Manager, AdelaideGlobal Ph: 08 82078234 Mobile: 0401125768 Email: <a href="mailto:debbenne@tafe.sa.edu.au">debbenne@tafe.sa.edu.au</a></td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Rita Bennink e-Learning Consultant, AdelaideGlobal Ph: 08 82078488 Email: <a href="mailto:ritabenn@tafe.sa.edu.au">ritabenn@tafe.sa.edu.au</a></td>
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</table>

### Field Data

**Content developer** AdelaideGlobal produces quality e-learning products such as online courses, learning objects, customising and repackaging of existing content, communication hubs and portals.

**Evaluator** AdelaideGlobal provides evaluation services on online products and services and online evaluation tools.

**Product** AdelaideGlobal offers a range of online courses: Office Administration, English as a Second Language, Literacy and Numeracy, Tourism, Business Communication, First Line Management, Small Business Management, Preparation/Women Studies, Library Studies. All are available for purchasing, franchising and customisation.

**Service** AdelaideGlobal provides: Professional development on elearning through online training programs, workshops, seminars. These can be customised for a client’s needs and aren’t platform specific. WebCT Training and consultation on the platform WebCT, implementation strategies, administration and help desk services. AdelaideGlobal has 3 Certified WebCT trainers. Consultancy on planning and implementing elearning in an organisation Support services by offering telephone and email support, mentoring and the establishment and maintenance of online networks.

### Adnet Training, VIC

<table>
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<tr>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Malka Lawrence</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>AdNet Training</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Suite 2, Level 1, 785 Toorak Rd Hawthorn East 3123</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>03 9821 0850</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>03 9821 0870</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.adnetgrp.com.au">http://www.adnetgrp.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Malka Lawrence General Manager 0411 887 421 Jodee Price Training Manager 0412 223 802</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Jodee Price Training Manager 0412 223 802</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Lisa Price Marketing Manager 0413 998 831</td>
</tr>
</tbody>
</table>

### Field Data

**Content developer** AdNet Training produces online content in the fields of Financial Services for traineeships and Klop 6 legislative requirements; Information Technology for new and existing workforce, mapping Vendor Certification against nationally accredited IT certification; Retail, Hospitality, Aged Care in line with accreditation requirements and Process Manufacturing.

**Service** AdNet Training’s online assessment service includes onsite and virtual support systems, designed to make online assessment easy to use and reliable.

**Marketer** AdNet Training’s marketing department can assist educators, institutes and enterprises identify
market trends, segments, strategies and success factors. We market online learning, as another training mode, to enterprises.

Alliance partner
AdNet Training has business associates in every major Australian city and region ready to partner you as you expand your Australian market for online learning.

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<tbody>
<tr>
<td>Your Name:</td>
<td>Kate Gunn</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Angus Knight Learning</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>NATIONAL</td>
</tr>
<tr>
<td>Street Address:</td>
<td>61-63 Sussex Street, Sydney NSW 2000</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 6243 5555</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 6243 5550</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.angusknight.com.au">http://www.angusknight.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Gary Watkins, General Manager, HTC Vocational Institute</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Duncan Gilchrist, National Tenders – 02 6243 5555</td>
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<tr>
<td>Content developer</td>
<td>As one of Australia’s leading eLearning providers and a RTO, Angus Knight creates high quality customised interactive education online content for education, government and corporate customers.</td>
</tr>
<tr>
<td>Evaluator</td>
<td>Angus Knight provides education-consulting services, which will thoroughly evaluate the outcomes of an elearning project.</td>
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<tr>
<td>Service provider</td>
<td>Angus Knight, through LearnNow/Click2Learn is able to provide a hosted online education solution. Click2Learn’s ASPEN technology platform consists of a Learning Management System (LMS), Learning Experience Server (LXS) and Content Development Server (CDS). LXS provides an easy authoring environment that creates a collaborative learning community. CDS allows for non-linear content development using subject matter experts, graphic designers, editors etc.</td>
</tr>
<tr>
<td>Service</td>
<td>Angus Knight provides education consulting and technology tools from the Aspen platform to easily customise relevant online assessments that can measure results.</td>
</tr>
<tr>
<td>Marketer</td>
<td>Angus Knight can assist organisations that require help with eLearning marketing.</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>Angus Knight is a national organisation with over 28 offices throughout Australia.</td>
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<tr>
<td>Name of person submitting information:</td>
<td>Peter Philippsohn</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Appcon Pty Limited</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 18 Tower II, 500 Oxford Street, Bondi Junction NSW 2022</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(02) 9388 0144</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(02) 9386 1455</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.appcon.com.au">http://www.appcon.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Sharon Philippsohn, General Manager (02) 9388 0144 0414 562 044</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Alex Holder, Sales Consultant (02) 9388 0144 0414 308 234</td>
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<tr>
<td>Content developer</td>
<td>Element K, distributed in Australia by Appcon, produces online IT courses for end users and computer professionals</td>
</tr>
<tr>
<td>Harvard Business School Publishing, distributed in Australia by Appcon, produces online business management courses from leading authors including Michael Porter, John Kotter, Linda Hill, and Charles Handy.</td>
<td></td>
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<tr>
<td>Product developer</td>
<td>Centro, distributed in Australia by Appcon, develops web collaboration software for live online learning.</td>
</tr>
<tr>
<td>Product</td>
<td>Books24x7 is a personalised web-based information subscription service putting reference libraries of unabridged, electronic versions of hundreds of top technical and business management books at your fingertips. Centro Symposium is the leading solution for collaboration on the web. Participants only need a PC, soundcard and browser to participate in online presentations and virtual classrooms. Element K online IT courses are available via Internet or intranet. Courses are grouped into libraries to suit end-users or computer professionals. Access courses anytime, from anywhere.</td>
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### Australian Institute of Fitness

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<tr>
<td>Name of person submitting information</td>
<td>Monty Dortkamp</td>
</tr>
<tr>
<td>Company/Organisation Name</td>
<td>Australian Institute of Fitness</td>
</tr>
<tr>
<td>Street Address</td>
<td>Upstairs, London Circuit, Civic</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address)</td>
<td>GPO Box 336, CANBERRA, ACT, 2601</td>
</tr>
<tr>
<td>Company Phone</td>
<td>02 6230 6676</td>
</tr>
<tr>
<td>Company Fax</td>
<td>02 6230 6670</td>
</tr>
<tr>
<td>Company Website</td>
<td><a href="http://www.air.edu.au">http://www.air.edu.au</a></td>
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<tr>
<td>Contact person's name, title, phone, mobile phone, fax</td>
<td>Monty Dortkamp, Managing Director 02 6230 6676, fax 02 6230 6670 0403 624 505</td>
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<tr>
<td>Content developer</td>
<td>AIF produces in-line content in the fields of health, rehabilitation, fitness, sport, recreation, administration, and management</td>
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<tr>
<td>Product developer</td>
<td>AIF produces learning products for the sport and recreation industry</td>
</tr>
<tr>
<td>Product</td>
<td>AIF’s range of products include skills recognition, national assessment materials, course delivery materials, and course delivery materials</td>
</tr>
<tr>
<td>Service provider</td>
<td>AIF includes an online skills recognition service to enable existing workers to upgrade to the new national qualifications, and the associated online assessment</td>
</tr>
<tr>
<td>Researcher</td>
<td>AIF has provided a range of research projects to identify employer and employee attitudes to learning and the role and contribution of on line learning and assessment</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>AIF has partners in every state and territory, as well as overseas contacts in 32 countries. We actively seek partners to develop and distribute new products internationally.</td>
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### Australian Education International

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<tr>
<td>Name of person submitting information</td>
<td>Scott Lambert</td>
</tr>
<tr>
<td>Company/Organisation Name</td>
<td>Australian Education International</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>National Office, Canberra</td>
</tr>
<tr>
<td>Street Address</td>
<td>Level 5, 16 Mort St, Canberra City, ACT, 2601</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address)</td>
<td>GPO Box 9880, Canberra, ACT, 2601</td>
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<tr>
<td>Company Phone</td>
<td>02 6240 7671</td>
</tr>
<tr>
<td>Company Fax</td>
<td>02 6240 7196</td>
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<tr>
<td>Contact person’s name, title, phone, mobile phone, fax</td>
<td>Scott Lambert, Executive Officer (VET Liaison), ph 02 62408534, fax 02 61235922</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax</td>
<td>Adrian van Leest, Director, Client Services Section, ph 02 62407196</td>
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<td>Service provider</td>
<td>AEI is a government body which promotes Australian education internationally and provides information for the Australian international education and training industry about markets and opportunities for education export and transnational service delivery.</td>
</tr>
<tr>
<td>Service</td>
<td>AEI maintains a &quot;virtual Australian Education Centre&quot; (studyinaustralia.gov.au) for prospective students and a website for the industry (<a href="http://aei.detya.gov.au/">http://aei.detya.gov.au/</a>). AEI works internationally through a network of overseas-based Education and Training Counsellors and other staff.</td>
</tr>
<tr>
<td>Researcher</td>
<td>AEI undertakes research to inform its own work and the strategic needs and priorities of the industry.</td>
</tr>
<tr>
<td>Marketer</td>
<td>AEI promotes Australia internationally as an attractive study destination and provides impartial, government-endorsed information on studying in Australia to prospective students and other decision makers.</td>
</tr>
</tbody>
</table>

### Catalyst Interactive

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information</td>
<td>Michael Grosser</td>
</tr>
<tr>
<td>Company/Organisation Name</td>
<td>Catalyst Interactive</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>ACT branch</td>
</tr>
<tr>
<td>Street Address</td>
<td>285 Canberra Avenue Fyshwick ACT 2609</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address)</td>
<td>PO Box 3820 Manuka ACT 2603</td>
</tr>
<tr>
<td>Company Phone</td>
<td>02 6239 2424</td>
</tr>
<tr>
<td>Company Fax</td>
<td>02 6239 3653</td>
</tr>
</tbody>
</table>
### Learn to Elearn Project

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Website:</td>
<td><a href="http://www.catalystinteractive.com">http://www.catalystinteractive.com</a></td>
</tr>
</tbody>
</table>
| Contact person's name, title, phone, mobile phone, fax: | Steve Hosking  
Account Manager (ACT)  
Phone 02 6239 2424  
Mobile 0414 394 526 |
| Additional contact person's name, title, phone, mobile phone, fax: | John Brett  
Account Manager (NSW)  
Phone 02 9659 1199  
Mobile 0414 394 523 |
| Additional contact person's name, title, phone, mobile phone, fax: | Phil Ellis  
Account Manager (VIC)  
Phone 03 9699 8100  
Mobile 0412 977 769 |

### Field Data

**Content developer**  
CI produces customised interactive online content for all industries in Australia, North America and Europe.

