Exegesis: Strategy and Learning-
A path to organisational change

John D. Kenny

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Declaration for PhD by Project.

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John D. Kenny - Student Number: 2015402E

I declare that, except where acknowledgement has been made, this Exegesis and the accompanying Portfolio is my own original work.

This exegesis has not been submitted previously, in whole or in part, to qualify for any other academic award.

The content of the Exegesis is the result of work that has been conducted since the official commencement of the research program.

I also declare that any editorial work, paid or unpaid, carried out by a third party has been duly acknowledged.

Signed

Date
Abstract

This Exegesis and the Portfolio document referred to herein report on the outcomes of my research towards a PhD in education (by Project) between mid 2001 and July 2005. The Portfolio contains a collection of ten papers written during the research and also a summary of the key tools and processes resulting from the research. This Exegesis contains the major theoretical arguments leading to the development of the research outcomes, the methodology employed and a description of the organisational context operating during the study. It also draws links between the various data sets as presented in the Portfolio.

The research began with a consideration of a major change project at RMIT University: the Implementation of the Distributed Learning System (DLS). The problems associated with this project highlighted the need for holistic organisational approaches to change and the uncertain nature of radical change projects.

This led into a consideration of broader questions to do with organisational change and managing uncertainty. The generalisability of the research findings was enhanced by the wide ranging literature review and data from a range of stakeholders. This ultimately led to the development of a “Maturity Model for Strategy” and a series of associated processes and management tools. These tools are offered as a means of assisting organisations wishing to understand the complexity of the change process. In the end the Maturity Model was applied to the DLS project as a means of illustrating its value in understanding the specific case, in which I was intimately involved.
Acknowledgements

I would like to express my sincere gratitude to those who assisted me at various stages: my two main supervisors, Mike Brown and Laurene Vaughan, for their patience and persistence; my previous supervisor, Chris Booth, for his initial encouragement and Carmen Riordan for her valued proof reading of the document.
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Chapter One- Introduction and Background

There is general agreement in the literature that there have been dramatic changes in the social and economic environment in which organisations operate. The modern economic climate is described as highly uncertain and fiercely competitive (Grant 2003; Chaffee 1985; Rae 1997; Mintzberg 1994; Ansoff 1994; Combe & Botschen 2002; Whittington & Malin 2003). It is increasingly globalised and networked by new technologies which led Barnett (2003) to use the term ‘supercomplexity,’ a condition ‘characterized by the presence of contestability, challengeability, uncertainty and unpredictability’ (Barnett 2003: 3).

This research is a study of strategic change in this uncertain environment which began as an investigation of a specific strategic project at RMIT University between 1998 and 2004. The project under study was the implementation of the Distributed Learning System (DLS), which occurred as one part of the organisational response to significant structural and economic changes in the tertiary education environment (Ramsden 1998; Rae 1997). Not long into the study, it became clear that a focus on a specific strategic project was far too narrow, and the research quickly broadened to include the organisational aspects and context surrounding strategic change at RMIT. This in turn led to a further broadening of the scope of the study to consider the nature of strategic change more generally, and revolutionary or radical change in particular. At this level, change usually brings with it a range of attitudinal and cultural factors which do not fit with traditional rational strategic planning processes. Radical change requires new approaches by managers and staff and ‘combines inner shifts in people’s values, aspirations and behavior with “outer” shifts in processes, strategies, practices and systems’ (Senge et al. 1999: 15).

This exegesis explains how my own understanding of the intricate and holistic nature of the change process developed, during the eight cycles of action research, and how it became increasingly evident that change of this nature is not to be considered as an option, but is in fact vital to the
progress and sustainability of all organisations. The research findings support calls by many others for new and more adaptable organisational forms, new approaches to leadership, and an organisational focus on learning as the basic ingredients of successful and sustainable organisations (Fullan 1997; McNiff 2000; Senge 1990; Stacey 1995; Weitzel & Jonsson 1989; Whittington & Melin 2003). My research has identified common themes across a number of strands of research, and my task in this exegesis has been to weave them into a comprehensive model for strategic organisational change. This exegesis discusses the developmental story of the research, the outcomes of which are presented in the accompanying Portfolio.

Whilst undertaking the study, it became clear from the literature review, that many of the issues identified were common to other organisations from a range of different sectors of the economy. This was an indication that there could be a high degree of generalisability associated with the research findings, a realisation which led me to pose two research questions for exploration. The first question addressed the specific DLS project and the second question was concerned with exploring strategic organisational change more generally. The two research questions posed were:

1. What are the key lessons that can be learned from the strategic project to implement the DLS at RMIT University?
2. What principles and processes could be applied to ensure the effective implementation of strategic change projects in the future?

**Problems encountered**

One problem I encountered during the research was the universality of strategic change as a process. This required that I read very broadly, across many different fields of research including project management, management, strategic management, innovation, educational leadership, educational project management, action research and teacher change. Realising that I would be unable to study each of these areas in great depth, and that I could not expect my supervisors to provide me with specific advice on readings, which extended beyond their own areas of expertise, I
decided to identify some of the key thinkers in each area and to look for common themes and threads that could be synthesised into generalisations of practice. I also deliberately used the peer review publication process to garner responses from scholars and experts in various disciplines and to check the validity and originality of my ideas.

The ten academic papers presented in the Portfolio are the results of this approach. Individually they present and discuss much of the primary data from the study and, as a collection they illustrate the development of the research outcomes and the associated conclusions over time. In this exegesis, a logical link has been established between the papers by means of a series of reflective commentaries which gives a narrative of the research and provides the theoretical background and evidence to support the conclusions. The Exegesis illustrates the development of the ideas and the papers in the Portfolio demonstrate my effort to conduct a dialogue with the research community and with members of my own organisation.

Aside from the papers, the Portfolio also contains a number of other products of the research, including a typology for categorising strategic projects, organisational process diagrams for managing change, a summary of key project success factors, a project evaluation process, a mechanism for estimating uncertainty and an online professional development program.

### 1.1 Structure of the Exegesis

During this study, I took the perspective of a practitioner researcher and made use of the constructivist methods of Action Learning and Action Research (ALAR). These are discussed more fully in Chapter Two-Research Methodology, but, in line with a constructivist perspective, my understanding grew over time as I encountered new knowledge and problems and had to relate these to my existing knowledge base.
In line with ALAR methodology, I was involved in collaborative and reflective activities: the ten academic papers (available in the Portfolio), were my attempt to satisfy the obligation to share learning with the research community. While there is a degree of duplication in some of the text in the papers, due to the fact that they were independent publications and that the ideas were in development, I have minimised this by excluding the abstracts and consolidating all the references into one section at the end of this Exegesis. Table 1.1 outlines the overall structure of this Exegesis document.

TABLE 1.1- Structure of the Exegesis

<table>
<thead>
<tr>
<th>Chapter One - Introduction and Background</th>
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<tbody>
<tr>
<td>Introduction to the research and an outline of the structure of the Exegesis and Portfolio.</td>
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<tr>
<td>A brief overview of the events preceding the formal study with reference to one published conference paper summarising some of the evaluation activity.</td>
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</table>

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<tr>
<th>Chapter Two - Research Methodology</th>
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<tbody>
<tr>
<td>A discussion of the research methodology and a description of the data collection methods employed in the study.</td>
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<th>Chapter Three - Stakeholder Perceptions</th>
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<tr>
<td>Three papers are referred to in this chapter provide an analysis of much of the primary data collected during the study and a discussion in view of the related literature. Data related to three groups is considered: project managers, students and staff. The commentaries provide a logical thread to the argument.</td>
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<th>Chapter Four - Managing Innovation and Change</th>
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<tr>
<td>A discussion of the organisational issues that became evident during the study. Six papers are presented that show a developing understanding of the issues around managing strategic change and the gradual development of the processes and products of the study. Again, commentaries provide a logical thread.</td>
</tr>
</tbody>
</table>
Chapter Five - Professional Learning

This chapter considers the professional development (PD) aspects and presents the last part of the primary data collected in the study. There is a discussion of the action learning process leading to the development of the PD program ‘Teaching and Learning Using the DLS’, which is presented in the Portfolio and finishes with a paper which explored the organisational PD strategy.

Chapter Six - Current Thinking

This chapter builds on the implications of the research so far to develop a model for strategic planning that takes account of relevant literature to refine and extend the research, leading to the final versions of the artefacts as presented in the Portfolio.

Chapter Seven – Implications

This chapter draws together the main ideas and developments to answer the research questions.

1.2 The Organisational Context for the Study

RMIT University is a large and complex educational institution. At the time of the research, a number of aspects contributed to its complexity. Firstly, there were over 57 000 student enrolments and over 3 600 staff with approximately a further 700 casual staff. Secondly, as a dual sector university, RMIT University it had both a higher education sector and a Technical and Further Education (TAFE) sector. Thirdly, it had multiple campuses within Victoria (Australia) and also delivered programs internationally through campuses and partnerships operating in Vietnam, Singapore, China and Africa. Fourthly, it had a very diverse range of students, many of whom came from overseas to study at RMIT.

Like other institutions at the time, RMIT University had been operating in an environment of shrinking government funding, increased competition and a more diverse student base. To respond to these challenge, the RMIT Teaching and Learning Strategy (1998-2000) and the subsequent RMIT Teaching and Learning Strategy (2000-2003) aimed to put the organisation into a more
sustainable position by offering students more flexible learning options and opening up new markets.

In 1998, RMIT management commissioned a report to investigate how the information technology goals of the university could best be aligned with the educational goals of produce more flexible, student-centred options and improving learning outcomes. The resulting report ‘The Education, Training and Information Technology Alignment Report’ (ITAP), (Czech et al. 1998) resulted in 113 recommendations. Two key projects to flow from the ITAP report were: the development and implementation of a centrally supported web-based student learning system, called the Distributed Learning System (DLS); and an integrated online management system called the Academic Management System (AMS). RMIT invested $50 million over three years for the development and implementation of these systems throughout the organisation.

As a member of the original team established to develop and manage the DLS, I was well placed to experience the problems and successes first hand. The ‘Benchmark’ DLS was set-up in semester one 1999 by the initial development team. Later, in semester two 1999, Learning Technology Services (LTS) was created to centrally manage the implementation of all of the ITAP recommendations, including the DLS and the AMS projects. This study emerged from my work in these groups.

1.3 The DLS Implementation

The DLS was designed to be a secure web portal containing a suite of integrated software tools to support online learning activities at RMIT. The Teaching and Learning Strategy (1998-2000) set strategic targets for each faculty to achieve 60% of courses ‘with some flexible component’ by the end of 2000 and the DLS was seen as a key means of reaching this target.
The original plan for the ‘Benchmark’ was for a pilot study involving twelve academic staff to evaluate the associated systems, software, processes and outcomes of the DLS. I conducted interviews with the academics and teaching staff who were to participate, and it became clear that most of them had little knowledge of, training in, or experience with using an online learning system. While there had been isolated pockets of what Rogers (1995) described as ‘early adopters’ within the University, exploring the use of web based software to support teaching and learning, the technology was not widely used or understood.

**TABLE 1.2: Growth in number of courses registered in the RMIT DLS (Source, DLS system data)**

<table>
<thead>
<tr>
<th>Version of the DLS</th>
<th>Number of registered courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark-semester one 1999</td>
<td>45</td>
</tr>
<tr>
<td>Semester two 1999</td>
<td>225</td>
</tr>
<tr>
<td>Semester one 2000</td>
<td>683</td>
</tr>
<tr>
<td>Semester one 2001</td>
<td>1053</td>
</tr>
<tr>
<td>Semester two 2002</td>
<td>3671</td>
</tr>
</tbody>
</table>

The DLS project was a significant and courageous attempt to establish an enterprise-wide learning system. While some staff felt that this would limit choice, others felt that it provided benefits that outweighed this disadvantage. The establishment of the DLS as a central system required a decision about which of the existing software platforms and packages to purchase. However, once this decision had been made, it enabled the establishment of a centrally supported system of hardware, the instigation of appropriate maintenance procedures, the development of mechanisms for security, the creation of links into central administrative systems, such as student records, and the creation of support services for staff and students.
The pressure to meet the strategic targets was felt immediately in LTS and led to an increase in the number of individual courses involved in the initial Benchmark project from 12 to 45. Due to this late change, few of the staff joining the project underwent any professional development or training. Over the subsequent years, the DLS continued to grow rapidly, see Table 1.2. More recent system figures indicate that over 45 000 students are registered on the DLS, which accounts for about 80% of students at RMIT University. Most staff received very little support to use the DLS, during 1999-2001, a minority attended a two-hour training session in the use of the software and while some had local mentor support, there was very little support for staff to re-develop course materials, manage online learning or adapt their learning approaches to incorporate the new technology.

1.3.1 Initial Evaluation Activity

Questions soon began to emerge about how to effectively support staff in redeveloping their courses to use the DLS. Along with a colleague, I conducted an evaluation of the ‘Benchmark’ and the results indicated that, despite the user friendly nature of the software in use, the DLS presented a range of technical problems as well as problems associated with professional development for staff using the technology in a teaching situation (McNaught et al. 1999).

Another key issue to emerge from the evaluation reports early in the project was the recognition of the need for more thorough planning and educational thinking prior to going online (Kenny 2000). Among the key success factors identified in the literature for educational technology projects were the appointment of a project manager, the clarification of the educational focus of the project at the outset, senior management support for the project, the provision of adequate resources for development and ongoing maintenance of the project (Alexander, McKenzie & Geissinger 1998). This led me to investigate how to use project management processes to support the re-development of courses for the DLS.
To address this need, I developed a ‘planning tool’ to assist managers and address the known educational and technical issues connected to using the DLS. It raised specific educational issues such as: the educational focus of the development, identification of any professional development needs and copyright issues concerning materials to be used or developed. While the planning tool was made available to the managers and course leaders of the 225 courses nominated to use the DLS in semester two 1999, only three of the 225 course teams returned a completed form and some active resistance to its use was expressed. Feedback indicated it was seen by staff as cumbersome and onerous to complete and was viewed as a means to enforce compliance.