**Product developer**  
CI develops elearning products in a range of industries.

**Product**  
CI’s LearnSwitch is an elearning development and management tool that enables non-technical subject matter experts, trainers and educators to create their own elearning courses quickly and simply.

**Service provider**  
CI’s elearning tools provide a complete solution for organisations embarking on elearning.

**Service**  
CI provides a range of elearning services including development, elearning strategy, training, online assessment and instructional design.

**Alliance partner**  
CI has Australian offices in Melbourne, Sydney, Brisbane and Canberra, and value added resellers for our elearning development tools in these and other cities and regions.

### CBTS (Australia) Pty Limited

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Noel Stubbs</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>CBTS (Australia) Pty Limited</td>
</tr>
<tr>
<td>Street Address:</td>
<td>1/102 Barkers Road, Hawthorn, Vic 3122</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 232, Hawthorn, Vic 3122</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>+61 3 9855 0302</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>+61 3 9855 0420</td>
</tr>
</tbody>
</table>
[http://www.skyquestcom.com/cbts](http://www.skyquestcom.com/cbts) |
| Contact person's name, title, phone, mobile phone, fax: | Noel Stubbs  
Managing Director  
Ph +61 3 9855 0302  
Fax +61 3 9855 0420  
Email noelstubbs@netspace.net.au |

### Field Data

**Product**  
CBTS is a Distributor/Reseller of an increasing range of elearning systems and self-paced learning resources in Australasia and SE Asia:  
- TLM (The Learning Manager) – an easy to use, scalable, web-enabled, software product that facilitates the development, delivery, assessment and management of eLearning using INTRAnets or the INTERnet.  
- DiscoverWare – an extensive range of self-paced, interactive, multimedia PC applications and PC systems training courses comprising: internet, operating systems, presentation graphics, word processing, spreadsheets, databases, scheduling and workbooks. DiscoverWare office 97 and Office 2000 courses cover the competencies required for the MOUS (Microsoft Office User Specialist) certification standards for “Proficient” and “Expert” user levels.  
- Nevada – Quick Reference Guides – over 40 titles (some in French, German, Spanish, Japanese and Swedish). Each is a colourful six-page tri-fold guide containing valuable tips and shortcuts for popular software products designed for the end user. They address at least 60% of the most commonly asked end-user questions that are normally directed to the trainer or to the Help Desk.  
- eText – the smart software that’s easier, faster and better for learning keyboard and typing skills. An innovative Australian developed product that uses accelerated learning techniques and methods designed by trainers and psychologists to teach basic keyboard proficiency at least twice as quickly as traditional typing tutor software.
- SkyLearner - This learning portal enables you to access 24 x 7 x 365 live webcasts, access Learning Channels with presentations by world experts covering: Family, Lifestyle, Personal Development, Master Gurus, Corporate Training; 41 computer training courses, E-Forum, Net Library (with 4000+ e-books).

**Service provider**  
CBTS provides an innovative technology platform and server support systems for managing and delivery of learning over the web. Hosting facilities can be arranged.

**Alliance partner**  
CBTS augments its own skills, resources and capabilities through networking and developing relationships with similar/complementary organisations throughout Australasia and overseas to ensure high quality products and service to meet yours and our client’s needs. We are ready to partner with you to assist the expansion of your online learning activities.
### Centre for Applied Learning Systems

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>John Cocks</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Centre for Applied Learning Systems (CALS)</td>
</tr>
<tr>
<td>Street Address:</td>
<td>120 Currie Street Adelaide S.A.</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>GPO Box 1872 Adelaide S.A. 5001</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(08) 82078500</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(08) 82078554</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.cals.tafe.sa.edu.au">http://www.cals.tafe.sa.edu.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>John Cocks, Educational Manager, Ph. (08) 82078504, Mob. 0401125796, Fax. (08) 82078554</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Bev Puckridge, Coordinator, Educational Publication Unit. Ph. (08) 82078544, Mob. 0417813717, Fax. (08) 82078554</td>
</tr>
<tr>
<td>Educational Resource Developer:</td>
<td>CALS, provides a full learning materials development, instructional design and production service for print, audio/video, multimedia CD-ROM and online.</td>
</tr>
</tbody>
</table>

### Choice Training & Consulting Services Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Anne-Marijke Gerretsen</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Choice Training &amp; Consulting Services Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 6, 100 George Street Parramatta 2150</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 4115, Parramatta NSW 2124</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(02) 9633 0500</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(02) 9633 0501</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.choicehr.com">http://www.choicehr.com</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Anne-Marijke Gerretsen, Training Executive Ph (02) 9633 0566 Fax (02) 9633 0567</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Grant Smuts, Vice-President, Asia-Pacific 02 8243 5555</td>
</tr>
<tr>
<td>Service provider</td>
<td>Choice Training &amp; Consulting provides training and assessment services in the Business Services and Call Centre training packages.</td>
</tr>
</tbody>
</table>

### Click2Learn

<table>
<thead>
<tr>
<th>Field</th>
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</thead>
<tbody>
<tr>
<td>Your Name:</td>
<td>Kate Gunn</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>LearnNow/Click2Learn</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>National</td>
</tr>
<tr>
<td>Street Address:</td>
<td>61-63 Sussex Street, Sydney NSW 2000</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>GPO Box 5239, Sydney NSW 2001</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 8243 5555</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 8243 5550</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.click2learn.com">http://www.click2learn.com</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Grant Smuts, Vice-President, Asia-Pacific 02 8243 5555</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Stephen DeKalb, Marketing Manager 02 8243 5555</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mr Con Kiitos, CEO – 02 8243 5555</td>
</tr>
<tr>
<td>Field</td>
<td>Data</td>
</tr>
<tr>
<td>Service provider</td>
<td>As one of Australia’s leading eLearning providers and a RTO, LearnNow/Click2Learn is able to provide a hosted online education solution. Click2Learn’s ASPEN technology platform consists of a Learning Management System (LMS), Learning Experience Server (LXS) and Content Development Server (CDS). LXS provides an easy authoring environment that creates a collaborative learning community. CDS allows for non-linear content development using subject matter experts, graphic designers, editors etc.</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>LearnNow/Click2Learn is part of the Angus Knight Group, a national organisation with over 28 offices throughout Australia.</td>
</tr>
</tbody>
</table>
## Competency Based Trainers Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Phill Bevan</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Competency Based Trainers Pty Ltd</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Head Office</td>
</tr>
<tr>
<td>Street Address:</td>
<td>7 – 11 Tamar Street Launceston TAS 7250</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 1022 Launceston TAS 7250</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(03) 6334 3466</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(03) 6331 2043</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.cbtconnect.com">http://www.cbtconnect.com</a> (under maintenance)</td>
</tr>
</tbody>
</table>
| Contact person’s name, title, phone, mobile phone, fax: | David Castle  
Director  
0408 343466                                                          |
| Additional contact person’s name, title, phone, mobile phone, fax: | Sue Shegog  
Director  
0412 930 180                                                        |
| Additional contact person’s name, title, phone, mobile phone, fax: | Phill Bevan  
Project & Development Manager  
0412 930 180                                                          |

### Field Data

**Content developer**  
CBT produces content for VET Training Packages and Accredited courses for the WebCT system, across a range of industry areas.

**Service provider**  
CBT provides services in the online delivery and assessment of VET qualifications, in Business Services and other requested Training Package areas.

**Service**  
CBT provides services in the online delivery and assessment of VET qualifications, in Business Services and other requested Training Package areas.

## Cordecom

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Austin Bond</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Cordecom Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Unit 5, First Floor 1-5 Point St Fremantle WA 6160</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>As above</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 9335 3760</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>08 9335 3978</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.cordecom.com.au">http://www.cordecom.com.au</a></td>
</tr>
</tbody>
</table>
| Contact person’s name, title, phone, mobile phone, fax: | Austin Bond  
Mobile 0412 2140 58                                                |

### Field Data

**Content developer**  
Cordecom Pty Ltd provides online learning programmes for VET and higher education, with particular experience in the arts.

**Product developer**  
Cordecom Pty Ltd provides software solutions, project management and business integration systems for education and business.

**Service provider**  
Cordecom Pty Ltd provides innovative technology systems for learning on the web.

**Researcher**  
Cordecom Pty Ltd provides research, policy analysis, reports, strategic planning and statistical services on issues affecting both VET and higher education.

## CPM Group

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Malcolm O'Callaghan</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>CPM Group</td>
</tr>
</tbody>
</table>
| Branch office (if applicable, e.g. ACT branch): | ACT  
10-12 Colbee Court  
PHILLIP ACT 2606                                                        |
| Company Phone:                         | 02 6285 3393                                                         |
| Company Fax:                           | 02 6285 3394                                                         |
| Company Website:                       | http://www.acpm.act.edu.au                                           |
| Contact person’s name, title, phone, mobile phone, fax: | Malcolm O'Callaghan  
Online Training Coordinator  
02 6285 3393  
0211 865 495                                                    |
| Additional contact person’s name, title, phone, mobile phone, fax: | Mary Welch  
National Training Manager  
02 6285 3393  
0419 441 533                                                  |

### Field Data

**Content developer**  
CPMG is an RTO which produces interactive, online content in the field of Project Management for industry and Government.