A second evaluation at the end of 1999, (Kenny 2000) was consistent with earlier findings that staff needed guidance to adapt to the new learning environment; training in the use of the online tools; and support to integrate the technology into their courses effectively. My experience with the planning tool convinced me that much of the initial activity on the DLS occurred with little real understanding of the implications of new technology for the learning environment or the complexity of the related course development and staff development processes.

The evaluation data indicated that the time and support required for staff was largely underestimated. Much of the work to put a course onto the DLS was expected to be done prior to the commencement of the course, but staff were not given sufficient time to do this within their already full workloads. It is little wonder that the planning tool was seen as an added burden in this situation, however, clearly some means had to be found of factoring the time and resources required to develop courses for delivery in the DLS into the organisational planning processes.

In accordance with one of the recommendations of the ITAP report, 120 Learning Technology Mentors (LTMs) were appointed to work directly with staff in their department and assist them to develop their learning materials to use the DLS, during semester two 1999 and semester one 2000. While the LTMs had the potential to provide on-going direct educational support, the small...
allowance of 26 days release from their normal duties for one semester, meant that many were unable to have a great impact.

I developed a more detailed planning guide to assist staff with course development, based on project management principles and stages, with a view to assist program teams and managers to more effectively plan and manage projects and support staff to use the DLS. The new guide contained five sections: a project scope section, a project planning section, a time line with key tasks identified, a design section, an implementation section and an evaluation section. It aimed to ensure that the resources needed for educational design and staff development were identified and provided and to link into faculty planning priorities, so that the resources required would be signed off by managers.

However, again there was very little uptake of the planning guides within the organisation. While some informal discussion occurred around the suitability of the project management approach to the educational development process, it was clear that some senior academics resisted the use of the tool. This resistance was to be the motivation for commencing my Masters study in August 2000.

1.3.2 Changing Strategic Goals

During 2000, a revised version of the RMIT Teaching and Learning Strategy was launched for the period 2000-2003. Despite the evidence that the existing strategic targets were not being met, the new strategy actually set more difficult targets by introducing the concept of ‘Flagship Programs’ which were to involve the renewal of a whole program for fully flexible delivery, either on or off campus. There was an expectation of the development of one Flagship per year per faculty. In addition, there was also the requirement that all educational programs were to ‘internationalise’ the curriculum and develop ‘Capability Based Curricula’ (Bowden, Hart, King, Trigwell & Watts 2000).
Following a formal review of the courses on the DLS in semester one 2000, the concerns identified in the early evaluation reports were borne out (McNaught et al. 2000). The review was to ascertain the progress towards the RMIT strategic targets, but it revealed some concerning but not unexpected results. About 50% of courses on the DLS were ‘empty shells’ with little or no course material or activity. Most of the rest were grossly under developed or had serious quality defects. The lack of planning and educational thinking was obvious.

As the focus of many managers had been on meeting the strategic ‘60%’ targets, it became clear that little thought was being given to the design of quality courseware and there were few resources in place to support staff. Among the recommendations coming from this review was the establishment of a Quality Assurance (QA) process, to be applied to all courses using the DLS. The report also identified the ‘need for evidence of a planning process’ and to better align the professional development of staff with the course development process.

This apparent lack of quality courseware in the DLS was a cause for concern, and senior management decided, in September 2000, that the resources of LTS were to be directed into supporting each faculty to develop a ‘Flagship Program’ by December 2000. Thus LTS was to withdraw from providing general professional development support across the organisation for the DLS. Support for the LTM program was also stopped.

These decisions were made despite the demonstrable lack of preparedness of the teachers and academics to meet the existing demands on their time. The fact that staff had full on-going work commitments and were about to enter into the key assessment phase of the academic year was ignored. In these circumstances, the expectation that educational development projects of this scope could be completed within three months was clearly indicative of a lack of understanding by management of the complexity of the change process at play.
After some discussion in LTS, the expectations were reduced from the renewal of a whole program per faculty to the redevelopment of four courses per faculty by December 2000. Despite this, the revised expectations still proved to be unattainable. Of the 28 courses originally nominated, only about seven complied with the quality assurance guidelines within the designated time.

In response to this, in early 2001, LTS management established a new project, called the ‘Strategic Courseware Renewal Project’ (SCR). SCR included a director, a technical production group to assist project teams (and act as an inducement to engage with the SCR approach) and a team of educational design and development personnel, to support and coordinate the projects.

A very specific project management process set up for SCR which was based on the concept of ‘rapid prototyping’. Again, ambitious strategic targets were set: 100 courses for renewal in 2001 (25 in semester one, 75 in semester two), to be driven by a tight ‘production schedule’ with a thirteen week timeline with fixed deadlines. The faculty project teams were ‘required’ to adhere to this schedule. These again proved to be unattainable and the SCR process had serious flaws from a project management perspective (Kenny 2002).

**1.3.3 An Organisational Crisis Emerges**

It was in this context that a much broader range of organisational issues became pertinent to my research. The ‘strategic’ organisational targets driving the implementation of the DLS project had been set prior to the commencement of the project and so had little relation to what was actually emerging from the evaluation data. The organisational strategic decision making, and the annual budgeting and planning processes provided little opportunity for influence by the evaluation data and the realities of the change process. There was a clear difference between the focus of management on meeting targets through the development of product and the problems encountered by staff coming to terms with a significant technological innovation. At this time, I realised that the
scope of my study needed to consider the organisational strategic change process and so my research was upgraded to a Ph. D. (by project) in late 2001. This expanded study aimed to identify the pertinent issues and to develop practical processes and mechanisms to effectively implement strategic projects in future.

As an illustration of how organisational events can affect research of this nature, I mention a series of occurrences that also had a great bearing on the strategic directions of RMIT and thus, I believe, on the receptiveness of the organisation to my research.

As mentioned earlier, LTS was set up to manage the implementation of the DLS. In parallel with the DLS project, another section of LTS was conducting a larger project to establish a centralised computer based Academic Management System (AMS). After a period of investigation and development, the AMS was released in late 2001. It was designed to replace most administrative functions of the university concerned with student enrolments, administration of accounts and student results, with new computerised processes.

Unfortunately for all concerned, the AMS implementation was a failure which threw the organisation into chaos. Many staff had to manually process student enrolments and results, as a matter of urgency, at the start of the 2002 academic year. As there had been little or no contingency planning, the credibility of LTS took a severe blow and the extra pressure placed on all staff was enormous. In addition to the millions of dollars already spent, RMIT then hired external consultants to try to fix the problems and make the AMS functional. The consultants were unable to do this and RMIT began to lose very large sums of money. One estimate suggested a total figure of over 90 million dollars (Duncan 2003). In a further tragic twist to these events, the Director of LTS died suddenly of a stroke in April 2002, and LTS was progressively disbanded over the next two years. The resulting financial crisis ultimately led to the resignation of the Vice–Chancellor in September 2004.
As a further illustration of how the organisational context can affect the practitioner research, in late 2003 and 2004, despite the prevailing problems already outlined, senior management initiated a radical organisational restructure. This involved the creation of new senior management positions and a replacement of the seven faculties with three ‘Portfolios.’ This re-structure again placed further significant pressure on staff and consumed considerable resources.

In this environment, while under significant pressure to perform their normal tasks and redefine their roles, it was unlikely that staff would be in a position to address the change issues with which the use of the DLS was concerned. Middle managers had to direct resources to other more pressing concerns. The DLS implementation became less of a priority and senior management began to emphasise ‘Capability Based Curriculum’. Unfortunately though, many of the organisational planning process flaws, which had led to the problems with the AMS and DLS projects, had still not been rectified and were evident in the lack of planning and resourcing associated with the implementation of these projects.

It is within this context that my study shifted from an initial narrow focus of understanding a specific strategic change project, namely the implementation of the DLS project, and subsequently adopted a broader focus on understanding effective strategic organisational change at RMIT. At this stage, the need for a holistic approach to strategic planning had become more obvious and this led me to study strategic organisational change in other contexts.

1.4 Reflection

This research presents data which analyses the DLS project from a number of different perspectives. There is data from teachers and academic staff, project managers, students and my own reflections on the events. The experience has been rewarding on the one hand, but frustrating on the other. As outlined above, for much of the time during the study, the organisation was in
crisis. Managers were not well placed to consider new strategic approaches and tended to be
distracted by other priorities in what became a highly political environment.

Much of the background is explained in more detail in the three papers listed below. As they relate
to data collected prior to the formal study, the papers are not included in the body of the Portfolio
document. The third paper is however presented in the Appendix of the Portfolio, as Item 15.

1. McNaught, C, Kenny, J, Kennedy, P, & Lord, R 1999. ‘Developing and evaluating a university-
wide online Distributed Learning System: The experience at RMIT University’. *Educational
Technology and Society*, vol. 2, no. 4.


Case Studies at RMIT’. *Proceedings of the Moving Online II, Conrad Jupiters Casino, Gold
Coast, Queensland*. Southern Cross University.

These documents clearly show that professional development and planning issues were identified
concerns from very early in the DLS project. They also highlighted technical problems and staff
workload as key issues. The papers called for an integrated planning and development process to
ensure the staff were supported and resourced to do the development work required. One of the
background papers cited above (Kenny 2001b), reported on a series of case studies coming from an
evaluation activity aimed at obtaining richer data on the educational effects of using the DLS on
staff and students. The case studies gave a much richer picture of the practicalities and issues faced
by teachers who wished to use the DLS in their teaching and the feedback reinforced much of the
earlier data.
The case studies clearly highlighted how staff would approach the use of the DLS with caution until they gained confidence in the reliability of the system and saw the response of students to it. They highlighted how the technology needed to be integrated into the design of the courses. This work was a prelude to my research, but the feedback in these reports had little influence on the project as a whole. While strategic targets were set, the resource implications went unaddressed and the subsequent problems became more serious as the system grew rapidly.

The difficulties in research of this nature became more evident as I had to reconcile the realities of the political developments and changes in strategic priorities, with the theoretical knowledge that was emerging from the research. As a practitioner researcher, I was attempting to capture learning as it happened and to consider how to effectively inform the organisation about this learning. However, the theoretical knowledge and research data often pointed to flaws in existing processes or did not support existing agendas within the organisation, and this often placed me in conflict with those driving the organisational strategies. There were implications for me of proposing new approaches which questioned the strategic directions proposed by management. I found it difficult to find an audience for these ideas in the organisation. In addition, during the study, RMIT also had to respond to various internal and external pressures, as described in this chapter, which led to changes in the strategic priorities of the organisation.

These and other practical issues associated with conducting research in a changing and dynamic environment will be considered in more depth in the next chapter, which explores the development of the methodological approach adopted for the research.
Chapter Two - Research Methodology

This chapter presents a discussion of the design of the research project and a rationale for the methods used. The project to implement the Distributed Learning System (DLS) provided the impetus for my research. It presented a unique situation for a study, as it involved an educational innovation using new technology with significant implications for the practice of academics and teachers at RMIT. Further, DLS was seen as a significant organisational initiative, which was strategically important for the sustainability of RMIT. My task as a researcher was to find a suitable approach to study this dynamic and evolving situation.

In discussing the design of the study, I consider the ‘four elements’ of a research design as presented by Crotty (1998: 4): the epistemology, theoretical perspective, methodology and methods. Crotty (1998) argued that consideration of each of these elements in the design of the research would enable a researcher to ‘justify’ the design of a research proposal and add to the ‘soundness’ of the research. In exploring the development of the methodology, I will consider the connection between these elements, and how they relate to the particular contextual and ethical issues and challenges I faced.

The epistemology refers to the underlying theory of knowledge generation held by a researcher. There are two main competing research paradigms in the social sciences: ‘the positivist mainly quantitative paradigm; and the phenomenological, interpretive, mainly qualitative paradigm’ (Zuber-Skerritt 2001: 3). Crotty (1998) maintained, as the underlying theory of knowledge generation, that the epistemology is embedded in the theoretical perspective taken by the researcher and also, therefore, within the methodology chosen when designing a research project.

As a researcher coming from a constructivist perspective, I hold that knowledge (truth) is relative and I construct a personal view of reality through reflection on my experience. I also believe that
the purpose of research is to ‘know, understand, improve or change a particular situation’ (Zuber-Skerritt 2001: 5). From this perspective, learners (researchers) continually interact with their environment and compare new information with their existing knowledge base, making adjustments where necessary: thus knowledge is relative and situational. In epistemological terms, then, this research is clearly located within the interpretivist phenomenological paradigm.

Realistically, a constructivist approach was the most suitable means of studying the DLS project. A project of this scale and complexity could not be limited to a controlled experimental situation once it had begun. Indeed, as described in Chapter One, the initial attempt to conduct a small controlled pilot project during the ‘Benchmark’ process was swamped by organisational pressure to meet strategic targets. The research methodology I chose therefore had to be one that could respond to the emergent nature of the project.

2.1 Methodological Issues

The complex and constantly changing context in which the research occurred meant that the design of the project was problematic. As a researcher working within the organisation, and also within the specific project understudy, I was presented with many situations which were unpredictable and beyond my control. However, I was also in a good position to witness the project as it progressed.