**Product**  
CPMG's range of products includes online courses for:
## DeakinPrime

**Company/Organisation Name:** DeakinPrime as the Registered Training Organisation including:
- Korum (Associations Division)
- PrimeDesign

**Street Address:** Deakin House
- Level 6
- 393 Swanston Street
- Melbourne 3000
- Victoria Australia

**Company Phone:** +61 3 9633 4800

**Company Fax:** +61 3 9633 4801

**Company Website:**
- [http://www.deakinprime.com](http://www.deakinprime.com)
- [http://www.korum.com](http://www.korum.com)

**Contact person’s name, title, phone, mobile phone, fax:**
- Andrew Volard
  - General Manager – Sales and Marketing
  - PrimeDesign
  - Ph: +61 3 9633 4854
  - Mob: 0419 777 774

**Additional contact person’s name, title, phone, mobile phone, fax:**
- Vicki Angliss
  - Development Manager, Korum
  - Ph: +61 3 9633 4854
  - Mob: 0402 897 904

**Additional contact person’s name, title, phone, mobile phone, fax:**
- Helen Fitzpatrick
  - National Manager, VET
  - Ph: +61 39633 4861
  - Mob: 0402 897 873

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content developer</td>
<td>As the business to business arm of Deakin University, DeakinPrime works with client organisations to design, develop and deliver innovative interactive elearning programs for all levels of training and subject areas.</td>
</tr>
<tr>
<td>Evaluator</td>
<td>DeakinPrime provides services in the mapping and evaluation of client training materials within the National Competency framework and to organisational competencies.</td>
</tr>
<tr>
<td>Product developer</td>
<td>DeakinPrime develops interactive elearning programs across a wide range of disciplines on behalf of client organisations.</td>
</tr>
</tbody>
</table>
| Product                | Transportation engineering studies – course information site: www.korum.com/ite
- Migration agent CPD programs: will be released end 2001
- Induction Online – Customised induction packages for companies of all sizes.
- [www.deakinprime.com/primedesign](http://www.deakinprime.com/primedesign)
- [eBusiness for Decision Makers - www.learnebusiness.com](http://www.learnebusiness.com)
- IT-Training Online - [www.deakinprime.com/primedesign](http://www.deakinprime.com/primedesign)
- Management Training – as distance learning modules
- [www.deakinprime.com/primedesign](http://www.deakinprime.com/primedesign) |
| Service provider       | DeakinPrime delivers elearning programs, which include collaboration and online testing, to client groups both in Australia and overseas, through a learning management system. |
| Service                | DeakinPrime provides an extensive custom-designed examination maintenance system which delivers and tracks computer based testing. |
| Alliance partner       | Dimension Data, Global Vision |
| Any other field        | Delivery of online Higher Education Programs |

## Ecomm.unity Planet Pty Ltd

**Name of person submitting information:** Susan Butler

**Company/Organisation Name:** Ecomm.unity Planet Pty Ltd

**Postal Address (if different to Street Address):** PO Box 129 Surry Hills NSW 2010

**Company Phone:**
- 0417 251 572

**Company Fax:** 02 9386 5108

**Company Website:** [http://www.ecommplanet.com](http://www.ecommplanet.com)

**Contact person’s name, title, phone, mobile phone, fax:**
- Susan Butler
  - Executive Director
  - 0417 251 572
  - 02 9386 5108

**Additional contact person’s name, title, phone, mobile phone, fax:**
- Karen Dunwoodie
  - Executive Director
  - 0414 946 266
  - 02 9386 5108

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content developer</td>
<td>Ecomm.unity are a specialist knowledge management company that produce and</td>
</tr>
</tbody>
</table>
disseminate interactive on-line content based on the need of the organization. We also assist in building end-to-end learning solutions.

Evaluator
Ecomm.unity are the creators and owners of a leading on-line analysis tool called 'The Coach'. It is an end-to-end knowledge management tool based on the strategic goals, capabilities and competencies of an organisation.

Product developer
The 'Coach' is a fully automated customisable analysis and evaluation tool for vertical industries, governments and developing communities. The tool highlights knowledge gaps within an organisation/community and this is quickly translated to a L&D need. This need is filled with content via Ecomm.unity's prompt multimedia and content methodologies. The content accredited value is defined by the client and sourced from an appropriate institution.

Product
The 'Coach' suite of tools include the following – climate surveys, organisational cultural surveys, merger and acquisition surveys, 360 degree (feedback) capability, high performance leadership for executives and team leaders, customer value analysis, health and welfare, organisational development inventory and compliance tool.

Service provider
Ecomm.unity provide a complete end-to-end solution. The 'Coach' can be ASP hosted or installed within an organisational intranet. All integration, middleware, APIs, and technology support are of the highest quality. The content has 24x7 support through a hosted environment.

Service
The Ecomm.unity service includes:
- Formulate capability frameworks
- Mechanisms that directly link L&D options
- Pathways that have specific performance measurement indicators
- A mechanism by which L&D and evaluation managers can assess ROI on given L&D options
- Real time L&D analysis
- An end-to-end solution that integrates, evaluates (knowledge skills and behaviours), real time individual and regional analysis with all available L&D opportunities worldwide.

This is achieved through consulting, 'The Coach', an understanding of the markets, and quality relationships with corporate, governments and development bodies.

Researcher
Ecomm.unity's tool, 'The Coach' is a leading research and analysis tool. It has time series analysis functionality that allows for constant tracking and improvement performance feedback and measure.

Marketer
As Ecomm.unity is an end-to-end solution provider and the tool outcomes are at the personal, group and series levels of analysis the organisation can market and source on timely and real time results. These results directly relate to comparison and analysis of market segments strategies and success stories across partners, alliances, mergers and acquisitions. Reports can be generated that are of Board presentation quality that are indicative of what is happening within the organisation now - in real time, what is happening today!

Alliance partner
Ecomm.unity have extensive alliance partners. The reach is throughout Australia and the Asia Pacific. Our company encourages the commercialisation of knowledge through content to the markets – knowledge in and knowledge out. We encourage and welcome interest from organisations seeking to form alliances, marketing partnership and content provision into our present relationships and clients.

Any other field
Ecomm.unity are leading edge creators of models for development. The development models extend across developed and developing communities.

EDU Technologies Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Mark Tranthim-Fryer</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>EDU Technology Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>22 Divett Street Port Adelaide SA 5015</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 83412555</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>08 84402407</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.edutech.com.au">http://www.edutech.com.au</a></td>
</tr>
<tr>
<td>Contact person's name, title, phone, mobile phone, fax:</td>
<td>Mark Tranthim-Fryer Bed Med (Ed Tech) Director Phone: 08 8341 2555, Mobile: 0419 819264 Fax: 08 84402407</td>
</tr>
</tbody>
</table>

Elearn.WA

<table>
<thead>
<tr>
<th>Field</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Frank Bate</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Elearn.WA</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Perth</td>
</tr>
<tr>
<td>Street Address:</td>
<td>1 Sarich way</td>
</tr>
</tbody>
</table>

Learn to Elearn Project Page 644 ©UNITAS Company Ltd. 2003
**Future Learning Systems Pty Ltd**

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>John Mitchell</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Future Learning Systems Pty Ltd</td>
</tr>
<tr>
<td>Postal Address:</td>
<td>PO Box 151, Pyrmont NSW 2009</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 9660 0255</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 9660 0277</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>John Mitchell, ph 0296600255, 0417827023, fax 0296600277</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Future Learning Systems provides clients with an innovative choice of elearning content from the world’s best content providers, together with customised and comprehensive support services.</td>
</tr>
<tr>
<td>Service provider</td>
<td>Elearning management systems provided by Future Learning Systems are web-based and can be hosted on either your organisation’s server or our partners.</td>
</tr>
<tr>
<td>Service</td>
<td>Future Learning Systems, a specialist in professional development through elearning for VET and other educational and corporate staff, can provide an integrated elearning system for your organisation, aligned to your corporate strategic HRD program.</td>
</tr>
<tr>
<td>Alliances</td>
<td>Future Learning Systems has relationships with the world’s best elearning content providers.</td>
</tr>
<tr>
<td>Broker, Integrator and Manager</td>
<td>On behalf of our clients, Future Learning Systems brokers arrangements with the best of breed elearning content developers. We can contextualise and customise the content and provide quality management and support systems.</td>
</tr>
</tbody>
</table>

**Global Learning Services**

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Dr Barry Cameron</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Global Learning Services</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>ACT</td>
</tr>
<tr>
<td>Street Address:</td>
<td>16/2 Postle Circuit, Holt ACT 2615</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>+61 2 6254 0898</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>+61 2 6254 0898</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.gls.canberra.net.au">http://www.gls.canberra.net.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Peter Kearns, Managing Director 10 Fisklen Crescent, Kambah ACT 2902 Phone/Fax +61 2 6231 4125 Dr John Grant, Director 38 Ambalindum St, Hawker ACT 2614 Phone +61 2 6254 1155 Fax +61 2 6254 2628 Dr Barry Cameron, Company Secretary 16/2 Postle Circuit, Holt ACT 2615 Phone/Fax +61 2 6254 0898</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Field</th>
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</thead>
<tbody>
<tr>
<td>Evaluator</td>
<td>GLS has conducted for ANTA, NCVER and State/Territory-based VET authorities and organisations many program evaluations</td>
</tr>
<tr>
<td>Researcher</td>
<td>GLS has researched for DETYA, ANTA, NCVER and various State-Territory-based VET organisations various aspects of IT&amp;T provision, elearning, learning community, and regional partnership</td>
</tr>
<tr>
<td>Marketer</td>
<td>GLS has considerable successful experience in supporting market research and market development in lifelong learning</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>GLS has Associates across Australia and a number of international Associates</td>
</tr>
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**Gordon Institute of TAFE**

<table>
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</table>

Learn to Elearn Project Page 645 ©UNITAS Company Ltd. 2003
### Name of person submitting information:

| Company/Organisation Name: | Helen Bath |
| Company name: | Gordon Institute of TAFE |
| Company phone: | (03) 5225 0500 |
| Company fax: | (03) 5225 0505 |

### Address Information:

| Street Address: | 2 Fenwick Street, Geelong, Vic 3220 |
| Postal Address: | Private Bag No 1, Geelong Mail Centre, Vic 3221 |
| Company phone: | (03) 5225 0500 |
| Company fax: | (03) 5225 0505 |