The developmental path of my research design has some of the characteristics of the practical process described by Crotty (1998: 13). The study began with a ‘real-life issue’ prompted by my experience in the DLS project, specifically, my endeavour to understand the project management process in relation to educational development projects and to validate a tool designed for this purpose. In designing the study, I had to ‘create a methodology’ as ‘every piece of research is unique and calls for a unique methodology’ Crotty (1998: 13). However, the task of developing an appropriate methodology, rather than ‘plucking a methodology off the shelf’ (Crotty 1998: 14),
involved a significant development process which continued throughout the project. It was not a neat, linear process from the formation of the research question to conclusions, as implied by Crotty’s model. Indeed, as the study progressed, even my initial research question was soon found to be too narrow and had to be broadened. Eventually, I formulated two research questions:

1. What are the key lessons from the strategic project to implement the DLS at RMIT University?
2. What principles and processes could be applied to ensure the effective implementation of strategic projects in the future?

The first question involved studying the implementation of the DLS at RMIT and was an extension of the focus of the initial Master of Education study. This aspect involved the collection and analysis of data from a range of stakeholders both within and outside of RMIT and was done over an extended period of time. The learning was built into several iterative cycles of planning, acting, observing and reflecting. Eight such cycles are reported in this study, three completed prior to the start of the formal study and five during the study (see Section 2.3 below). Methodologically, my intention in designing the study was to adopt an action research approach, as described by Zuber-Skerritt (2000) below:

*Critical collaborative enquiry by reflective practitioners who are accountable in making the results of their enquiry public, self-evaluative in their practice and engaged in participative problem solving and continual professional development.*

*(Zuber-Skerritt 2000: 26)*

In practice during the study, I was able to meet most of these criteria, but the areas which caused me the most difficulty were the collaborative/participative aspects, partly due to the nature of the project, but also because of the structure of the “Research by Project” program as it was first introduced.

The “Research by Project” program was an initiative of the Faculty of Education Language and Community Studies at RMIT University and I was a student in the inaugural intake. The program
appealed to me as a practitioner, because it offered support and enabled me to do research on an area related to my professional work. However, as a new program, it had some teething problems which led to changes in the management of the project. This affected the design and development of my research directly, as I had, over the period of the research, a total of five different supervisors, including three within the first year. Each supervisor understandably had his/her own particular areas of expertise, and his/her own perspective on my research, which required a degree of re-focusing at each change.

Initially, syndicate groups of students were formed to enable a collaborative element of the research to develop. However, the group of which I was a member consisted of people from a range of different backgrounds and organisations working on totally unrelated topics. Early on, the group met a number of times in forums organised by the supervisor and, at my prompting, we even tried to promote contact online by establishing a discussion board in the DLS. Ultimately, though the group dissipated and I found myself working in isolation most of the time.

Due to these developments, I made a conscious decision, at an early stage in my research, to use publications and the associated peer review process, to test the originality and relevance of my work and to fulfil the requirement of applied action research to share the findings. In addition, I also made a concerted effort to engage in discussion with others at RMIT, by offering ideas flowing from my research to team meetings, informal discussions with individual colleagues, developing a number of discussion papers as well as organising and conducting a forum.

It is evident from the literature that various applications of action research/action learning methodologies have evolved to suit different situations. For instance, amongst those listed by Kemmis & McTaggart (2000) were participatory research, critical action research, industrial action research and classroom action research. Zeichner & Noffke (2001) described Practitioner Research as a form of participatory research, in which the practitioner not only is an active participant in the
research process, but where the practitioner is the researcher. Hewitt-Taylor (2002: 33) described ‘Insider Research’ as ‘conducting research in an organisation or culture to which the researcher belongs.’

My research clearly has characteristics of both practitioner action research and insider research. From a methodological point of view, research of this nature is open to the criticism that a practitioner may not necessarily have the skills to do meaningful research (Zeichner & Noffke 2001). However, Kemmis & McTaggart (2000: 591) claimed that the ability of the practitioner researcher to collect ‘timely evidence’ was a legitimate ‘trade off’:

…some loss of methodological sophistication is a price worth paying in most practical contexts of transformative social action.

Kemmis and McTaggart (2000: 592)

In methodological terms, there are also potential problems with insider research. Some of those identified included: failure to be aware of the ‘taken for granted’ aspects of an organisation; loss of objectivity; being inundated with material because they know too much experientially; or alternatively having difficulty interviewing colleagues because they assume the researcher has the common tacit knowledge; potential difficulties which may arise during the interview process due to changing between roles from a colleague to a researcher, particularly when power relationships were involved (Hewitt-Taylor 2002; De Lyser 2001: 441-442). Hewitt-Taylor (2002) also commented on the possibility of pressure arising to suppress data critical of the organisation, thus distorting the pursuit of truth.

These difficulties were contrasted with the advantages of being on the inside, such as: ease of access to people and information; knowledge of the cultural and historical context; and the ability to get results relatively quickly, when compared with the time taken to get inside a different organisation. Kemmis & McTaggart (2000: 590) also pointed to significant advantages for researchers of having an insider view: the unique opportunity to move ‘between two thought
positions’. With the ability to take a ‘subjective’ inside perspective, as well as the ability to step back and take a more ‘objective’ outside perspective. The insider researcher is uniquely positioned to consider critical questions about how the situation came to be and where it might lead. For these reasons, they argued that participatory research should be the ‘method of choice in social research’ (Kemmis & McTaggart 2000: 590).

However, as De Lyser (2002: 442) pointed out, the concept of the ‘insider’ is not as straightforward as it seems: ‘In every research project we navigate complex and multi-faceted insider-outsider issues.’ Insiders in one situation can also be outsiders in another. This was evident in my own research, for example, I would be considered as an insider in terms of my work group within Learning Technology Services (LTS). However, as a member of a central service group for the University, serving staff from seven independent faculties, many of the staff I encountered in my role would have seen me as an outsider. Often my role was that of a consultant, offering policy or educational advice, or conducting staff development within the University. Indeed as time went on, to some degree I became an outsider within LTS, as I was progressively sidelined due to my critical stance on a number of issues.

My research therefore contained aspects of both insider research and practitioner research. I had insider knowledge of the organisational culture and the DLS project which certainly assisted in being able to carry out my research. However, in terms of my relationships with the participants in the research, I largely took the position of a fellow practitioner trying to come to terms with a complex change project. In this role, I experienced first hand the frustrations, achievements, opinions and reactions of staff as they wrestled with change due to the DLS project and the other organisational developments. My responsibility as a researcher was to accurately determine what was happening and communicate my findings, in order to inform the direction of the project.
2.1.1 Research design

The model presented by Crotty (1998:4) is not meant to imply, that designing a research project is a linear process, flowing from an epistemological stance at the top through to methods chosen at the bottom, nor the other way around. Indeed, he identified the research question and methods as the starting point. The value of the model lies in the framework it presents for evaluation of the research, which ensures that important questions and assumptions underlying a research proposal are identified and addressed. Crotty (1998: 2) argued that at the outset of a research project, ‘we need to put considerable effort into answering two questions. First, what methodologies and methods will we be employing in the research we propose to do? Second, how do we justify this choice?’

In my own case, as Crotty (1998) suggested, I began with a real life problem, but the design of the research project was not as straightforward as his model indicates and it went through a number of stages. Initially, in deciding how I might approach the problem, my actions were, to some degree, driven by the University’s formal requirements for ethical approval. This process required an initial project design, which proved to be only a starting point. Once underway, the research process was, to some degree, beyond my control. By definition, research is a discovery process, the outcomes of which cannot be totally pre-defined or predicted, and as the description in Chapter One clearly illustrated, the ensuing organisational developments were totally unpredictable.

The development of the research design was therefore influenced by the organisational context in which it was occurring. However, in parallel with these influences, there was another developmental factor influencing the research project. One which Crotty (1998) did not account for: the fact that I was also developing as a researcher. In the beginning, as a student I would be considered an ‘apprentice researcher’ (Hodges 2004). It is reasonable to expected that my understanding of, and skills in, the research process would develop considerably over the course of
the project. Indeed, it would be strange if this development did not happen. With this in mind, my original research plan must be judged against the rudimentary level of understanding of the research process which I had at the time.

As a novice researcher, I clearly then faced different problems in designing my research proposal, when compared to someone with considerably more research experience, as I could not draw on a research experience base. In respect of Crotty’s four elements of research design, my understanding of these also have deepened over time. If I had attempted a definitive design for the project prior to beginning, it may well have been detrimental to the study and discouraging for me. It would have used up valuable time (as the project was already underway) and would not have allowed for the developmental process outlined.

With the DLS project already well underway (see section 2.3.1 below) I devised and implemented an initial research plan, and while its inadequacy soon began to show, the initial proposal served my purposes well. It enabled me to comply with the formal ethical and administrative requirements of the program yet also to collect timely data. This timeliness of the data was a crucial aspect of the study (Kemmis & McTaggart 2001: 591). As my research knowledge grew, and I became increasingly aware of my own implicit theoretical perspectives, I became more able to consciously apply the new knowledge to the interpretation of the data and the changing design of the study.

In criticizing Crotty’s approach, Vaughan (2004: 180) rejected the assumption implied in the model that ‘the research environment or context is stable and consistent’. She argued that the ‘instability of the research context (due to its constant state of change) requires a more flexible model of conceptualizing and articulating the research process and outcome.’ With the search for meaning as a prime purpose of the research process, she proposed that what is required is ‘a hybrid approach to research design’. In this view, the learning from the research influences the direction of the research, as it happens.
Such an approach requires us to move beyond the linear or singular model of conceiving research through one methodology and related acts. What is appropriate at one stage of the research may not be appropriate at another.

Vaughan (2004: 182)

Vaughan’s view more closely resembles how my own research plan developed. There were many simultaneous influences at play; the changing and dynamic organisational context, my own changing research capabilities, the implications of the learning which emerged and its influences on my own practice; the evolution of the research program in which I was enrolled; and not to forget the inherent contestability of the interpretive research tradition itself.

The above call by Vaughan (2004) for the researcher to be able to draw on a variety of methodological approaches at different stages within the one study, extends the notion of a researcher using a variety of methods to ensure a ‘plurality of perspectives’ (Kemmis & McTaggart 2000: 580). Here Vaughan (2004) is calling for the need to make adjustments to the methodology, or research design, as the situation under study changes. This also extends the notion of the researcher as the designer of the research (Crotty 1998). Design is an interactive process, so if the situation or context that is under study changes, it follows that the research methodology may also need to change. From my perspective as a practitioner research, this re-design process occurred as the research proceeded and was inherent in the reflective cycles of the action research process.

Thus the different research paradigms are not so much distinguished by the methods or even methodologies they make use of, as both quantitative and qualitative methods are in use across the different research paradigms. They do however differ considerably in the theoretical perspectives applied to the interpretation of the resulting data (Charmaz 2000; Crotty 1998; Zuber-Skerritt 2001; Kemmis & McTaggart 2000).
2.1.2 Changing perspectives

Earlier, I explained that my own capabilities as a researcher grew over the course of the project. This process was brought about largely through a broad reading of the literature and through the act of justifying, to myself and others (such as my supervisors and through the publication process) the underlying theoretical perspectives and values I brought to the research. A major strength of the ‘by project’ approach to research was that, as I became increasingly aware of my own perspectives, I was able to apply them to understanding the developments as they happened. This was very suited to me as a practitioner and fostered my development as a researcher, as alluded to previously.

Zuber-Skerritt (2001: 9) noted that the development of the researcher during the research process is common and, indeed, something to aim for ‘in order to achieve far-reaching transformational change.’

Most of us, as critical action learners/researchers started with technical, then proceeded to practical and finally understood and practised critical modes of inquiry.

(Zuber-Skerritt 2001: 9)

Zuber-Skerritt (2001: 5) also claimed that interpretive approaches to research are concerned with the particular situation under study; that they do not aim to make generalisations from the findings. She argued that the aim of interpretive research is to understand the fluid, dynamic and complex situation under study; that the researcher is looking for ‘perspectives, rather than truth’. This description applies to the first of my two research questions. However, there is a problem in applying it to the second of my research questions, which clearly involves the establishment of generalisations.

It was evident that the two research questions required quite different methodological approaches and there was a seeming contradiction here. However, *Grounded Theory* is a methodological approach which maintains that, in complex social settings, theory can emerge from the data (Glaser...
& Strauss 1967; Glaser 1995). This ‘grounded’ approach argues that generalisations can be made based on the evidence at hand. I drew on this theory to inform the study and to address the second research question.

As the study progressed and the scope was broadened further, it became necessary to draw on aspects of other methodological approaches besides Grounded Theory. The expanded study was informed also by Critical Theory, which requires the researcher to critically consider the historical and power relationships at play in a social setting; and Systems Theory, which leads the researcher to consider the effects of action more holistically (Zuber-Skerritt 2001; Kemmis & McTaggart 2000, Senge 1990).

The development of the critical aspects of my research is also evident (Zuber-Skerritt 2001; Kemmis & McTaggart 2000). Initially, as I came to understand the DLS project and its implications for teaching practice, I operated on the level of a ‘technical inquiry’ (Kemmis & McTaggart 2000: 583). At this stage, I did not question the values and principles that were behind the implementation and I was engaged in developing and improving the effectiveness of the implementation process, based on the evaluation of my experiences and reflections during the implementation. This is also indicated by my belief, at the time, that the organisational quality assurance process was a suitable vehicle for change (Kenny & McNaught 2000; Kenny 2001a).

Over time however, the planning and professional development issues began to emerge, and the complexity of the change process became more evident. As I began to apply my learning to the understanding of the project, I came to question key aspects of the project, and the research took on aspects of ‘practical inquiry’ (Kemmis & McTaggart 2000: 583). At this point, my reflective process demonstrated the characteristics of ‘double-loop learning’ (Argyris & Schön 1996: 19-22), in that I came to question the organisational processes, underlying values and the strategic goals. I consistently also tried to engage my colleagues in discussions around these ideas.
Later, as the implementation proceeded and the management priority shifted towards the achieving tangible outcomes, such as the production of course content material, my research took on the characteristics of ‘critical inquiry.’ The evidence clearly indicated that the management performance targets were unrealistic, and that there were significant problems with the strategic approach and organisational decision making process. The combination of the organisational problems and the critical nature of my findings, contributed to my inability to have these issues discussed within the organisation, so I increasingly used publications to engage with the broader academic community.

This growth in the critical perspective of the study arose naturally, as I was developing as a researcher, along the lines described above (Zuber-Skerritt 2001), searching for a truthful understanding of what was happening in a complex and dynamic change project. The research and my experience led me to believe that the organisational strategic decisions were a reaction to the crises, and that the positivistic strategic targets, which were unrelated to, or tempered by, the reality of what was actually happening. Clearly my perception was formed by the evidence I collected, the situations in which I found myself and my own beliefs about the change process. It is also evident that quite a different perspective was held by management which led to significantly different decisions to those I had been recommending. The main problem for me was that there was no mechanism by which my ‘voice’ as a practitioner could be heard, so the ideas could at least have been considered.

The influences of Systems Theory (Senge 1990) on my research were also evident from the outset as I had consistently maintained a holistic view of the issues and had advocated organisational approaches (See for example Portfolio Item 4, Kenny 2000; Item 5 Kenny 2002; and Item 10 Kenny, Quealy and Young 2002). To my way of thinking, the planning and resourcing problems and professional development issues, which were behind the problems with the DLS project, had to
be tackled from an organisational perspective. Recognition of the importance of the organisational culture and the need to investigate the strategic planning process were further developments of this systems theory aspect during the study.

The Methodology in Practice

As indicated above, there is a degree of imprecision in the definitions of the various methodological approaches. Judging research of this nature then, should not be based so much what Kemmis and McTaggart (2000: 593) referred to as ‘methodological purity’, but rather on whether it achieves its primary purpose: that the researcher critically examines his/her own understanding and practices within a social situation; and that it makes use of evidence from a range of different perspectives to get a multifaceted, and more complete picture of the reality under study (Kemmis & McTaggart 2001: 580).

…in order to confront and overcome irrationality, injustice, alienation and suffering in these practice settings and in relation to the consequences of their practices in these settings. (Italics in quote)

Kemmis and McTaggart (2000: 593)

Ultimately, as a practitioner researcher, I was searching for a credible version of the truth in my workplace. Credibility goes to the heart of the validity of the research and is related to the justification for the research methods used and the interpretation of the evidence obtained. In the interests of establishing the credibility of the study, some questions arise, such as: How much were the analysis and findings influenced by my own reactions to the development during the study? What relationships did I have with those who participated in the study? These and other questions are ethical in nature and will be considered more fully in the next section.


2.1.3 Ethical Issues

In terms of the general ethical issues related to my research, formal ethical approval was granted by the Faculty Research Ethics Sub-Committee on June 29, 2001. My research proposal sought permission to use questionnaires and conduct interviews within the organisation. Approval from the organisation to carry out my research was also implicit in the following quote from the official course documentation provided for students in the “Research by Project Program”:

Research by project enables the participant to develop a project that is significant in their chosen profession and contribute directly to their organisation. The aim is to create research and development capability within the organisation, produce a tangible outcome from the project that is transferable to a wider audience in the workplace and develop research skills within the participant.

Copy of Course Documentation supplied to students:

“Management Plan for Research by Project” (Overview, page 1)

Therefore, a key aim of the “Research by Project Program” was that both the organisation, and myself as the researcher, would benefit from the study. The organisation would benefit from the tools and processes flowing from the research, while I would benefit by improving my own practice, increasing my research skills and gaining a qualification. To this list of benefits, Hodges (2004: 66) added making ‘a contribution to scholarly or professional knowledge.’ Clearly, the organisation would have benefited from the increased revenue and research profile flowing from the papers I had published.

Further evidence of organisational support for my research was the fact that my manager at the time was also initially one of my co-supervisors and that RMIT University provided me with an exemption from course fees (HECS). I interpreted this as an implied agreement between myself and the University, in which I had an obligation to share the learning from my research within RMIT. As a professional, I took this commitment very seriously; even though it came to have increasingly deleterious consequences for me as the research progressed and my findings became more critical
of the organisation (see Chapter One and Section 2.3 below). The question for me was not “if” but “how and when” to make the information which was emerging from the research available to the organisation. As my attempts to do so became more politically disadvantageous, I came to rely on peer reviewed publications as the main outlet for dissemination and feedback on my ideas.

Due to its nature, the criteria of validity traditionally used in the scientific research paradigm, such as the replicability and statistical validity of data and the generalisability of conclusions are inappropriate for judging the quality of practitioner research (Zeichner & Noffke 2001). However, as they pointed out, there is still much debate about how the ‘value’ of practitioner research should be judged (as opposed to its ‘validation’ by academics) and the role that the practitioners themselves should play in this process. Zeichner & Noffke (2001) proposed ‘trustworthiness’ as a more suitable basis on which to judge an interpretive study and noted the close link between ethical considerations and trustworthiness:

…the boundaries between the epistemological and ethical issues that are commonly experienced in discussions of positivist research are beginning to break down. The ethical dimensions of the research process are now commonly viewed as a central part of the process of determining the quality of the research.

Zeichner & Noffke (2001: 318)

Zeichner & Noffke (2001: 318-323) considered a range of means to gauge the ‘trustworthiness’ of data including: triangulation (comparison of findings across different data sets); disclosure (self-reflection and openness by the researchers of his/her own pre-conceptions and their affects on the research; face validity (does the data make sense to the participants in that context); and relations (explicit statements about the nature of the relationship between the researcher and the participants in the study). They were clear that whatever means are used would necessarily contain a strong ‘moral and ethical component’ (Zeichner & Noffke 2001: 323). A number of these points will be discussed below in the relation to the particular sets of data collected.


**2.2 Methods**

As mentioned earlier, Kemmis & McTaggart (2000: 592) encouraged the use of evidence from across ‘the range of different perspectives’ within a setting. Denzin & Lincoln (2000: 3) described the researcher as ‘Bricoleur’ where the researcher is involved in ‘deploying whatever strategies, methods, or empirical materials as are at hand.’ While acknowledging that research and evaluation are not the same, Phillips et al. (2000:1.4) described a similar multi-method approach to evaluation as an ‘eclectic-mixed methods pragmatic paradigm’. Thus the researcher is encouraged to use a wide range of methods including qualitative and quantitative methods (Crotty 1998; Kemmis & McTaggart 2000; Zuber-Skerritt 2001) according to the requirements of the particular situation.

According to Zuber-Skerritt (2001: 5), the use of a variety of methods enables the researcher to give ‘an honest account of how the participants in the project view themselves and their experiences.’ This principle was applied in this study. The evidence collected in this research came from staff, students and managers, as well as various secondary sources of information. The mix of evidence included both qualitative and quantitative methods and enabled ‘triangulation’ to be used as a means of validating and confirming the findings (Denzin & Lincoln 2000: 4; Kemmis & McTaggart 2000: 580; Zuber-Skerritt 2001: 4).

A particular advantage of the DLS technology was the ability to create online questionnaires. Having the questionnaire available on the internet enabled me to reach a wider audience, both inside and outside of RMIT, than may have been possible otherwise. It also avoided the cost of expensive mail outs or print runs and offered the respondents the convenience of completing it at a time and place that suited them. The ethical integrity was maintained as, when the data was submitted, it went directly to a secure electronic database and was ready for analysis.
Three such questionnaires were used, one for project managers, one for students and one for staff involved in the professional development program. Each questionnaire was designed to collect both quantitative and qualitative data. They largely consisted of closed questions (e.g. 'Likert' type) which made them easy to complete but still permitted coverage of a range of topics. Each also contained at least one open question to enable respondents to expand on their responses if they wished. This design proved to be a good combination. The closed questions enabled the statistical analysis of the data, which was particularly useful for the large amounts of data collected from the students. With the student data, I was able to explore possible relationships between the variables using chi-square analysis (Kenny 2003c, See Portfolio Item 2). The responses to the open questions added richness to the data by enabling students to elaborate on the issues.

It could be argued that using an online questionnaire format may have biased the data by discouraging responses from those who were less confident with using the technology. In the case of the project manager questionnaire, this is unlikely, as the target group was professionals who would have been very familiar with the educational use of technology, as they were experienced managers of educational development projects (see Item 1 in the Portfolio).

As for the online staff questionnaire, it was used with staff who attended the professional development program. The use of this aspect of the technology was a key learning outcome for the program and staff were well aware of how to access and complete it, so again it is unlikely to have been a factor of bias in the data.

In the case of the online student survey, the chances of bias due to the technology are greater than in the previous two cases. Students who were disenchanted with the technology may not have accessed or completed the questionnaire. However, as I was particularly interested in how the use of the technology affected the educational experience of students who used it, the target group included any students who had been using the DLS on a regular basis and who could compare it to
their previous experiences. I assumed that, for these students, the use of the technology had been built into the design and structure of their courses and that they had acquired a reasonable level of proficiency in its use.

Nevertheless, it is still possible that some students may have been unwilling to or unable to describe their course experience in this format, but this is a possibility with any voluntary questionnaire, be it online or not. Alternatively, it is also possible that some may have been so outraged by their experience that they were motivated to respond when they may not have done so otherwise. Indeed some of the student responses did display a high degree of anger and frustration with the technology (see Item 2 in the Portfolio, Kenny 2003c). In the next few sections, I will consider aspects more specifically associated with the validity of each of the data sets.

2.2.1 Project Manager Questionnaire

In the early stages of the study, online technology was used to great effect to survey the project managers. A message was posted to a professional discussion board explaining the purpose of the questionnaire and seeking suitable respondents. The message provided direct hyperlink access to the online questionnaire. Those who responded did so voluntarily. The flexibility and convenience of this approach resulted in feedback by 25 project managers from 16 different educational institutions around Australia. While I am not aware of the number of active participants using the discussion board at the time, I believed this was a reasonable number of returns and a good spread of institutions to be able to explore the project management process in tertiary institutions further. The results are presented in a published paper (Item 1 in the Portfolio, Kenny 2004a) and the items in the questionnaire can be found in Appendix One.

The survey aimed to identify any peculiarities associated with the tertiary environment in relation to the management of projects. It queried the project managers about certain aspects of their work
as project managers and how this related to other duties they had. In particular, the survey asked about:

- The extent of their experience, and qualifications in project management.
- The state of any institutional project management processes and guidelines available to them.
- The supports offered to them and their team in their role.
- The levels of control and autonomy they had over projects of which they were in charge.
- The proportion of their time devoted to the project management role.
- What worked well, what blocks they encountered and what they would do better in future projects.

As the researcher, the only relationship I had with the respondents was that of a professional colleague. In all cases the respondents voluntarily completed the questionnaire and they were provided with information about my research in a plain language statement, according to the ethical requirements. All except three of the respondents were from different institutions. The three respondents who were from within RMIT, while known to me professionally, were independent academics and I had no authority over them whatsoever. The anonymity of all respondents was maintained in the subsequent analysis and reporting on the data.

**2.2.2 Student Feedback Questionnaire**

The student perspective was gained through an online questionnaire designed to gauge the impact of the DLS on their learning experience. A trial of the student questionnaire a year earlier had shown that it needed to be kept short and easy to complete, consequently it was designed using only 25 questions, 24 of which were closed questions with one open response question at the end.

The questionnaire was made available via the login page of the DLS where a notice was placed explaining the purpose of the questionnaire and asking them to voluntarily complete it. Their
anonymity was assured by providing a link to a webpage with a generic login to access the survey. The data provided was saved directly into a secure electronic database.

The questions fell into three categories (See Appendix Two for a copy of the questions): 

1. Background information

2. Educational issues
   - flexibility of the learning,
   - opportunities for interaction and communication,
   - assessment experiences, administration,
   - access to learning resources
   - overall affects on learning as perceived by the students

3. Technical issues
   - login and access

I had hoped for a large number of responses, and was pleased when a total of 620 students completed the questionnaire, 431 of whom also provided a response to the open question. I subsequently published the results and analysis in a paper (see Portfolio Item 2 Kenny 2003c).

Again, in terms of relations, as a member of staff who was not teaching, I had no relationship with any of the students, so power is unlikely to have been an issue in their responses at all. It is also possible that presenting the questionnaire online would have served to enhance their sense of anonymity and make the questionnaire more convenient to use.

**2.2.3 Staff Development Evaluation Questionnaire**

As the project involved the adoption of relatively new technologies and their incorporation into teaching practice, there was a need, identified in the early evaluation reports, to provide the
academics and teachers with support to use the DLS effectively in their teaching. To meet this need, I set-up an action learning project to develop a program called ‘Teaching and Learning Using the DLS.’ Information about the program is presented as Item 11 in the Portfolio.

The development of the program occurred over three years and during this time, it underwent four iterations. Feedback from the participants was used to improve the program and this is discussed in detail in Chapter Five-Professional Learning. A copy of one version of the feedback evaluation form is provided in Appendix Three.

In disclosing my relationship with the participants, as the designer and facilitator of the program, I had no authority relationship with any staff who participated. Most were voluntary participants, and those who weren’t attended because the delivery of a program had been negotiated with their work group. In addition to the formal feedback, other data was collected, including statistics available from the DLS system, which enabled usage patterns, such as time and frequency of access, to be studied. Informal comments by participants were also noted during the professional development activities and used to improve the program.

### 2.2.4 Staff Interviews

In order to get a different perspective from staff on the implementation of the DLS, which included reflections on the historical and political dimensions of the project, I approached 11 staff for an interview. The staff approached had been involved in the DLS project since its initiation. Seven of them agreed to be interviewed.