### Contact Information:

| Contact person's name, title, phone, mobile phone, fax: | Helen Bath |
| Manager, EDSU | Tel: (03) 5225 0520 |
| Fax: (03) 5225 0400 |
| Additional contact person's name, title, phone, mobile phone, fax: | Lyn Wakefield |
| Project Officer, EDSU | Tel: (03) 5225 0676 |
| Fax: (03) 5225 0400 |
| Additional contact person's name, title, phone, mobile phone, fax: | Fay Thomey |
| Project Officer, EDSU | Tel: (03) 5225 0782 |
| Fax: (03) 5225 0400 |

### Hunter Institute

### Field Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Jock Grady</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Hunter Institute – TAFE NSW</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Newcastle Campus (Room SG-22) Maitland Road, Tighes Hill NSW 2297</td>
</tr>
<tr>
<td>Postal Address:</td>
<td>Locked Bag 45 Hunter Region Mail Centre NSW 2310</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(02) 4923-7222 (Switch-board)</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(02) 4923-7676</td>
</tr>
<tr>
<td>Company website:</td>
<td><a href="http://www.hunter.tafensw.edu.au">http://www.hunter.tafensw.edu.au</a></td>
</tr>
<tr>
<td>Contact person's name, title, phone, mobile phone, fax:</td>
<td>Jock Grady</td>
</tr>
<tr>
<td>Manager eLearning</td>
<td>Mobile: 0407-285-911</td>
</tr>
<tr>
<td>Ph: (02) 4923-7708</td>
<td></td>
</tr>
<tr>
<td>Fax: (02) 4923-7676</td>
<td></td>
</tr>
<tr>
<td>Email: <a href="mailto:jock.grady@tafe.nsw.edu.au">jock.grady@tafe.nsw.edu.au</a></td>
<td></td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Donna Hensley</td>
</tr>
<tr>
<td>Manager Flexible Learning</td>
<td>Mobile: 0414-488-568</td>
</tr>
<tr>
<td>Ph: (02) 4923-7688</td>
<td></td>
</tr>
<tr>
<td>Fax: (02) 4923-7676</td>
<td></td>
</tr>
<tr>
<td>Email: <a href="mailto:donna.hensley@tafe.nsw.edu.au">donna.hensley@tafe.nsw.edu.au</a></td>
<td></td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Jillian Albrecht</td>
</tr>
<tr>
<td>Recognition Centre – Hunter Institute</td>
<td>Recognition Centre – Hunter Institute</td>
</tr>
<tr>
<td>Ph: (02) 4923-7529</td>
<td></td>
</tr>
<tr>
<td>Fax: (02) 4923-7723</td>
<td></td>
</tr>
<tr>
<td>Email: <a href="mailto:jillian.albrecht@tafe.nsw.edu.au">jillian.albrecht@tafe.nsw.edu.au</a></td>
<td></td>
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### Hunter Institute

### Field Data

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<tr>
<td>Content developer: ITALIC (Hunter Institute) produces interactive eLearning content with a focus on blended learning solutions.</td>
<td></td>
</tr>
<tr>
<td>Evaluator: ITALIC evaluates eLearning applications and courseware for use within the Hunter Institute and wider VET sector.</td>
<td></td>
</tr>
<tr>
<td>Product: Existing eLearning product list available from:</td>
<td></td>
</tr>
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</table>
Service provider: ITALIC (Hunter Institute) provides project management support and eLearning consultancy for teachers and VET professionals.

Service: Hunter Institute offers Recognition of Prior Learning (RPL) service to students and prospective students.

Researcher: ITALIC (Hunter Institute) provides research on eLearning, Blended and Flexible Learning to teachers and VET professionals.

Alliance partner: Hunter Institute has business associates throughout Australia, southeast Asia and the Pacific. Particular strengths accrue from partnerships in Engineering, ICT, Coal Mining and Maritime industries.

Any other field: ITALIC (Hunter Institute) provides a range of services to teachers and VET professionals focussing on provision of innovative teaching and learning research and solutions.

**I.CMedia**

<table>
<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Mark Bradley &amp; Denise Galloway</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>I.C.Medium</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 1, 128 Hindley St., Adelaide, 5000</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>Box 6818 P.O. Halifax St., Adelaide. 5000</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>+61 8 8415 6157</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>+61 8 8231 5200</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.icmedia.com.au">http://www.icmedia.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Denise Galloway 01 8 84155157 0413 18 158</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Mark Bradley (as for Denise Galloway.)</td>
</tr>
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**iedex**

<table>
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<tr>
<th>Field</th>
<th>Data</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>John Viljoen</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>iedex</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 2, 17 Raglan St, South Melbourne</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>03 9696 1222</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>03 9696 1333</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.iedex.com.au">http://www.iedex.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>John Viljoen, Director 03 9696 1222</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Duncan Macneil, Interactive Services 03 9696 1222</td>
</tr>
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**Impart Corporation**

<table>
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<tr>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Leon Heydenrych</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Impart Corporation Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 1, 5 Elizabeth Street, Sydney NSW</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>As above</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 9233 3499</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 9223 3433</td>
</tr>
</tbody>
</table>

Content developer: I.CMedia produces CD-ROM and online content for education and industry training in the fields of rural industries, primary, secondary and post secondary education.

Product developer: I.C. Media are producer/publishers of "About Asia" series Vietnam, Thailand & Indonesia and China, Korea and Japan also CD-ROM for RIRDC (rural industry research), CD-ROM and online content for training and manufacturing industries.

Researcher: IC Media provides consultancy and research in relation to instructional media development, design, production and evaluation — specialising in education and cross cultural applications.

Content developer: iedex produces online learning and support tools for strategic and performance management.

Evaluator: iedex can significantly reduce the costs of evaluations and questionnaires by developing online surveys to your requirements.

Product: iedex has a set of integrated performance management tools can transform an organisation's performance management cycle into an effective, process-driven exercise.

Service: iedex's online 360 feedback can be customised and administered by you online without expensive consultancy fees.
**Field** | **Data**
--- | ---
Content developer | Impart and CCH Australia formed an alliance to jointly develop and deliver fair trading compliance training to targeted markets in the retail and banking sectors.

Evaluator | Evaluation and testing of existing interactive courseware, using Impart’s Quality Assurance Methodology: Multimedia Pathways

Product developer | Design and develop multimedia interactive: courseware; performance support tools; web-based reference tools; high-end simulation courseware; WebLessons; online assessment tools.

Product | Impart has three products:
- CCH-Impart Online Compliance Training for Customer Relations – Fair Trading Law
- Competencies on Target (CoT) – the online call centre and recruitment and assessment tool
- WebSlides – online collaboration technology

Service provider | Impart specialise in designing, implementing and managing online learning solutions with authoring capabilities. Integration of learning into learning management systems (experienced systems integrators).

Service | Impart is Australia’s leading integrator of online learning solutions has proven expertise in the following key training areas: Compliance (general and legal); Induction; Internal Systems; Product; OH&S; Simulation and Awareness.

Alliance partner | Impart’s business associates include CCH Australia, NETg and SkillSoft.

---

**IPR Systems Pty Ltd**

<table>
<thead>
<tr>
<th>Field</th>
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</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Peter Higgs</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>IPR Systems Pty Limited</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 6, 19-31 Pitt St Sydney 2000 NSW</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 82984140</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 82984101</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.iprsystems.com">http://www.iprsystems.com</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Peter Higgs- Co-founder <a href="mailto:phiggs@iprsystems.com">phiggs@iprsystems.com</a></td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Dr Renato Iannella- Chief Scientist <a href="mailto:renato@iprsystems.com">renato@iprsystems.com</a></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service provider</td>
<td>IPR Systems is an expert in computer systems to manage the intellectual property rights in online learning. IPR is currently developing Learning Object Exchange as system for managing and exchanging LO between educational organizations.</td>
</tr>
</tbody>
</table>

| Researcher | IPR Systems developed the Business Requirements, System Requirements and Functional Requirements Specifications for the Rights Management and other modules of the Schools Online Curriculum Content Initiative. IPR is an expert in global standards activities including Rights Management Languages, IMS, XML, Dublin Core Meta data. |

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**Janison Solutions**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Wayne Houlden</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Janison Solutions</td>
</tr>
<tr>
<td>Street Address:</td>
<td>PO Box 288J (Level 1, 394A High Street) Coffs Harbour Jetty Australia</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 288J (Level 1, 394A High Street) Coffs Harbour Jetty</td>
</tr>
</tbody>
</table>
### Field Data

**Product developer**
Janison Solutions develops customisable elearning products including Toolbox, Mirror and Satellite for the institutional and corporate market.

**Product**
Janison’s Toolbox is a unique and totally customisable elearning LMS solution. Its building blocks are innovative embeddable components that allow interaction to occur from within content and in context. Various configurations available.

**Service provider**
Janison Solutions provides innovative and holistic LMS solutions to the institutional and corporate elearning market.

**Alliance partner**
Janison Solutions has an alliance relationship with Appcon in Australia, SchoolKit in the U.S and Courseware in the U.K.