Again, the participants were voluntary contributors and, while I knew them professionally through their involvement in the project, I had no authority over them. Their anonymity was assured and they were provided with the information about my research in plain language statement as required by the ethical standards.
I conducted a series of semi-structured interviews, using a series of open questions which are available in Appendix Four. The interviews were arranged to be held at a place and time of mutual convenience. I took notes during the interviews, transcribe the notes into an electronic document which I then emailed to the interviewees for comment and or correction. The version which they returned to me then became the permanent record of the interview. At all times the identity of the participants was protected. I subsequently presented the results in a paper reproduced as Item 3 in the Portfolio (Kenny 2004b).

2.2.5 Secondary Data

The implementation of the DLS required new organisational processes to be developed and some existing ones to be modified. Organisational policy and strategic documents, previous evaluation data and reports were used as sources of secondary evidence.

Another source of secondary data was the extensive literature review which ranged over a number of fields of research including literature concerned with project management, organisational change, teacher change, educational development and organisational learning.

I also kept a journal, especially during the early stages of the research and I used this as a reflective tool to understand the changing context and my reactions to what was happening.

2.3 The Research Cycles

As described earlier, the research process involved a series of iterative cycles based on the action research process ‘learning from action or concrete experience, as well as taking action as a result of this learning…in a cyclical iterative process of action and reflection on action and in action’ Zuber-Skerritt (2001: 1).
The formal part of the research consisted of five iterative cycles, between Semester Two, 2000 and Semester One 2004. These were preceded by three cycles, from Semester Two 1998 and Semester One 2000, conducted prior to the formal study, but which have been included in the Exegesis because they provided the motivation for the study and set the organisational context. These initial cycles also provided some of the secondary evaluation data referred to in the discussion.

In the discussion below, each of the cycles will be briefly considered from a methodological and ethical perspective in order to address the particular issues in relation to the ‘trustworthiness’ of the data and to explain how the research developed over time in response to the learning which was emerging and the changing organisational context. While my intention was to follow an action research process, I found that the organisational developments affected my plans. So to some degree, the research process was reactive as well as proactive. However, what I was able to do was apply my learning to the situation as it unfolded, and in this sense, the research process was consistent.

2.3.1 Cycles prior to the formal study (Semester Two 1998- End of Semester One 2000)

This section outlines the three cycles completed prior to the formal study:

Cycles One, Two and Three-Background to the Study

During this period, I had not yet enrolled in the “Research by Project” program. My experiences during these cycles provided the motivation for my research as I wanted to understand the resistance I encountered to the use of a project management approach to managing and resourcing the educational projects in the DLS. This period also provided valuable background information and evaluation data used as secondary data and referred to in the research, which enabled some triangulation of findings. Much of this period is described in Chapter One.
Key learning

- The organisational planning processes for the DLS seemed to be disconnected from the annual planning processes which were used to make staffing and resource decisions.
- There was insufficient resources allocated to staff professional development.
- Staff were expected to do much of the re-development of their courses without any time or on-going support.
- The Learning Technology Mentors program had potential but there was insufficient time or resources for them to be effective.

2.3.2 Cycles during the formal study (Semester Two 2000- End of 2004)

Cycle Four (Semester Two 2000)-Problems emerge

This was the first cycle within the formal research study, although it is difficult to know exactly when to begin, I have chosen Semester Two 2000 even though the formal enrolment process took some time. My manager at the time had been encouraging me to begin a higher degree, and it was around this time that I made the decision to enroll in the program.

The DLS project was well underway, growing rapidly and problems were beginning to emerge. The desire to develop a workable project management process, as recognised in the evaluation reports was the initial aim of the study. During this period, I concentrated on ensuring compliance with the requirements of the program, specifically, drafting my project proposal, and getting the ethics documentation in order.

However, while this was going on, I was able to begin reading the project management literature and consider how to use the existing organisational processes more effectively. This resulted in the first published paper for which I was the main author, (see Portfolio Item 4, Kenny & McNaught 2000). In Chapter Four in this exegesis, the development of this organisational perspective is discussed more fully.
The evaluation work which I had done over the three previous cycles (see Kenny 2000) had indicated that the complexity of the change process was not well understood within the organisation, and that it was not adequately resourced or supported.

A formal review of the DLS in June 2000 also highlighted many of the problems that had been identified in the earlier evaluation reports, but the political consequences from this report were significant and immediate. Senior management made a decision to focus the resources of LTS on the “Flagship Programs” (refer to chapter One) and away from general support for staff across the board.

While I had not yet fully formed my ideas, I was very concerned about this development. It was becoming clear from my research and the earlier evaluation work that to improve the situation more resources were needed for professional development, not less. Staff needed specific support to change their teaching approaches and engage in the change process.

At this stage, I still believed that the organisational planning process, the quality assurance and work planning processes of the university would alert managers to various problems which had also been identified by the earlier reports and which I felt were also inherent in this change of direction. When this did not happen, I began to have serious concerns about the organisational strategic direction and the lack of effective feedback loops within the university. This convinced me of the relevance of my research topic and of the need to offer these emerging ideas as a potential solution to the problems with the project. At this stage, I still had confidence that an organisation which claimed to be committed to quality assurance would consider all the evidence and implement corrective action accordingly.

**Key Learning**

- Use of new technology for teaching was not well understood by managers or teaching staff.
• Staff needed more support to change their teaching practice to use new technology.

• Staff learning is iterative and most were starting from a low base.

• The flagship programs assumed a higher level of knowledge and technical resources and would be more complex projects to manage.

• The concentration on “Flagship Programs” left a gap in general support for staff to implement the DLS.

• The strategic targets were driving quantity, not quality. There was a push to get the required number of courses in the DLS with little consideration of the implications for teaching or educational design.

• The annual organisational planning process did not link in with the DLS project to enable resources to be directed to where they were needed.

During this time, I had concentrated on refining the planning guides to adapt them to program level projects and share the work with management, but there was no real interest in the guides within LTS as the management of the various projects was largely in the control of faculty staff.

**Cycle Five (2001)-Changing directions**

My concerns with the apparent disconnection between the evidence collected by evaluation and feedback and the managerial decision making process became even greater as 2001 began. The work I had done to develop a planning guide was ignored when the Strategic Courseware Renewal (SCR) project was set-up. This project was designed to enable the adoption of the DLS technology more effectively, but, according to my understanding, there were serious flaws in the project management process established to drive the project. The learning that was emerging from my reading of the project management literature and the questionnaire obtained from the project managers around Australia, only served to reinforce my concerns.

The management decision had been made, with no apparent consultation or reference to the earlier reports. While I and other staff involved in professional development argued for an improved process, we were unsuccessful. As I became increasingly critical of the process and the reduction in
the resources for professional development, against all the evidence, it soon became increasingly obvious to me that there was no room for any debate of the policy.

There seemed to be no organisational mechanism to discuss any of the issues I was trying to raise. The learning from previous cycles was not addressed and I was unable to make any in-roads in the discussion. At this stage, I decided to concentrate on publishing my findings in order to get some feedback from peers on the validity of the ideas. I worked on a paper about the management of educational projects, which was published (see Portfolio Item5, Kenny 2001a).

When given the option, I withdrew from the SCR project and decided to put my energy into addressing the gap in supporting staff to use. I went on to develop the first iteration of professional development (PD) program “Teaching and Learning Using the DLS.” The development of this PD program is described in more detail in Chapter Five of the exegesis and in Item 11 of the Portfolio. The PD program was designed to go beyond the technical training issues and address the educational design and development issues for teachers and academics who used the DLS in their classes. During this period, I also collected the feedback from students via the online questionnaire which was published in a paper (see Portfolio Item 2, Kenny 2003c) and discussed in Chapter 3 of the exegesis.

In an endeavour to share my emerging findings on the management of innovative projects with key RMIT staff, I organised a discussion forum. The forum was attended by 12 key staff from across the university, but although there was some lively discussion during the forum, there was no attempt by managers to engage in further development or consideration of the implications of the ideas beyond the forum.

**Key Learning**

- Innovative projects had very high levels of uncertainty associated with them and required considerable resources.
The management of educational projects had much in common with innovative project in industry.

Innovative projects need to be set-up with very flexible management processes.

Iterative learning processes and communication were vital to reduce uncertainty.

Organisational culture and management support was vital for success of projects.

**Cycle Six (2002)-Professional development**

During this cycle, building on the initial iteration in 2001, I continued to develop the staff PD program. However, its effectiveness was reduced because many staff had to concentrate on coping with the massive enrolment and administrative problems caused by the failure of the computerised Academic Management System (AMS) (see chapter One). With this failure, coming on the heels of the DLS review the previous year, the credibility of LTS was seriously undermined. A lot of resources had to be directed to assist those coping with the crisis.

My understanding of the project management process for innovative educational projects developed further to the point where I was able to place the management of innovative projects into an organisational process context, see chapter four of the exegesis (particularly sections 4.3 to 4.6). Much of this material was published but it had little impact at RMIT (see Portfolio Items 6, Kenny 2002; Item 7, Kenny 2003b; and Item 8, Kenny 2003a).

The PD program developed rapidly as an action learning project into an online format. During this period, it underwent two iterations, based on feedback and the need for it to be adapted to meet other strategic developments within the organisation (as explained fully in Chapter Five of the exegesis).

The concerns about professional development (PD), which I and some of my colleagues continued to express, became a low priority in this climate. The management support required to promote the PD program and to raise awareness of PD as a whole across the University was not evident.
However, I continued to take a holistic view and considered the DLS PD program within the wider organisational system (see section 5.2 in the exegesis). These ideas were developed into in a paper which was published but again had little impact on the organisation (see Item 10 in the Portfolio, Kenny, Quealy & Young 2002).

**Key Learning**

- SCR program proved to be ineffective and did not meet its targets.
- There was little or no change in the levels of staff capability with the technology
- The system led to bottle necks in the production.
- The most successful educational projects used a team based an action learning and staff development focus, rather than simply viewing the academics as content providers.
- Staff who did the PD program still had to complete it in their own time and found it difficult to complete.

In the next stage of development, of the PD program, I set-out to re-develop it as a pathway for staff gain credit for its completion as part of a formally accreditation academic program. I hoped that this would be one means of encouraging staff to complete it and recognizing and rewarding their efforts.

At this stage, I also decided to explore the strategic planning process in the literature to better understand the how strategic decisions are made and to see what could be applied to the situation at RMIT and for innovative change projects in general. This was driven by the fact that, despite my efforts and the evidence of my research, I was being side-lined and becoming ineffectual within the group. My work received little recognition within RMIT and was having minimal influence on the strategic direction of the organisation. I began to consider questions such: “Who or what is an organisation?”; “How are strategic decisions arrived at?”; “What level of alignment is there, or should there be, within an organisation when policy decisions are made?”; “How do large organisations set-up processes to enable input from staff to strategic decisions?”
These questions were particularly relevant to the critical aspects of my research. I wanted to explore how organisations in general dealt with knowledge produced by research or radical change, particularly when it was critical or contradictory to the policy supported by the hierarchy. I also wanted to explore how evidence coming from practice could be more effectively used to influence organisational strategic decision making processes. Clearly the potential for political and power conflicts at this critical level of inquiry had started to become a reality for my research (Kemmis & McTaggart 2000). This change in focus to consider the broader organisational and strategic issues, led to the upgrade of the research into a PhD in November 2002.

**Cycle Seven (2003)-Challenging strategic directions**

From my perspective, the strategic decision making process at RMIT seemed to me to be totally out of touch with the reality I was observing around me. The organisation seemed to be reeling from the effects of the financial crisis caused by the collapse of the AMS and what seemed like incessant changes in strategic priorities.

The uncertainty caused by the unstable context affected my study directly in that it prevented me from conducting a follow-up student questionnaire that I had planned. Added to this, the organisational restructure led to the demise of LTS, the resignation of the manager, the downgrading of support for online learning and the establishment of a new work group, Curriculum Innovation and Design (CID) to which I was assigned, along with my colleagues. While CID had an unclear charter, staff development was clearly not a priority, particularly in relation to the DLS. We were encouraged to wind-up our current projects and concentrate on other priorities (see chapter One).

Again I found myself at odds with a strategic decision, and tried to use the evidence emerging from my research to influence the strategic direction of CID. The program renewal process that had been
established did not address many of the issues that had emerged from my research and had not been validated. Again, strategic decisions had been made at upper management levels and there was little opportunity for input. My efforts to do so were not appreciated by the management of CID, who had developed the approach to program renewal. This was a very frustrating time for many of the former LTS group, including myself. Although I made many efforts to contribute ideas flowing from my research to the workgroup meetings and the structure of the new group, there was little interest shown. It seemed that the strategic agenda had already been set.

By this stage, the research had taken on a cathartic aspect for me. It was a means of me channelling my energy into something useful while the internal confusion around me continued. While there was little interest in my ideas within RMIT, I was able to have three papers published (Item 8, Kenny 2003a; Item 7, Kenny 2003b, Item2, Kenny 2003c).

During this time, I also completed the data set, by conducting the semi-structured interviews of staff about their experiences in the DLS. The participants came from a cross section of the university and particularly sought staff who had been involved with the project from the beginning who would be able to give some historical account of what had happened for them, and what professional development they had undergone. The results were eventually published in a paper, (see Portfolio Item 3, Kenny 2004b).

**Key Learning**

- The political agenda of CID had been set by senior management without any consultation with our group.

- Organisations need to acknowledge the high levels of uncertainty which is associated with radical change.

- The importance of an organizationally sanctioned learning process that looks critically at the feasibility and implications of any radical change needs to be conducted prior to its implementation.
Cycle Eight (2004)-Outcomes

In the final phase of the research, my main focus was trying to influence the directions of the new work group and to contribute ideas to the revisions of the teaching and learning strategy, and the development of a PD policy for the organisation. I was also advocating a trial and evaluation of the learning from my research by using the ideas in the design and approach to some educational pilot projects within CID. It was difficult to be heard in the group. The organisational crisis and restructure continued to cause widespread confusion and the CID management showed little interest in my ideas at all.

Management also made a decision that the staff PD program that I had developed for the DLS was to be handed over to the central technology management group, Learning Technology Services (LTS), and become a technical training program. Despite my objections, the educational aspects of the program were disregarded, a process which had led to the initial problems with the DLS and ignored the learning from the earlier evaluation reports.

During this time, as I became more frustrated with the lack of response to my concerns. I produced a draft discussion paper on a PD plan for RMIT, but my critical stance led to me being offered a redundancy package at the end of April 2004. After which I concentrated exploring the strategic management literature more broadly and on bringing my research to a conclusion.

2.4 Closing reflection on my research experience

Throughout the research project, as I have explained, I experienced considerable frustration and found it very difficult to have my story heard within the organisation. My frustration grew as the organisational crisis became more prominent. However, as a researcher I maintained a commitment to doing what I could to reveal the truth about the situation which was emerging from my research.
The critical nature of my work would have been difficult enough to deal with in a stable environment, but I believe the prevailing closed organisational culture, based on top-down hierarchical management processes, became even more entrenched due to the financial crisis.

I believe that I made every possible endeavour to share my emerging knowledge with the organisation and the broader academic community, but I note that the observation by McNiff (2000: 18) that ‘many people work hard to sustain practices which suit them’, may offer some explanation of the resistance I encountered.

As far as I was able, I kept my personal frustrations from influencing my research. Instead, I used them as a motivator to understand the situation further. I feel the high level of triangulation of the evidence across the various stakeholder groups, the literature and the secondary data is an indicator of the validity of the findings, but ultimately this is something on which the reader will make a judgement.

Through my experience, I acknowledge the importance of maintaining some form of dialogue when dealing with stressful situations, and in hind-sight I would have been a little less strident at times in putting forward my views. However, I also note that communication is a two-way process, and in my experience there was little encouragement within the organisation of alternative points of view.

It may well be true also that in actuality ‘ideas arose largely out of conflict and contradiction’ (McNiff 2000: 20), and my experience tends to support this rather pessimistic view of critical practitioner research. However, throughout the study I remained willing to enter into a dialogue with the organisation, and this along with the fact that I placed my own career situation in jeopardy in trying to do so are, I believe, further indicators of the validity of my research. This aspect was identified as a potential area of weakness for insider research (Hewitt-Taylor 2002).
Added to this is the fact that I deliberately used the publication process to make my ideas known to a wider audience should also support the credibility of the study. However, while the publication process gave me an outlet to express my ideas to the broader academic community, my biggest regret is that, within the organisation, there was such limited scope to engage in fruitful discussion. I truly wished to contribute to the advancement of the change process and the organisation sustainability, and I can only imagine where things might have gone had there been some sense of openness and receptiveness to at least explore these ideas.

The rest of the exegesis document contains a discussion of the evidence and the learning from the research in more detail. It attempts to identify links between the various papers and other components resulting from my research project, to explain more fully the development of the ideas and ultimately to lead the discussion towards some conclusion.

- In the next chapter, the specific evidence from the research related to the perceptions of the stakeholders will be discussed. The three papers, containing the data emanating from the questionnaires of the project managers, students and staff will be considered along with any links and points of triangulation they raised.

- Chapter Four considers the development of the organisational perspective and process of change. The discussion is based around six papers and shows the development of many of the processes and tools emanating from the project.

- Chapter Five describes the development of the staff PD program and also proposes an organisational focus on PD as published in a paper Item 10 in the Portfolio.

- Chapter Six involves a detailed review of the strategic change and organisational literature in and leads to a refinement and further development of the many of the earlier ideas into a
comprehensive model of strategic change, the Maturity Model for Strategy and associated processes.

- Chapter Seven draws the discussion to a conclusion and address each of the two research questions. In responding to the second research question generalisations arise which are then applied to the specific situation of the DLS project, which is the subject of the first research question.
Chapter Three- Stakeholder Perceptions

Most of the primary research data from this study is presented in a series of 10 papers published during the study, which are presented in the Portfolio for convenience. The papers are discussed in turn in Chapters Three, Four and Five of this exegesis and the reader is advised to read the paper relevant to each section before continuing through the Exegesis. In this chapter, three papers are discussed, in Chapter Four six papers are discussed and in Chapter Five the final paper is discussed. For each paper, a reflective commentary is given in this Exegesis which discusses the implications of the findings, explores the development of the ideas and any links between them. This chapter is concerned with three papers which explored the response of stakeholder groups to the use of the DLS at RMIT.

3.1 Project Managers

This paper (Kenny 2004a), titled “A study of educational technology project management in Australian universities” reports on the first questionnaire I developed for the study which collected data from experienced educational project managers. My motivation was to get a clearer understanding of the use of project management and to better understand the resistance to the use of the project planning guides.

Please read the following paper from the portfolio:

Portfolio Item 1- Paper

3.1.1 Reflective Commentary

Kenny (2004a) presented an analysis of the data received from the project managers and a review of the literature concerned with the management of innovation and change. Its aim was to gather data regarding the nature of the project management processes employed for educational projects in various tertiary institutions, including RMIT. A comment from one of the reviewers is given below.

…this paper is of great interest to AJET readers. It investigates the need to use different models of project management in working with university academics. It also discusses the need for synergy between project management and professional development in organizations…This paper provides a useful framework for discussing the differences of managing a project within the university environment. More discussion about innovative projects and an approach to manage innovative projects would be useful.

Comments of one reviewer

This paper provided an overview of the project management approaches in use in 16 different tertiary institutions. It pointed to both the strengths of a project management approach in terms of linking resources and the problems inherent in educational projects, where academics operate as independent experts and tend to have multiple responsibilities. The paper highlighted the need to engage academics in projects, for example, through staff development, and not to view them simply as content experts. It pointed to key project success factors such as projects being properly scoped and operating with good team approaches.

Although the questionnaire was conducted in semester one 2001, the paper was not published until 2004, and therefore it also contains references to some of the ideas developed later. It identified a general under-resourcing and lack of understanding by university management of the demands of educational projects using technology, which was consistent with other findings (e.g. Kenny 2001b, 2004b). The paper drew a clear distinction between projects that involve high levels of uncertainty with associated professional learning and those that do not. It also pointed to the need for managers
to have a better understanding of the demands of educational projects (and by implication innovative projects generally) and to resource them appropriately.

### 3.2 Students

The next paper in the Portfolio, Kenny (2003c), reports on another key part of the primary data from the study. Please read the following paper from the portfolio:

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**Portfolio Item 2 Paper**

Kenny, J 2003c. Student perceptions of the use of online learning technology in their courses. *UltiBase Online Journal* March 2003. RMIT Faculty of Education Language and Community Services, RMIT University, Australia.  
[http://ultibase.rmit.edu.au/Articles/march03/kenny2.htm](http://ultibase.rmit.edu.au/Articles/march03/kenny2.htm)

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The data was collected in an online questionnaire made available to students in Semester One, between April and June, 2001. The paper included a detailed statistical analysis of the 620 responses received and was the first significant attempt to obtain specific data from students in relation to how the use of the DLS was affecting their learning. I had planned to use follow-up questionnaires in 2002 and 2003 to gain longitudinal data, but the organisational developments described in Chapter One prevented this from happening.

### 3.2.1 Reflective Commentary

This paper reinforced many of the concerns expressed in earlier evaluations reports and papers (see Kenny 2001b; Kenny 2000; McNaught et al. 1999). The large number of student responses (620) also enabled some statistical analysis of the data to explore relationships between the variables. This seemed an appropriate use of quantitative analysis as the data were also enriched with qualitative information from the same body of students. It identified the elements of online courses which were appealing to students and established a relationship between student satisfaction and
the capability and confidence of staff with the DLS functionality. The paper also clearly demonstrated the link between well structured and designed online courses and student satisfaction. It also pointed to a need for professional development support for staff as they learn to use the online environment to improve student learning and for support for students as they adjust to the change.

The paper provided further evidence of the negative effects of the technical issues. It supported the approach of linking course development more closely with staff development, a theme consistent with earlier reports (Kenny 2000) and the data from the project manager questionnaire. It also highlighted the iterative nature of staff adoption of the technology and an overall student disposition generally favourable to the flexibility it offered. The paper argued that staff should consider students background, technical capabilities and expectations of learning as part of the change process in adopting new technology. This theme was emphasised again in the next paper.

3.3 Key Staff

The next paper, Kenny (2004b), reports on interviews undertaken with seven staff users of the DLS, conducted in late 2003. It was published as a non-refereed paper. The participating staff, who had used the DLS since its inception, provided answers to a range of open-ended questions.

Please read the following paper from the portfolio:

Portfolio Item 3- Paper

3.3.1 Reflective Commentary

This paper reported on the experiences of the DLS implementation project by the participating staff and the effectiveness of the strategic planning process. The data were consistent with earlier findings about the application of the strategic planning process and the use of strategic targets (Kenny & McNaught 2001). The findings also underlined the importance of on-going staff development as a key component of success and in this respect the study supported the findings from the survey of project managers and the student survey.

While the respondents supported the strategic direction, and saw the strategic project as a motivating factor in their own involvement, they were very critical about the use of the planning process and the use of inappropriate strategic targets to drive the rapid growth in the DLS. The staff were clear that difficulties arose because the strategic plans did not provide for sufficient time and support for staff to adopt the technology and learn from experience. They saw that a more careful planning process may have avoided the persistent technical problems which damaged the credibility of the system. They did point to some successes, as courses progressively improved, primarily where the staff concerned had the capability, vision and confidence to explore the technology in their teaching.

The study also supported earlier findings from the project managers’ questionnaire, of a lack of understanding by managers of the complexity of the change for staff using the DLS. I again found that there was no mechanism for me to feed these findings into the organisation to lead to improvement. This lack of any organisationally coherent processes for feedback of learning was a key theme which led me to study the nature of the organisational planning processes and feedback mechanisms within RMIT and beyond.
3.4 Summary

These three papers offered an opportunity for triangulation of the data, which exhibited a high degree of consistency across the three stakeholder perspectives and with earlier reports. The project managers’ questionnaire pointed to a lack of understanding by managers of the complexities of the change process involved in innovative projects which was also supported by the staff interview data. This lack of understanding had a bearing on the lack of resourcing for projects. It can also be linked to inappropriate use of strategic targets to drive change, as was described in Kenny & McNaught (2001) and supported by the staff interviews Kenny (2004b). The project managers’ survey indicated that some of these problems were quite widespread across the tertiary education sector.

The importance of staff learning as a key success factor in educational projects was clearly expressed by the project managers and in the staff interviews. Students also alluded to staff capability as a factor in their satisfaction. Each of these papers pointed to the holistic nature of strategic educational change and the value of formative feedback as a means of monitoring the direction and pace of change. The findings were very supportive of earlier evaluation data such as Kenny (2001b, 2000) and were instrumental in directing my research into a consideration of the organisational context for strategic change.

The next chapter presents six papers which explored the theme of effective organisational planning process. The papers demonstrate how, as I became more critical, my research shifted from first person action research into second person action research, as I investigated the organisational and professional implications of the strategic change process; and ultimately into third person action research, as I considered the wider systemic implications of the learning and tried to engage with the wider academic community (Reason 2001).
Chapter Four- Managing Innovation and Change

The data from the three stakeholder groups in the previous chapter highlighted problems with the implementation of the DLS project at RMIT. These largely stemmed from a lack of understanding by management of the demands that the project placed on staff. This resulted in a lack of coherence between the organisational planning and evaluation processes, and insufficient attention to and support for the learning of staff as they came to terms with the degree of change involved. Item 1 in the Portfolio (Kenny 2004a) as presented in Chapter Three, also highlighted a range of similar problems at other universities regarding the management of educational change projects more generally. The recognition of the generalised nature of problems with the management of educational projects, led me to broaden the study to consider the RMIT project management process in particular and to an exploration of the nature of effective management processes for innovation and change projects more generally.

The research findings for this area are presented in a series of six papers, each of which drew on the experience of developing and implementing the DLS. These papers can be found in the Portfolio as Items 4-9, and, as before, the reader is advised to read the relevant paper for each section before continuing on with this Exegesis. The papers concerned take an organisational perspective on the management of strategic innovation and change. They provide the theoretical basis for many of the ideas, processes and products presented in the Portfolio and show how they developed over time.

My initial study of the project management literature revealed strong similarities between the management of innovative projects in industry and educational development projects (Kenny 2001a, 2002). There was a debate in the project management literature about how best to manage the creative process of development, e.g. (Lester 1998; Sheasley 1999) which resonated with many of the issues surrounding innovative educational projects (Bates 2000; Phelps et al. 2000). There
was a commonality in the call for more open management processes to deal with the increased
levels of uncertainty associated with these projects which also had its parallels in the professional
change and action research literature. None of these issues could be considered in isolation from the
organisational context: the nature of the strategic change driving these projects, the culture, as well
as the attitudes of management and staff to change, were directly relevant.

4.1 Organisational Processes

The next paper, Kenny & McNaught (2000) explored the problem of alignment between the
organisational planning process and feedback systems to capture the learning. Please read the
following paper from the portfolio:

Portfolio Item 4 Paper

New Learning Technologies: Processes and Plans at RMIT. In R. Sims, M. O'Reilly &
S. Sawkins (Eds.) Learning to choose. Choosing to learn, pp. 655-664. Proceedings
of the 17th annual Australian Society for Computers in Learning in Tertiary
Education 2000 conference. Southern Cross University, Coffs Harbour, 9-14
December.