---

### Jobs Australia Ltd

**Field**

| Name of person submitting information: | Chris McAleer |
| Company/Organisation Name: | Jobs Australia Ltd |
| Branch office (if applicable, e.g. ACT branch): | Melbourne |
| Street Address: | 708 Elizabeth St Melbourne 3000 |
| Postal Address (if different to Street Address): | P.O. Box 299 Carlton South 3053 |
| Company Phone: | 03 9349 3699 |
| Company Fax: | 03 9349 3655 |
| Company Website: | http://www.ja.com.au |
| Contact person’s name, title, phone, mobile phone, fax: | Chris McAleer, Manager Australian Training Network, 03 9349 3699, 0418 132 287, 03 9349 3655 |

**Field Data**

| Content developer | Jobs Australia online delivery partner JPM Asia Pacific Institute Pty Ltd produce online content for the following Training Packages: ICA99, FNB99, 7040-7042 (FMII), CHC99, BSA97 and BSZ98. |
| Service provider | Jobs Australia offers online learning and assessment for a wide range of AQF qualifications from Cert I – Diploma level. |
| Alliance partner | Jobs Australia offers all online training and assessment with partner JPM Asia Pacific Institute Pty Ltd (etraining). |
| Any other field | Jobs Australia is a national RTO operating in every state and territory from more than 120 sites nationally. Delivery modes include online learning and assessment across six training packages and traditional delivery modes across 28 training packages. |

---

### John Mitchell & Associates

**Field**

| Name of person submitting information: | John Mitchell |
| Company/Organisation Name: | John Mitchell & Associates |
| Postal Address: | PO Box 151, Pyrmont NSW 2009 |
| Company Phone: | 02 9660 0255 |
| Company Fax: | 02 9660 0277 |
| Company Website: | http://www.jma.com.au |
| Contact person’s name, title, phone, mobile phone, fax: | John Mitchell, Managing Director, ph 0296600255, 0417827023, fax 0296600277 |

**Field Data**

| Evaluator | John Mitchell & Associates uses qualitative and quantitative techniques to help developers and users to determine the efficiency, effectiveness and appropriateness of elearning content and related staff development programs. |
| Service provider | John Mitchell & Associates assists registered training organisations to develop strategic plans, human resource development plans and change management strategies to integrate elearning with the whole organisation. |
| Researcher | John Mitchell & Associates provides research services to registered training organisations, governments, investors and new entrants to the market, on the connections between e-business and elearning in VET. |
John Mitchell & Associates is able to provide clients with in-depth market analyses of the Australian and international markets for elearning.

As lead author of Critical Issues in Flexible Learning for VET Managers (TAFE frontiers, 2001), John Mitchell & Associates can work with RTOs in identifying the management and organisational requirements of elearning.

Marketer

As author of two major national studies of the VET market for elearning, John Mitchell & Associates is able to provide clients with in-depth market analyses of the Australian and international markets for elearning.

Alliance partner

John Mitchell & Associates, author of the only national VET study into alliances in elearning, provides strategic management advice to companies seeking to form consortia, partnerships or alliances.

Management planning

As lead author of Flexible Learning for VET Managers (TAFE frontiers, 2001), John Mitchell & Associates can work with RTOs in identifying the management and organisational requirements of elearning.
Any other field Leadership is a function of Values Development. We offer in depth learning, facilitation and training to help you integrate/align enterprise and employee values.

Alternative Dispute Resolution ADR Co-operation and collaboration between all parts of an organisation – even an industry requires trust and constructive ways to solve conflict. Negotiating and ADR skills development and training.

### Microcraft Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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</thead>
<tbody>
<tr>
<td>Name of person submitting information</td>
<td>Liz McArthur</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Microcraft Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Suits 1 &amp; 2, 2 Theatre Place CANTERBURY VIC. 3126</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 63 CANTERBURY VIC. 3126</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(03) 9836 9577</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(03) 9836 0363</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Liz McArthur Director <a href="mailto:lizmca@microcraft.com.au">lizmca@microcraft.com.au</a> Ph. (03) 9836 0363</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Tony McSherry Director <a href="mailto:tonymc@microcraft.com.au">tonymc@microcraft.com.au</a> Ph. (03) 9836 0363</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Trevor Theisz Multimedia Project Manager <a href="mailto:ttheisz@microcraft.com.au">ttheisz@microcraft.com.au</a> Ph. (03) 9836 0363</td>
</tr>
</tbody>
</table>

### Content developer Microcraft Pty Ltd produces interactive, online content in any field - on time and within budget. Specialists in interactive multimedia development. Over 16 years experience.

### Product developer Microcraft Pty Ltd sells and supports its own range of unique, award-winning products for developing on-line content called AUTHOR.

### Product AUTHOR is quick to learn, involves no programming and enables rapid construction. Includes automatic collection and management of remote learning results.

### Product Chinese language version available.

### Service provider Microcraft Pty Ltd provides software solutions for web learning on inexpensive hardware multimedia production services consultancy on any aspect of on-line learning

### Service provide total multimedia production services or components like voice-over teach others how to develop on-line education includes technical consulting services

### Researcher Microcraft Pty Ltd has developed products that facilitate on-line research.

### Alliance partner Microcraft Pty Ltd has an existing network of content partners and is receptive to partnering with further content providers for mutual benefit.

### Neil Headford & Associates Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information</td>
<td>Neil Headford</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Neil Headford &amp; Associates Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>14 Aleppo Dr Kardinya WA 6163</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 6163 Kardinya WA 6163</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 9314 5807</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>08 9314 5809</td>
</tr>
<tr>
<td>Company Website:</td>
<td>Headford.com.au</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Neil Headford 08 9314 5807 or Mobile 040 999 1007 Email <a href="mailto:neil@headford.com.au">neil@headford.com.au</a></td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Karen (Office Manager) 08 9337 2066</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Craig (IT Development) 08 9310 5614</td>
</tr>
</tbody>
</table>

### Content developer Neil Headford & Associates Pty Ltd provides customised competency-based HR management and training systems


### Product Neil Headford & Associates provide specialised database systems for evaluating psychology

---

Learn to Elearn Project Page 651 ©UNITAS Company Ltd. 2003
## North Melbourne Institute of TAFE

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Margaret Aspin</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>NMIT</td>
</tr>
<tr>
<td>Street Address:</td>
<td>77-91 St George Rd Preston 3072</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>03 9269 8377</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>03 9269 8349</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://online.nmit.vic.edu.au">http://online.nmit.vic.edu.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Margaret Aspin Team Leader Flexible Delivery Phone 03 9269 8377 <a href="mailto:Margareta-adm@nmit.vic.edu.au">Margareta-adm@nmit.vic.edu.au</a></td>
</tr>
</tbody>
</table>

| Additional contact person’s name, title, phone, mobile phone, fax: | Alick Marks Provider Administrator Online Programs Phone 03 9269 8351 Online-adm@nmit.vic.edu.au |

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Content developer</td>
<td>NMIT Online develops online courses and web sites for government, companies and other organisations.</td>
</tr>
<tr>
<td>Service</td>
<td>NMIT Online provides online networks, and e-Moderation via 'FirstClass' communications systems for companies, associations and other groups world wide.</td>
</tr>
<tr>
<td>Any other field</td>
<td>NMIT Online provides high quality professional development in elearning, Virtual Work, Managing Virtual Teams, developing educational web pages, and developing and delivering online courses.</td>
</tr>
</tbody>
</table>

## North Queensland Executive Training Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Tom Floyd</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>North Queensland Executive Training Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>66 Whitsunday Drive</td>
</tr>
<tr>
<td></td>
<td>Kirwan 4817 Qld</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(07) 4773 3233</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(07) 4773 3214</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Tom Floyd Managing Director 0408 071 701 (mobile)</td>
</tr>
</tbody>
</table>

| Additional contact person’s name, title, phone, mobile phone, fax: |  |

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluator</td>
<td>NQET conducts quantitative in-house evaluations and assessments to determine individual and group competencies.</td>
</tr>
<tr>
<td>Product developer</td>
<td>NQET Can Develop Interactive Experiential Activities To Support The Delivery Of Training Programs And Assessments</td>
</tr>
<tr>
<td>Service provider</td>
<td>NQET Is An Innovative Provider Of Indoor And Outdoor Experiential Training Programs</td>
</tr>
</tbody>
</table>

## Northern Territory University

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Barbara White</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Interactive Learning Division Northern Territory University</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Ellengowan Drive</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>Ellengowan Drive Darwin, 0909</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 8946 6483</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>08 8946 6549</td>
</tr>
<tr>
<td>Company Website:</td>
<td>Currently under development</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Barbara White Director <a href="mailto:Barbara.white@ntu.edu.au">Barbara.white@ntu.edu.au</a> 08 8946 7012</td>
</tr>
</tbody>
</table>

| Additional contact person’s name, title, phone, mobile phone, fax: |  |

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluator</td>
<td></td>
</tr>
<tr>
<td>Product developer</td>
<td></td>
</tr>
<tr>
<td>Service provider</td>
<td></td>
</tr>
</tbody>
</table>
Field | Data
--- | ---
**Evaluator** | ILD’s educational design team has extensive experience in evaluating educational learning resources using a range of media. Online learning environments is a specialty.

**Product developer** | NTU’s Interactive Learning Division specialises in the development of interactive multimedia online learning resources for both the TAFE and Higher Education sectors.

---

### Ochre Information Systems Pty Ltd

**Name of person submitting information:** Justin Dubois

**Company/Organisation Name:** Ochre Information Systems Pty Ltd

**Street Address:** 258 Harcourt Street New Farm Q 4005

**Postal Address (if different to Street Address):** Po Box 811 New Farm Q 4005

**Contact person’s name, title, phone, mobile phone, fax:** Justin Dubois, Director justin@ochreis.com.au

**Additional contact person’s name, title, phone, mobile phone, fax:** Ben Hamilton, Managing Director ben@ochreis.com.au

**Additional contact person’s name, title, phone, mobile phone, fax:** Kim Yelland, Director kim@ochreis.com.au

**Product developer** | Ochre develops Learning Management Software called Wise.NET, for the VET sector and in-house training management at an enterprise level.


**Service** | Ochre provides consultation for the training industry and implementation of learning management systems.

**Alliance partner** | Ochre’s best practice development ensures that we can integrate with any other system. Our web-based Wise.NET suite are used worldwide.

**Any other field** | Ochre is unique in that we have an intimate knowledge of and relationship with the training industry as well as high-end, robust, web-based technology.

---

### Online Learning Australia

**Name of person submitting information:** John Humann

**Company/Organisation Name:** Division of Creative Informatics Pty Ltd

**Street Address:** 173 Burke Road, Glen Iris Vic 3146

**Company Phone:** 03 9509 3500

**Company Fax:** 03 9509 4500

**Contact person’s name, title, phone, mobile phone, fax:** Mr John Humann Senior Consultant 03 9509 3500

**Content developer** | Online Learning Australia develops interactive online course materials and provides expert instructional design over a wide variety of content areas.

**Product developer** | Online Learning Australia develops generic content both online and paper-based support material for the banking and financial services industry.

**Service** | Online Learning Australia offers a high level consulting service whereby advice and strategic direction can be provided to organisations embarking on eLearning.