4.1.1 Reflective Commentary

This paper was the first in which I was the first author and the major contributor. Although my
thinking on this was to change later, at this stage I argued that the existing organisational quality
assurance (QA) process was a suitable mechanism to link the DLS educational projects into the
strategic planning process to address the issues around the lack of resourcing and time. The paper
was advocating an organisational perspective which might have been applicable, and of interest to,
other organisations.
The paper upheld the value of collaboration, evaluation and feedback as key components of improvement and argued that the effectiveness of the DLS would be enhanced if the learning was captured and shared within the organisation. The underlying mechanism proposed to enable this was based on ‘learning conversations’ (Laurillard 1997), at all levels within and across organisational boundaries.

The rationale for using the QA system was to take advantage of the existing continuous improvement mechanisms and work planning process to engage staff in an action learning process of course development. My assumption was that, as the QA process was adopted policy and espoused continuous improvement; it would already be accounted for in staff workloads and would simply need some ‘tweaking’ to include staff learning to use the DLS. Unfortunately this was not the case.

In the paper, the implementation of the DLS technology was seen as a means of encouraging a re-thinking of teaching and learning practices. The paper called for an organisational approach that was a combination of ‘top down’ and ‘bottom-up,’ recognising the holistic nature of the change. It also discussed the effects of the strategic targets as drivers for uptake of the change and raised criticisms consistent with the staff interview data (Kenny 2004b).

The paper also presented a model of an ‘institutional quality process’ for course renewal (this is an early iteration of the processes shown in the Portfolio Items 7 and 11). The model advocated aligning the existing processes of the organisation with the strategy. In particular, the work planning process was seen as a means of ensuring that adequate recognition of the course development time and associated staff development was factored in to workloads. This question of alignment is considered again in Chapter Six.
Kenny & McNaught (2000) outlined many of the themes which would be pursued and clarified at a later stage as my understanding grew. My prime concern here was to propose improved coordination of the organisational processes and more effective feedback systems as identified in the earlier evaluation reports. The paper was quite critical of this as far as the DLS project was concerned and also began to highlight serious organisational problems beyond the project due to lack of buy-in by the staff, a theme also returned to in Chapter Six.

During 2001, I explored project management more closely and how to integrate it within an organisational context and reconcile the apparent clash between managerialism and academic culture.

4.2 Addressing Academic Concerns

The next paper, Kenny (2001a), drew an explicit link between the ideas emerging from the project management literature concerning the management of innovative projects and the characteristics surrounding the management of educational projects and academic work. The parallels suggested a high degree of generalisability for the issues and processes across a number of different sectors. The paper proposed a planning process for educational change projects which was developed further at a later stage. Please read the following paper from the portfolio:

**Portfolio Item 5 Paper**


4.2.1 Reflective Commentary

This paper (Kenny 2001a), shows a development in thinking from the previous paper (Kenny & McNaught 2000). There is a greater recognition of the tensions within the organisation and the competing priorities at play. This paper also foreshadowed the imminent release of the AMS and explored, in more detail, the clash between bureaucratic planning processes and the independent nature of academic work. In this paper, the strategic targets come under question again and it also demonstrated a much stronger attitude to the professional growth of staff as a key to quality outcomes.

The model began to explore a ‘looser’ project management approach which resources the developmental activities of the professional staff and clearly links action learning into the cyclical process. I still saw the QA process as the mechanism to link into the annual planning cycles, recognising the lead times this implies, but also saw the opportunity to satisfy other strategic goals of RMIT such as developing a ‘scholarly’ approach to improving teaching, (Boyer 1990). The Boyer approach had been actively promoted in the RMIT Teaching and Learning Strategy (1998-2000) and was consistent with using the action learning process as a means of staff development through involvement in innovative educational projects.

4.3 Managing Innovative Educational Projects

The ideas in the next paper, Kenny (2002) flowed directly from the previous papers, but it used the developments at RMIT as an illustration of an inappropriate application of the project management process to educational projects.

Please read the following paper from the Portfolio:
**Portfolio Item 6 Paper**


**4.3.1 Reflective Commentary**

In this paper, Kenny (2002), I critically analysed the project management process devised for the Strategic Course Renewal (SCR) process. The SCR focus on producing product, the reduced significance of staff capability building and imposition of a rigid planning process were diametrically opposed to the learning emerging from the literature and my research data. Shenhar & Dvir (1996: 607) had pointed out that ‘as an organisational concept, project management is quite new and probably not well-understood.’ The SCR project management process was clear evidence of this lack of understanding of the interrelatedness of activities and processes within an organisation.

This paper proposed a project management approach which applied a range of ideas emerging from my study of the project management for innovative projects. I noted a number of similarities which also fitted with the educational technology project literature and I then considered the project management process in an organisational context. In particular, the recognition that innovative change projects needed more open project management approaches emerged in this paper as did the parallels between the management of innovation and radical strategic change projects and the importance of a supportive organisational culture.

It was around this time that I began to realise the importance of timely formative evaluation, both formal and informal when the uncertainty surrounding a project is high. This theme is explored in
more detail in another (unpublished) paper, Item 9 in the Portfolio. I no longer considered that the formal review process connected with QA would be suitable. The annual QA cycle of reflection was too long to consider anything but incremental change and it tended to be viewed as a bureaucratic requirement rather than an integral part of the reflective professional activity.

The typology of strategic innovation projects, which presented four categories of projects which were distinguished according to the scope and uncertainty associated with each, was published here for the first time. Kenny (2002) also explored the tensions arising between the need for looser management and the requirements for accountability. I developed these ideas from the previous paper and expanded the list of ‘Key Characteristics’ into a set of ‘key success factors’ for radical change projects, in which the value of formative evaluation was central. This list of success factors was developed more fully in the next two papers and is presented in its present form as Portfolio Item 13.

To be consistent with the earlier papers, I took an organisational perspective to managing change which linked the concept of uncertainty, introduced by Shenhar & Dvir (1996) to causes of uncertainty in organisations, mainly associated with the degree and the pace of change as proposed by DeWit & Meyer (1999). The organisational culture was highlighted as a key success factor as reflected in the organisational reward and promotion processes. A clear link between innovation and change was established: ‘Management of innovation is clearly associated with managing change’ (Shenhar & Dvir 1996: 608).

As part of my attempt to involve my colleagues in a discussion of these issues, the publication of this paper had been preceded by means of a forum which I organised. Although about 12 key people attended the forum, including the then PVC Teaching and Learning, and several unit managers concerned with educational development projects, little interest was shown after the
forum. There was quite a dismissive attitude expressed towards the ideas by one senior academic in attendance. If nothing else, this experience confirmed for me that the resistance to consideration of a project management approach for educational projects which I had detected earlier was in fact real.

I will return to these themes again in Chapter Six, in the discussion leading to the development of the Maturity Model for Strategy.

4.4 Managing Innovation Projects

In the next paper (Kenny 2003b) I addressed similar issues to the previous one, but this paper was designed to test the ideas with a more general audience. Because the paper was concerned with the management of innovative projects, I chose to explore the generalisability and originality of the concepts with an audience of project managers.

Please read the following paper from the Portfolio:

**Portfolio Item 7 Paper**


4.4.1 Reflective Commentary

This paper, Kenny (2003b), was more generalised in its language than the previous paper, and considered the organisational project management process in more depth. The target audience was readers of the international Project Management Journal, which is published by the Project Management Institute in the USA.
One reviewer gave very positive feedback and commented that the paper was very original and thought provoking. The reviewer rated the paper of high importance, original, valid and highly relevant saying that I had ‘accomplished a remarkable result.’ The second reviewer was much more critical, with the result that I had to present a five page response to the criticisms, some of which I accepted and some of which I rejected. Overall, the review process led to significant improvements in the final paper and the article was published in March 2003.

The direct link between organisational strategy and the establishment and evaluation of projects was much more explicit in this paper. It provided a brief case study of the implementation of the DLS for the non-educational audience and placed more emphasis on the product versus process argument. The concepts of project efficiency and project effectiveness were explored as a part of the discussion concerning the evaluation of projects. The paper re-emphasised the importance of an organisational approach and open project team structures for strategic change and innovation. The organisational process flow chart presented in the paper, was a significant development from the earlier flow chart (Kenny & McNaught 2000). There was no longer a link to the QA system, as it would not be suitable for the evaluation of revolutionary change projects due to the associated high levels of uncertainty.

Keeping the organisational focus, the paper built on the accountability process, as proposed by Kenny (2001a), and considered the link between evaluation and the organisational strategic goals as factors to be included in measuring the effectiveness of projects. This was the theme of another (unpublished) paper, Item 9 in the Portfolio. The significance of acknowledging the level of uncertainty associated with a project was emphasised by Shenhar & Dvir (1996: 623) who claimed that ‘higher uncertainty required increased budgets and led to longer projects.’

The organisational process flow chart and the typology were linked explicitly for the first time with a table for estimating uncertainty in a process called the Organisational Impact Planning Process.
(OIPP). This was the first attempt to articulate the full organisational process and has since been
developed further, see Chapter Six, into the current material in Items 12 and 14 of the Portfolio.

While the importance of flexible and open project management processes to facilitate learning,
sharing of ideas and timely feedback was evident, the management literature did not specifically
address how this might be achieved. There appeared to be a gap in terms of explaining how the
learning in innovative project teams might actually occur.

**4.5 Action Research and Project Management**

A number of researchers had recognised the need for iterative development processes (Sheasely
1999; Lester 1998), Mintzberg (1994) had called for strategy to be formed from learning based on
action and Rogers (1995) had identified the process of ‘social construction’ as the basis of the
adoption of innovations. The action learning /action research (ALAR) literature provided a model
which addressed all of these requirements very well so I began to explore ALAR in relation to self-
managed project teams which is discussed in the next paper, Kenny (2003a). Please read the
following paper from the Portfolio:

<table>
<thead>
<tr>
<th>Portfolio Item 8 Paper</th>
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| Kenny, J 2003a. ‘A research based model for managing strategic educational change and

**4.5.1 Reflective Commentary**

In this paper, I explored in more detail the nature of the learning process in innovative project
teams, which had previously been identified as a key issue in the project management
questionnaire. My aim was to explicitly link the professional ALAR model into the organisational management of innovative strategic projects.

The paper presented a model for managing innovative project teams based around the ALAR process. The diagram presented in the paper has since been further developed as a part of Item 12 in the Portfolio. The literature on professional growth through action learning matched well with the requirements for innovative change projects. A model was proposed for significant educational projects to be setup as action research projects with embedded action learning for the individuals involved.

The paper picked up on the connection between the level of uncertainty for a strategic project and the amount of learning required of staff. The two stage adoption process for innovations, as described by Rogers (1995), was explored as the basis of an organisational management process for innovative projects. These ideas are developed further in the formation of the Maturity Model for Strategy, discussed in Chapter Six.

The key success factors developed earlier in Kenny (2001a, 2002) were developed further into a project process which was divided into three phases: planning, design and development and an evaluation. Accountability and feedback mechanisms were again identified as key issues, and were discussed in the next paper (unpublished).

### 4.6 Effective Evaluation

The process of evaluation and feedback is inherent in the ALAR process. The need to establish effective evaluation processes at an organisational level, particularly when high levels of uncertainty are involved was discussed in Kenny & McNaught (2000), Sheasley (1999) and Lester (1998) and Kenny (2002, 2003). In the next paper, which has not yet been published, the links
between the organisational evaluation process and the evaluation of specific projects is explored more closely. Please read the following paper from the Portfolio:

**Portfolio Item 9 Paper**

Kenny, J. Evaluation of strategic change in organisations. (unpublished)

### 4.6.1 Reflective Commentary

This paper has been submitted for peer review, but as yet has not been published. It explored the evaluation and feedback process for strategic projects in some detail. It expanded on the ideas of project effectiveness and project efficiency mentioned in Kenny (2003b) and also attempted to synthesise other ideas for the management of radical innovation and change.

The paper considered the summative and formative aspects of evaluation and recognised that the more uncertainty that was associated with a project, the more formative evaluation was needed. It linked the very high levels of uncertainty to the informal formative evaluation possible in self-managed team process, where timely evaluation and rapid response to unexpected developments can occur.

In recognising the formal accountability requirements, through the connection between projects and strategy, a table of success measures for summative evaluation, which includes measures for project effectiveness and project efficiency, was adapted from the literature and is also presented as part of Item 13 in the Portfolio. The process incorporated summative evaluation along with a previously developed cyclical formative evaluation process (both formal and informal) to more accurately reflect the requirements of highly innovative projects. In combination, these last two papers led to the further refinement of the organisational strategic management process into four
linked process flow chart diagrams, which have not been published, but which are presented as part of Item 12 in the Portfolio and developed further in Chapter Six.

This chapter has explored the development of effective organisational processes to manage innovation and change, and the ideas presented will be explored further in Chapter Six of this Exegesis.

The importance of integrating and supporting staff learning as a key component of innovative change projects has been a constant theme running through this study. Rogers (1995) identified staff learning was identified as a key factor of the level of uncertainty associated with innovation and radical strategic change generally, consistent with Mintzberg (1994), he described a process of ‘social construction’ of meaning with their peers, and learning from action as essential for effective innovation and strategy formation. The project managers’ questionnaire, discussed in Kenny (2004a), clearly pointed to the need for professional development to be integrated into the project management process, and the staff interviews, Kenny (2004b) confirmed the need for on going support for staff in the iterative process of professional growth. The next chapter explores this particular aspect of the DLS project.
Chapter Five- Professional Learning

In Chapter Three, the evidence presented was drawn from the project managers’ questionnaire, the student questionnaire and the staff interviews. The data supported the need for the professional development and learning of staff to be a key component of the implementation of the Distributed Learning System at RMIT and educational change projects more broadly. In the first part of this chapter I explore the attempt to integrate professional development into the DLS project at RMIT, through the development of a professional development (PD) program for staff. This section also presents an analysis of the final part of the primary data collected during the study.