**Researcher** | Online Learning Australia has the conducts educational research projects across topics such as the evaluation of flexible delivery and current status of online learning.

**Alliance partner** | Online Learning Australia works in consortium with other training providers (eg universities, TAFEs) to develop high quality learning resources, both online (eg Toolboxes) and traditional.

---

### Open Learning Institute of TAFE

**Name of person submitting information:** Rosalind Gilroy
## Field

<table>
<thead>
<tr>
<th>Company/Organisation Name:</th>
<th>Open Learning Institute of TAFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Address:</td>
<td>1 Cordelia Street, South Brisbane 4101</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>GPO Box 1326, Brisbane 4001</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>07 3259 4411</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>07 3259 4377</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.oli.tafe.net">http://www.oli.tafe.net</a></td>
</tr>
</tbody>
</table>
| Contact person’s name, title, phone, mobile phone, fax: | Tanya Lowe  
Acting Director (Research and Development)  
(Ph) 07 3259 4320 (F) 07 3259 4355 |
| Additional contact person’s name, title, phone, mobile phone, fax: | Frieda Rossiter  
Educational Product Representative (Research and Development)  
(Ph) 07 3259 4203 (F) 07 3259 4355 |
| Additional contact person’s name, title, phone, mobile phone, fax: | John Blakeley  
Director (Educational Services)  
(Ph) 07 3259 4169 (F) 07 3259 4121 |

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content developer</td>
<td>The OLI provides consultancy, development and multi-media support for content experts and can also provide specific content expertise for a wide range of VET areas.</td>
</tr>
<tr>
<td>Evaluator</td>
<td>The OLI provides research, audit, review and evaluation services to organisations assuring the appropriateness, quality and value for money of online learning solutions.</td>
</tr>
<tr>
<td>Product developer</td>
<td>The OLI is a recognised leader in development of online learning strategies, innovative products and responsive online solutions for the public and private sector.</td>
</tr>
<tr>
<td>Product</td>
<td>The OLI offers a wide range of online solutions, including Learning Management systems, learning, assessment and RPL programs, survey tools and tailored online applications.</td>
</tr>
<tr>
<td>Service provider</td>
<td>OLI provides extensive online service options including Web site development, hosting, consultancy services and Learning Management Systems supporting learners and facilitators to achieve successful outcomes.</td>
</tr>
<tr>
<td>Service</td>
<td>OLI provides online support for enrolled students including email assessment, counselling and learning support, conferencing, and other resources needed to support our distributed learning model.</td>
</tr>
<tr>
<td>Researcher</td>
<td>The OLI has significant experience in research, review and evaluation of online learning, including market identification, learner attributes, needs and expectations to inform product development.</td>
</tr>
<tr>
<td>Marketer</td>
<td>The OLI has fully developed graphic art, multimedia and broadcast media capabilities as well as significant experience in marketing distance education to corporate and consumer clients.</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>The OLI enters alliances/partnerships in order to enhance its capability base, respond rapidly to diverse client needs and take advantage of new/changing markets in a competitive environment.</td>
</tr>
<tr>
<td>International</td>
<td>The OLI has an established network for providing accredited and customised short-term training and award courses to organisations and individual students internationally.</td>
</tr>
</tbody>
</table>

Parasol EMT Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Peter Mckie</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>PARASOL EMT Pty Ltd</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Head Office ACT</td>
</tr>
</tbody>
</table>
| Street Address: | 1/9 Lithgow Street  
FYSHWICK ACT 2609 |
| Company Phone: | 1300 366 818 / 02 6280 9880 |
| Company Fax: | 1800 030 666 / 02 6280 9881 |
| Contact person’s name, title, phone, mobile phone, fax: | Peter Mckie  
Managing Director  
02 6280 9880 |
| Additional contact person’s name, title, phone, mobile phone, fax: | Ian Wilson  
Technical Director  
02 6280 9880 / 02 62363440 |

Parasol EMT Safety Service provides a full range of quality training in Occupational Health and Safety, Confined Spaces Safety, and Food Handling Hygiene throughout Australia.

## Field

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Aid</td>
<td>Parasol EMT provides a full range of basic and advanced first aid and clinical training, including flexible learning modes.</td>
</tr>
<tr>
<td>Industrial Health and Safety</td>
<td>Parasol EMT provides a full range of quality training in Occupational Health and Safety, Confined Spaces Safety, and Food Handling Hygiene throughout Australia.</td>
</tr>
</tbody>
</table>

Pearson Education Australia

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Greg Higgins</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Pearson Education Australia</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Unit 4, Level 2, 14 Aquatic Drive, Frenchs Forest, NSW, 2086</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>Locked Bag 507, \FRENCHS FOREST, NSW, 2086</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(02) 9454 2200</td>
</tr>
</tbody>
</table>
### Quality Automotive Training

**Field** | **Data**
---|---
Name of person submitting information: | Tom Ziniak
Company/Organisation Name: | Quality Automotive Training
Street Address: | Unit 4, 7 Stephen Street Melrose Park SA 5039
Postal Address (if different to Street Address): | PO Box 481, Melrose Park SA 5039
Company Phone: | (08) 8277 3866
Company Fax/Email: | (08) 8277 0286 / qat@bigpond.com
Company Website: | http://www.quality-at.com.au
Contact person's name, title, phone, mobile phone, fax: | Tom Ziniak Managing Director 0416 006 433
Additional contact person's name, title, phone, mobile phone, fax: | Bronte Cooper Marketing Manager 0413 303 409

**Field** | **Data**
---|---
Product developer | Quality Automotive Training (QAT) develops learning resource workbooks to suit the Automotive and Bicycle Training Packages AUR99. These include Sales and Service for Certificate II & III levels.
Service provider | QAT is a Registered Training Organisation (RTO) which conducts both training and assessment in the Automotive and Bicycle Industries. Presently operating in SA and NT.
Service | QAT also conducts on site and off job assessments to enable existing workers in the Automotive and Bicycle Industries to obtain Vocational Accreditations.
Any other field | QAT provides resource materials, training and assessments for the Certificate II & III in Bicycle Mechanics.

### Riverina Institute

**Field** | **Data**
---|---
Name of person submitting information: | Vicki Marchant
Company/Organisation Name: | Riverina Institute (TAFE NSW)
Street Address: | Cnr Macleay & Coleman Sts
Postal Address (if different to Street Address): | P O Box 2231
Company Phone: | 02 69381 300
Company Fax: | 02 69381 327
Company Website: | http://www.rt.tafensw.edu.au
Contact person's name, title, phone, mobile phone, fax: | Vicki Marchant Manager, New Learning Technologies Ph 02 6938 1323 Fax: 02 6938 1432

**Field** | **Data**
---|---
Content developer | Riverina Institute produces online courses for Administration Training Package; OH&S; management Teacher professional development for online facilitation & development
Product | Riverina Institute’s range of online courses include Graduate Certificate in Flexible Delivery;
<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cert IV in Business (Admin); Introduction to Teaching Online; Facilitating and Managing eLearning (developed in conjunction with the TAFE NSW Professional Development Network)</strong></td>
<td></td>
</tr>
<tr>
<td>Service provider</td>
<td>Riverina Institute provides online facilitation services and student support services in conjunction with online delivery; particularly for teacher professional development for online facilitation and development</td>
</tr>
<tr>
<td>Service</td>
<td>Teacher professional development; online facilitation</td>
</tr>
<tr>
<td>Any other field</td>
<td>Riverina Institute has developed and delivers a suite of courses for teacher professional development for online course design, development and delivery, including online facilitation</td>
</tr>
</tbody>
</table>

### Safecity Training Academy

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Alexander Wilon</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Safecity Training Academy</td>
</tr>
<tr>
<td>Street Address:</td>
<td>322 Claytons Road, PORTERS RETREAT NSW 2787</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>Post Office Box 177, OBERON NSW 2787</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 6335 5216</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 6335 5229</td>
</tr>
<tr>
<td>Contact person's name, title, phone, mobile phone, fax:</td>
<td>Elizabeth Murdoch, Coordinator, Phone 02 6335 5216</td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Sharon Flinders, Distance Learning Tutor, Phone 02 6335 5216</td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Jackie Wilon, Business Manager, Phone: 02 6335 5216</td>
</tr>
</tbody>
</table>

### SMA (Operations) Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Andrew Wise</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>SMA (Operations) Pty Ltd</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Research &amp; Technology Group</td>
</tr>
<tr>
<td>Street Address:</td>
<td>4 Apollo Place, Lane Cove, NSW 2066</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 369, Lane Cove, NSW 1595</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 9418 9177</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 9418 6945</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.sma.com.au">http://www.sma.com.au</a></td>
</tr>
<tr>
<td>Contact person's name, title, phone, mobile phone, fax:</td>
<td>Keith Crampton, Learning Systems Specialist, SMA R&amp;T, Ph: 02 9418 9177, Fax: 02 9418 6945</td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Andrew Wise, Manager, SMA R&amp;T, Ph: 02 9418 9177, Fax: 02 9418 6945</td>
</tr>
<tr>
<td>Additional contact person's name, title, phone, mobile phone, fax:</td>
<td>Cathy Chambers, Marketing Manager, SMA R&amp;T, Ph: 02 9418 9177, Fax: 02 9418 6945</td>
</tr>
</tbody>
</table>

### Field Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content developer</strong></td>
<td>Safecity produces internet content which is interactive, innovative and flexible.</td>
</tr>
<tr>
<td><strong>Evaluator</strong></td>
<td>Safecity has an in-house evaluator who specialises in the outcomes of Internet assisted learning.</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>Our flexible online support services and program facilitation include personalised support which assists in making online and internet supported learning fun, flexible, and effective.</td>
</tr>
</tbody>
</table>

### SMA (Operations) Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content developer</strong></td>
<td>SMA has many varied electronics and mechanical technical specialists capable of developing online content and technology based training aids.</td>
</tr>
<tr>
<td><strong>Product developer</strong></td>
<td>SMA produces part task trainers as well as interactive freeplay emulations of systems and HMI to support the delivery of both online and traditional technical training.</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td>SMA has many existing emulations available, mainly for marine and automotive applications. SMA utilises, and is a reseller of, the Rapid® software development tool.</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>SMA is able to provide all design and development tasks to produce technology based training aids ranging from online emulations to part task trainers.</td>
</tr>
<tr>
<td><strong>Alliance partner</strong></td>
<td>SMA has offices throughout Australia and internationally to assist you with the provision of technology based training aids.</td>
</tr>
<tr>
<td><strong>Any other field</strong></td>
<td>SMA is able to provide the full spectrum of training analysis and design tasks, as well as technical documentation (both online and hardcopy).</td>
</tr>
</tbody>
</table>
### Smart Tec Frontline

**Name of person submitting information:** Melinda Knight  
**Company/Organisation Name:** Smart Tec Frontline  
**Street Address:** 270 Auburn Road Hawthorn VIC 3122  
**Postal Address (if different to Street Address):** PO Box 923, Hawthorn VIC 3122  
**Company Phone:** (03) 9818 5400  
**Company Fax:** (03) 9815 0093  
**Contact person’s name, title, phone, mobile phone, fax:**  
- Melinda Knight  
  - Training Manager  
  - (03) 9818 5400  
  - (03) 9815 0093  
  - 0418 342 108  

#### Field | Data  
--- | ---  
**Product developer** | Smart Tec Frontline is involved in the development of ‘Know it Now’, a web powered self help & knowledge management program which enhances elearning  
**Service provider** | Smart Tec Frontline supports Know it Now providing 24/7 student/client support and effective implementation and support of induction and compliance training programs.  

### Smartmedia

**Name of person submitting information:** Alan Manley  
**Company/Organisation Name:** Smartmedia – Torrens Valley Institute  
**Street Address:** 100 Smart Road Modbury 5092  
**Postal Address (if different to Street Address):** 100 Smart Road Modbury 5092  
**Company Phone:** (08) 82078123  
**Company Fax:** (08) 82078008  
**Company Website:** [http://www.tvtafe.sa.edu.au/smartmedia](http://www.tvtafe.sa.edu.au/smartmedia)  
**Contact person’s name, title, phone, mobile phone, fax:**  
- Sue Rosenthal  
  - Project Manager  
  - Ph (08) 82078123  
  - Fax (08) 82078008  
  - sueros@torrens.tafe.sa.edu.au  
- Larry Keig  
  - Project Manager  
  - Ph (08) 82014329  
  - Fax (08) 82078008  
  - larryk@torrens.tafe.sa.edu.au  
- Helen Bayne, Manager, Training Resources and Development Services (TRENDS)  
  - Ph (03) 5564 8961  
  - Fax (03) 5564 8828  
- Lyn Goodear, Manager, Flexible Learning Unit  
  - Ph (03) 5564 8849  
  - Fax (03) 5564 8982

#### Field | Data  
--- | ---  
**Content developer** | Smartmedia produces interactive, online content for vocational education and training in: Information Technology, Multimedia, Electronics, Business Services, Management, Building Trades, Veterinary and Applied Science, Biotechnology, Horticulture, Community Services and Health Care, Horse Industries, Textiles, Clothing and Footwear, Environmental Management and a number of other educational areas.  
**Product** | Smartmedia’s range of products include print and video based learning materials and promotional materials to support the marketing of online vocational education and training products and services.  

### South West Institute

**Name of person submitting information:** Julie Kean  
**Company/Organisation Name:** South West Institute of TAFE  
**Street Address:** Timor Street, WARRNAMBOOL VIC 3280  
**Postal Address (if different to Street Address):** PO Box 674, WARRNAMBOOL VIC 3280  
**Company Phone:** (03) 5564 8911  
**Company Fax:** (03) 5564 8982  
**Company Website:** [http://www.swtAFE.vic.edu.au](http://www.swtAFE.vic.edu.au)  
**Contact person’s name, title, phone, mobile phone, fax:**  
- Julie Kean, Assistant Director Development  
  - Ph: (03) 5564 8910  
  - Fax: (03) 5564 8982  
- Helen Bayne, Manager, Training Resources and Development Services (TRENDS)  
  - Ph: (03) 5564 8961  
  - Fax: (03) 5564 8826  
- Lyn Goodear, Manager, Flexible Learning Unit  
  - Ph: (03) 5564 8849  
  - Fax: (03) 5564 8982

#### Field | Data  
--- | ---  
**Content developer** | TRENDS is an award-winning developer of online resources in fields as diverse as business administration, meat processing, and life skills for adults with an intellectual disability.  

---

**Learn to Elearn Project**  
Page 657  
©UNITAS Company Ltd. 2003
### Attachments

<table>
<thead>
<tr>
<th>Product developer</th>
<th>TRENDS specialises in the development of integrated learning management systems, using proprietary online learning platforms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service provider</td>
<td>South West Institute of TAFE provides online delivery and support services for a wide range of learners, especially those in traineeships.</td>
</tr>
</tbody>
</table>
## TAFE Connect

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>TAFE Connect</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>TAFE Commission of NSW</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>TAFE Online Project</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 4, 35 Bridge Street, Sydney 2000</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>61 2 9561 8427</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>61 2 9561 8563</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.tafensw.edu.au">http://www.tafensw.edu.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Tony Brady, Executive Director, TAFE Ph: 61 2 9561 8926 Fax: 61 2 9561 8563</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>David Poynter, Project Manager, TAFE Online Ph: 61 2 9561 8427 Fax: 61 2 9561 8563</td>
</tr>
</tbody>
</table>

TAFE Connect is rolling out 450 elearning modules for use in more than 400 VET courses in 54 fields of study. Modules are designed to be teacher-supported and may be delivered online or in blended learning formats.

The TAFE NSW Online Project develops teacher elearning services and highly engaging quality courseware under the banner ‘TAFE Connect’ to meet Australian Training Qualification Framework industry-endorsed curriculum outcomes.

‘TAFE Connect’ features a broad range of teacher-supported online learning materials featuring a range of communications and web-learning strategies designed to meet the needs of a diverse range of student learning styles.

TAFE NSW Institutes provide a range of ‘TAFE Connect’ elearning options across 130 campuses. All courses are teacher-supported. Some are available all-online. Others are available in mixed-mode or blended learning formats.

Teacher-supported ‘TAFE Connect’ elearning is available on campus and as self-paced online learning through a network of 130 TAFE NSW campuses and across Australia in over 54 learning streams, providing enhanced learning opportunities for those unable to regularly attend face-to-face classes.

‘TAFE Connect’ learningware lends itself extremely well to specialised industry and corporate training programs. Co-branding and customised services for corporate cohorts is available. TAFE NSW Institutes offer specialised teacher/client collaboration to meet identified corporate training needs.

‘TAFE Connect’ elearning services are exclusive to TAFE NSW, but its courses and qualifications are recognised and widely respected, with online students enrolled across Australia and around the world.

## T&S Institute of Technology & Management

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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</thead>
<tbody>
<tr>
<td>Company/Organisation Name:</td>
<td>T&amp;S Institute of Technology &amp; Management</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 16 / 33 Bligh St Sydney NSW 2000</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>GPO Box 3763, Sydney 2001</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>+61 2 9232 6400</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>+61 2 9232 6455</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.tsinstitute.edu.au">http://www.tsinstitute.edu.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Lamina Godman Flexible Learning Manager</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Suzanne Dwyer Managing Director</td>
</tr>
</tbody>
</table>

T&S Institute of Technology & Management delivers flexible online accredited IT & Business Diplomas and Certificate courses for students, career changers and people who want to improve their business skills. The courses are very interactive with lots of great exercises, support & elearning features. In fact our delivery model ‘e-training’ has just been nominated a finalist in the best of breed for online learning by Austrade.

T&S Institute students receive continual support by a mentor, telephone and online by: Online Forum Online Chat Email Audio Announcements Audio Seminars Students can achieve job ready skills for a great new career.

## TechComm Simulation

<table>
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<tr>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Warren Cameron/Max Barry</td>
</tr>
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### TechComm Simulation

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<tr>
<td>Company/Organisation Name:</td>
<td>TechComm Simulation</td>
</tr>
<tr>
<td>Branch office (if applicable, eg. ACT branch):</td>
<td>Sydney Office</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 1, 53 Balfour Street Chippendale Sydney NSW 2008</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>N/A</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 690 3600</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 699 3871</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.techsim.com.au">http://www.techsim.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Warren Cameron; Sales Manager 0438 633 593 Max Barry; Deputy Director 0417 657 406</td>
</tr>
</tbody>
</table>

**Field Data**

- **Content developer**: TCS develop and provide Training services for the Power Generation Industry, Industrial and Utility to both Australian and Global Markets. (RTO Accredited)
- **Evaluator**: TCS is an RTO under the Australian Recognition Framework to deliver training, conduct assessment and issue qualifications for UTP20198, UTP30298 & UTP40298
- **Product developer**: TCS develops both standard training modules and Client Specific to meet the requirements of the Power Generation Industry.
- **Product**: TCS products include Training Needs Analysis, Operator Aptitude Evaluation, Operator Competency Assessment, Plant Operation Certification, Site Specific Operation, Self Paced Learning, Permit To Work Training
- **Service provider**: TCS specialise in providing Comprehensive training requirements for Greenfield Sites whereby local resources are a prerequisite to project acceptance
- **Service**: TCS provide EPC (Engineering Procurement Contractors) with EPC Training Coordinators to ensure hand-over and resource development meets Owner client requirements.
- **Any other field**: To support this service TCS are specialists in Power Plant Operation Services and suppliers of Full Scope Replica Simulators provided as training tools for Power Generation Industry

### The Education Channel International Ltd

<table>
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<tr>
<th>Field</th>
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<tr>
<td>Name of person submitting information:</td>
<td>Kevin Ryall</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>The Education Channel International Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Suite 403, 15 Albert Ave, Broadbeach, Queensland, 4218</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>07 5527 6899</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>07 5526 2999</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://the-educationchannel.com">http://the-educationchannel.com</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Kevin Ryall, CEO, details as above</td>
</tr>
</tbody>
</table>

**Field Data**

- **Content developer**: The Education Channel produces interactive industry based online content.
- **Product**: The Education Channels current content includes NuMaths programs for the hospitality industry

### The Home Publisher

<table>
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<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Janet Graham</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>The Home Publisher</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Street Address:</td>
<td>28 Maxwell Street, Fairy Meadow NSW 2519</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 49, Fairy Meadow NSW 2519</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>02 4283 3458</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>02 4283 6190</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.homepublisher.com.au">http://www.homepublisher.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>As above 0419 251 035</td>
</tr>
</tbody>
</table>

**Field Data**

- **Researcher**: The Home Publisher provides consultants for research into the feasibility of online learning in a VET organisation. Includes up-skilling of staff to basic knowledge levels.
- **Training and Consulting**: The Home Publisher provides training in the software required for online development including Dreamweaver, Fireworks, and Frontpage

### The Learning Group

<table>
<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Mark Samuels</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>The Learning Group</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>NSW Head Office</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 3, 346-348 Kent Street Sydney NSW 2000</td>
</tr>
</tbody>
</table>

**Field Data**

- **Researcher**: The Learning Group provides interactive industry based online content.
- **Product**: The Learning Groups current content includes NuMaths programs for the hospitality industry
### Training Online International Pty Ltd

<table>
<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Marilyn Harvey</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Training Online International Pty Ltd</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 5101, West End, 4101, Brisbane</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(07) 3846 1815</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(07) 3846 1802</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.trainingonline.com.au">http://www.trainingonline.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Marilyn Harvey (041 202 5066)</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Steve Roberts (0439-080-280)</td>
</tr>
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</table>

### WebCiTe Pty Ltd

<table>
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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Steve Roberts</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>WebCiTe Pty Ltd</td>
</tr>
<tr>
<td>Branch office (if applicable, e.g. ACT branch):</td>
<td>Adelaide</td>
</tr>
<tr>
<td>Street Address:</td>
<td>41 Dalton Ave, Aldgate, SA 5154</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO 82, Aldgate, SA 5154</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>0439-080-280</td>
</tr>
<tr>
<td>Company Website:</td>
<td><a href="http://www.webcite.com.au">http://www.webcite.com.au</a></td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Steve Roberts Managing Director 0439-080-280</td>
</tr>
</tbody>
</table>

### Field Data

- **Content developer**
  - The Learning Group produces customised online learning applications for any industry, in areas such as Employee Orientation, Systems Training, Product Training, Compliance, as well as Sales & Marketing.

- **Service provider**
  - The Learning Group has considerable experience in working with content experts to design learning materials that are easy to use, and which motivate and train employees, while providing reporting features for management.

- **Service**
  - The Learning Group provides tailored online solutions that include: training tools, reporting databases, assessment tools, change management tools and marketing services.

- **Alliance partner**
  - The Learning Group is a developer of customised elearning applications – we are flexible enough to partner with other organisations to achieve reliability, speed and quality solutions.

- **Field**
  - **Data**
    - The Learning Group is a developer of customised elearning applications – we are flexible enough to partner with other organisations to achieve reliability, speed and quality solutions.

- **Field**
  - **Data**
    - Training Online has expertise in the development of online learning material. Our processes enable us to work with subject matter experts from any field.

- **Product developer**
  - Training Online is developing a range of propriety content under the name Learningbytes™.

- **Service provider**
  - Training Online has a learning management system known as eClassroom in A Case™ that is available for purchase on implementation on an ASP basis.

- **Field**
  - **Data**
    - WebCT expertise instructional design course content development and conversion graphic design, shockwave flash multimedia, video streaming assessment tools

- **Product developer**
  - WebCT systems integration hosted servers, backup and maintenance outsourced remote WebCT system administration customised solutions automatic student registration

- **Product**
  - WebCT training specialists

---

**Attachments**
customised training, presentations and workshops
online or face-to-face training
short structured courses or self-paced
focus on WebCT and/or pedagogy
WebCT Certified Trainers, training materials and documentation

Service
WebCT support
WebCT helpdesk for system administrators, instructors or students
1800 free call number and email
casual, monthly or casual rates
local, experienced, responsive support
priority connections with WebCT Support North America
access to a range of consultants, trainers and system integration specialists

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>David Bevan</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>WebRaven Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 6, 80 Albert St Brisbane, Qld 4000</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>07 3210 2333</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Tania Wickman, <a href="mailto:tania@webraven.com">tania@webraven.com</a>, 07 3210 2333</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>David Bevan, <a href="mailto:david@webraven.com">david@webraven.com</a>, 07 3210 2333</td>
</tr>
<tr>
<td>Service provider</td>
<td>WebRaven provides the web based Learning Management System DOTS™ that provides tools to: Easily build courseware and assessments from existing materials; Create an online course catalogue with e-commerce capability; Associate competencies with courses to meet compliance or degree requirements; Assign instructors to courses and monitor them; Build course plans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Data</th>
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</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Linda Gregory</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>Western Pacific Assoc of Transactional Analysis</td>
</tr>
<tr>
<td>Street Address:</td>
<td>482 Fitzgerald St, North Perth</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 504, Leederville</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>08 9335 6950</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Linda Gregory, Trainng Coordinator, Phone/fax 9335 6950, Mob 0409 687 926, <a href="mailto:lgregory@central.murdoch.edu.au">lgregory@central.murdoch.edu.au</a></td>
</tr>
<tr>
<td>Content developer</td>
<td>WPATA produces online and correspondence training in TA psychotherapy. Course is fully accredited</td>
</tr>
<tr>
<td>Product</td>
<td>The training consists of 12 core modules, provided via video, with online supervision.</td>
</tr>
<tr>
<td>Service</td>
<td>Online supervision and discussion to assist with learning.</td>
</tr>
</tbody>
</table>

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<tr>
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</thead>
<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Danielle Mackowski</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>where-u-learn.com Pty Ltd</td>
</tr>
<tr>
<td>Street Address:</td>
<td>Level 1, 287 Melbourne Street NORTH ADELAIDE SA 5006</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(08) 8361 9725</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Denise Picton, Managing Director, Ph: (08) 8361 9725</td>
</tr>
<tr>
<td>Additional contact person’s name, title, phone, mobile phone, fax:</td>
<td>Des Manning, General Manager, Ph: (08) 8361 9725, Mob: 0417 875 855</td>
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<tr>
<td>Name of person submitting information:</td>
<td>David Bevan</td>
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<tr>
<td>Company/Organisation Name:</td>
<td>Western Pacific Assoc of Transactional Analysis</td>
</tr>
<tr>
<td>Street Address:</td>
<td>482 Fitzgerald St, North Perth</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 504, Leederville</td>
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<td>Company Phone:</td>
<td>08 9335 6950</td>
</tr>
<tr>
<td>Contact person’s name, title, phone, mobile phone, fax:</td>
<td>Linda Gregory, Trainng Coordinator, Phone/fax 9335 6950, Mob 0409 687 926, <a href="mailto:lgregory@central.murdoch.edu.au">lgregory@central.murdoch.edu.au</a></td>
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<tr>
<td>Content developer</td>
<td>WPATA produces online and correspondence training in TA psychotherapy. Course is fully accredited</td>
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<td>Product</td>
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### Workforce Management Consulting

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<tbody>
<tr>
<td>Name of person submitting information:</td>
<td>Harvey Green</td>
</tr>
<tr>
<td>Company/Organisation Name:</td>
<td>WorkForce Management Consulting</td>
</tr>
<tr>
<td>Postal Address (if different to Street Address):</td>
<td>PO Box 708, Bondi Junction, NSW, 2222</td>
</tr>
<tr>
<td>Company Phone:</td>
<td>(02) 9664 2284</td>
</tr>
<tr>
<td>Company Fax:</td>
<td>(02) 9664 2281</td>
</tr>
</tbody>
</table>
| Contact person’s name, title, phone, mobile phone, fax: | Harvey Green: Director.<br> Tel: 02 9664 2284  
Fax: 02 9664 2281  
Email: harvey.green@workforce-management.com.au |

<table>
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<tbody>
<tr>
<td>Evaluator</td>
<td>Workforce Management Consulting provides a qualitative and quantitative evaluation service of projects conducted in the workplace.</td>
</tr>
<tr>
<td>Alliance partner</td>
<td>WorkForce Management Consulting is ready to partner with your organisation to provide elearning and e-assessment for Frontline Management Certificate III, IV and Diploma Programs.</td>
</tr>
</tbody>
</table>
14.2 **Attachment 2 — How to Select a Live E-Learning Tool: A guide to evaluating the best synchronous ‘virtual classroom’ for your organisation**

Note: Due to copyright restrictions this attachment is provided in electronic form with the master copy of this report. Full source is: Duckworth, C. L. (2001). *How to Select a Live E-Learning Tool: A guide to evaluating the best synchronous ‘virtual classroom’ for your organisation*. Sunnyvale, CA: Brandon-hall.com
14.3 **Attachment 3 — Authoring Tool Strategies Choosing tools that match your company’s e-Learning initiative**

Note: Due to copyright restrictions this attachment is provided in electronic form with the master copy of this report. Full source is: Chapman, B. & Hall, B. (October 2001). *Authoring Tool Strategies Choosing tools that match your company’s e-Learning initiative*. Sunnyvale, CA: Brandon-hall.com.
14.4 **Attachment 4** — Live E-Learning 2002 Virtual Classrooms, Synchronous Tools, and Web Conferencing Systems

14.5 **Attachment 5 — LCMS Report: Comparative Analysis of Enterprise Learning Content Management Systems**

Note: Due to copyright restrictions this attachment is provided in electronic form with the master copy of this report. Full source is: Chapman, B. (Ed.). (2002). *LCMS Report: Comparative Analysis of Enterprise Learning Content Management Systems.* Sunnyvale, CA: Brandon-hall.com
14.6 Attachment 6 — Video Streaming: A guide for educational development

Note: Due to copyright restrictions this attachment is provided in electronic form with the master copy of this report. Full source is: Thornhill, S., Asensio, M., & Young, C. (November 2002). Video Streaming: A guide for educational development. Click & Go Video: Joint Information Systems Committee: UK. Sourced 12.12.2002 at http://www2.umist.ac.uk/isd/lwt/clickgo/the_guide/Guide-S10-serving.pdf