The second part of the chapter considers a published paper that I wrote with two colleagues to consider how the learning from this PD program could be applied as the basis of an organisational PD Framework for RMIT. This is consistent with the approach taken from the beginning (see Kenny & McNaught 2000) to find a holistic solution to the problem. This paper is presented as Item 10 in the Portfolio (Kenny, Quealy & Young 2002).

5.1 Professional Development Program

This section describes the development of the PD program ‘Teaching and Learning Using the DLS’ which I developed to fill the gap left when Learning Technology Services (LTS) withdrew from general support for staff using the DLS after the SCR Program had got underway. The PD program was progressively developed as an action learning project, in four iterations between 2001 and April 2004. In this period, over 50 staff successfully completed the program. The participants provided feedback via an evaluation survey as well as informal feedback during the sessions. Details on gaining guest access to the program are presented, along with a description of the program as Item 11 in the Portfolio.
5.1.1 Iteration One

The program was designed to support staff to develop their course to use the DLS. The original version of the course was set-up to complement a two-hour DLS software training program provided for staff learning to use Blackboard\(^1\). The focus of the PD was on the educational use of technology and the design of aligned learning tasks (Biggs 1999). It was advertised across the university and individual staff volunteered to participate. Two separate programs were conducted in this format and a total of sixteen participants provided feedback.

Eighteen (18) participants from a range of different departments across the university elected to attend the first offering of the program, indicating a clear demand for the course, but unfortunately the numbers fell away and only seven completed the activities. The two main reasons for the drop-out rate were the difficulty of attending the workshops and the expectations of the program. Staff attending did so voluntarily and the work had to be done in addition to full teaching loads. The commitment required was difficult to maintain without the recognition and support of the organisation.

A second group, which chronologically overlapped with the first, was smaller with only eleven participants. In contrast to the first program, this one was organised in response to a request by a program leader who was able to get a group of staff together, nine of whom completed the activities and provided feedback. The better attendance record of the second group indicated that, where the sessions could be negotiated with an identified group, it was more effective. Even though staff still did not get allocated time to do the program, the commitment seemed greater.

\(^1\) Blackboard is the main online course management and delivery tool used in the DLS.
Overall, the participants reported that the workshops were useful, relevant and informative. However, a number of the participants in both groups did not have the level of proficiency assumed with the DLS technology, and they struggled to keep up. This led to a revision of the workshop program to meet the expectation that it would include the basic training component for the DLS and the Blackboard tool.

5.1.2 Iteration Two

In the second iteration the materials were put into an online format in the DLS. The next group consisted of ten participants from various departments across the university. Aside from feedback during the course, the participants were given a survey to complete online. The survey contained twelve questions, the last two of which allowed them to provide free written responses. Further data was also collected using the course statistics function of the Blackboard software.

Nine of the ten participants completed the evaluation survey: eight TAFE teachers and one higher education teacher, four males and five females. All were experienced teachers. Five had been teaching for longer than ten years, two for between six and ten years and two for between one and five years. However seven reported that they were in their first year of experience with using online learning activities. Three reported that they had no prior experience with the technology when they started, five had some skill and one participant self-rated as an expert. The feedback on the program was positive across the board and the participants rated the learning resources as either high or excellent. (See comments from two participants below)

As the material was fully online it allowed the opportunity for more self-paced learning, it was also reasoned that this would enhance staff skills as users of the DLS and give them an insight into the experience of being a student.

I enjoyed the course and feel that my DLS skills have improved immensely in this 5 week period.
As a part of the experiment with flexibility, at the first session, the participants were given the option of doing sessions two and four remotely over the Internet. There were mixed results with this option. Even though the participants were enthusiastic about the idea at the beginning, in actuality their progress became very dispersed. The value of the discussion in the face to face sessions was affected because the already small group was became even smaller due to some not attending and choosing the remote option, largely because of other work pressures. In these circumstances there was less incentive to complete work within a set-time frame. As one of them expressed it:

Great course - but takes a lot of time. It was important to make us do the assessment tasks - otherwise I might have been tempted to gloss over some of it. There is a strong emphasis on reflection and discussion - but this is difficult to do effectively when we are working at different rates.

In addition, the final session for each group had been scheduled for the holiday period, which also made it difficult to get full attendance.

**Analysis of course statistics**

Blackboard enabled statistics to be collected on the access patterns of the participants. Course statistics revealed that 84 per cent of the logged visits to the program occurred in normal office hours (0900-1700) and 93 per cent occurred between Monday and Friday. Very little advantage was taken of the flexibility to access the materials outside of normal working times: of the access outside of these times, 13 per cent occurred between five pm and midnight with six per cent on Sundays. Aside from the six compulsory days, there were at least ten logged visits to the website on 32 other days. Overall, the flexibility experiment detracted from the course, even though the largest number of hits (970) to the course website occurred on a flexible day.

Being an introductory program, most participants had a low level of competence with the technology, and expressed a need for face to face support from the facilitator. The inability of most
of the participants to complete all the assessment requirements in this iteration indicated that there were too many tasks, so the assessment was simplified in the next iteration.

5.1.3 Iteration Three

In the next iteration the program was again revised. A key purpose of the revision was to ensure the program would be suitable to enable RMIT meet certain strategic targets related to an agreement with a state government initiative from 2001. In this initiative, a number of staff at RMIT had received laptop computers on the condition that they attended suitable professional development. A further government initiative in 2002 also required RMIT to ensure that most TAFE staff would meet ICT PD strategic targets by 2005. As the PD program was already developed and was designed for the RMIT environment, with slight modification, to include certain assessment requirements, it was seen as a key means of meeting these strategic goals to which RMIT was already committed.

However, this meant that there was a considerable backlog, and over 250 were enrolled in the PD program. In reality though, many of these participants enrolled in the PD only to comply with the directions of their managers, and not through any desire to develop sound online courses or a commitment to using the DLS. This reduced the value of the professional development and completion rates were again very low. Again few resources were allocated, such as time release for staff to attend and the effort required was not reflected in their work plans. Over the year, only 12 staff actually completed the program. However, the feedback received from those staff who did complete the program was very good. These participants found the materials of a high quality and they were happy with the general structure of the course. (See the comment below)

It was helpful to see application of DLS in the Library reference also the examples of DLS course set up and using the system to access info for this course gives you a direct experience. More case studies of a variety of applications of DLS to online delivery would be useful also.
The 40 hours required for the program, (comprising of 20 hours face to face and 20 hours follow-up) was a significant commitment. Staff indicated that the PD had a lower priority to other work demands. For the participants it was something to be done in addition to their other duties, a point consistent with the earlier evaluation data (Kenny 2000) and pointing to a need for better alignment and integration of PD with the work planning process.

5.1.4 Iteration Four

In 2002-2003, the program was again modified to include formal assessment material which would enable staff to obtain accreditation for a short course and credit for workplace learning units into the Graduate Diploma of Industrial Education and Training (IET). This process was finalised in mid 2003. In this format, the program could serve two purposes: provide for those staff purely interested in the PD aspects; and provide assessment tasks for those wanting recognition towards a post graduate qualification.

In a further modification for 2004, the program was re-designed to contain an introductory component and an extension component to meet the on-going demand for introductory training and to provide a pathway into the full program. In the PD program, staff were supported to choose a project directly related to their work and to take an action learning approach. In this way it was linked into their existing workload rather than being something added on. Again feedback from the participants rated the course very highly. They particularly found the direct support of the facilitator, the flexibility and the relevance of the learning activities valuable. The program was completed by 16 staff in three separate offerings, 14 gave feedback. (See comments of three staff below).

This program has broadened my understanding of on-line teaching/learning.
The programme got me going, for which I am always grateful, and has forced me to think around what I am doing. I am forced to reflect more deeply on the approaches we take.

I thought the program was excellent. I found it difficult to find enough time in my schedule to devote to the program and would have liked more time to work through it. I will still work through some of the material provided but would like assistance from an instructor if I need it and because I am still completing my project I worry about getting ongoing assistance and feedback about it. I would like to know that there is support for me in my continued learning in ICT skills and my development of online learning materials for my students. … I thought the face to face classes were essential.

This part of the research illustrates that even though the need for PD was identified early and the PD program was well received by staff, well structured and designed, the fact that it was not integrated into staff work plans and resourced appropriately caused difficulties.

The student feedback (Kenny 2003c-Portfolio Item 2) linked student satisfaction to staff capability with the software and the staff interview data had called for on-going support to use the DLS, but staff who participated in the PD program had to do it in their own time, in addition to their full work loads. There was no express policy to encourage staff to improve their skills with the DLS and no formal and planned organisational process for them to upgrade their capabilities.

The competing demands on staff, also noted in the project managers’ questionnaire (Kenny 2004b - Portfolio Item 1) were evident in the low completion rates for the PD program. The capabilities required to use the DLS effectively extended beyond training in the software as it required teaching staff to re-think their teaching. This is an iterative development process, most suitable to action learning. The student feedback data had indicated that staff would often begin to use the technology at a minimal level to begin with, but clearly, some level of on-going support, as called for in the staff interviews would assist them to continue to develop their capabilities and courses.

Earlier reports DLS review (McNaught e al. 2000) and the Strategic Course Renewal (SCR) project (See Chapter One) had both demonstrated that without developing the capabilities of staff, the
optimal benefits from use of the technology would not be achieved. To maximise the benefits of the investment for the organisation, the project planning has to integrate staff capability building as a key component of educational development projects and ensure that it is adequately resourced.

### 5.1.5 The Current Situation

The organisational restructure, which occurred during 2003-2004, placed the future of the program in an uncertain situation. The management of CID were not interested in providing PD support for the DLS and wanted to pass the program over to Information Technology Services (ITS) who were to run it as a training program. Considerable discussion ensued in an effort to have the professional development focus of the program recognised, especially in view of the earlier history of the DLS which led to the poor quality outcomes reported in the DLS review (McNaught et al. 2001).

As of the end of April 2004, when I left RMIT, there was still no firm decision by management as to the future of the PD program, even though I had proposed a solution for its further development, which would have enabled RMIT to meet its strategic commitments. This last point illustrated the difficulty I and some of my colleagues experienced in trying to promote an organisational approach to PD. With the organisational re-structure now in full swing and a shift away from a commitment to supporting online learning clearly evident, I was unable to convince management of the value of the program.

The next paper (Kenny, Quealy & Young, 2002) describes an organisational PD model that was informed by the experience of developing the PD program. The paper proposed a strategic solution to the building of staff capability that could be monitored and resourced.
5.2 Organisational Professional Development

The final paper presented in the Portfolio as Item 10 (Kenny, Quealy & Young 2002), aimed to address the identified need for a systemic and coordinated organisational approach to professional development. It also explored possible synergies with existing organisational processes such as the work planning process to minimize any extra burden on staff or the organisation.

Please read the following paper from the Portfolio:

**Portfolio Item 10 Paper**


5.2.1 Reflective Commentary

This paper, Kenny, Quealy & Young (2002), elaborates on the need for PD to be integrated with attempts to use the DLS. Based on the structure of the professional development (PD) program ‘Teaching and Learning Using the DLS,’ it identified six levels of competence for using the DLS ranging from induction to advanced skills and mentoring. The model linked the skill level required to particular roles and PD approaches and identified the DLS capabilities required of RMIT teaching staff to function effectively using the DLS.

At the end of the paper a draft organisational PD framework for all Information and Communication Technology (ICT) PD at RMIT was proposed. It was derived from the structure of the PD program and recognised the stages in growth in staff capability which could be linked to career progression. The organisational focus aimed to address the problems due to lack of staff time
and lack of alignment of PD opportunities with the organisational planning process. This paper appears as Item 10 in the Portfolio and the draft organisational PD framework is presented as Item 11.3.

The aim was to align staff capabilities with the organisational process and strategic goals so the resourcing could be accounted for in the work plans. LTS management expressed interest in the idea, seeing the strategic advantages of improved coordination and management of this PD. A draft was prepared for discussion and circulated, but unfortunately, due to the organisational restructure and the demise of LTS, the planned exploration of the framework did not go ahead. This idea of building an organisational PD framework seemed to generate little interest beyond the small group initiating the idea at this time.

This completes the presentation and discussion of the primary data from my research and represents a particular milestone in my thinking and the development of the models and processes flowing from the research. The next chapter attempts to weave all these ideas, along with a review of the current strategic planning literature, into a model which presents a coherent approach to strategic change. This will ensure that the research findings, which were carried out over a four year period, and the ideas which were developed concurrently, are as up to date as they can be in order to answer the research questions. It clearly demonstrates a shift into third person action research as I attempt to incorporate learning from the broader academic community with the learning from this study to further develop more generalisable models.
Chapter Six – Current Thinking

In the preceding chapters, I described the unfolding of a strategic project to implement the DLS at RMIT University and the reactions of three stakeholder groups, management, staff and students to the innovation over a five-year period. I also described the dynamic nature of the organisational response to its environment as it endeavoured to meet strategic challenges. Along the way, I developed models and processes which are represented in ten papers presented in the Portfolio. These models were developed and refined over time during the research as new learning came to light. In this chapter I will continue this development as I draw together the earlier work with the more recent learning from the literature, and use this to develop a coherent and comprehensive model for strategic organisational change which reflects my current understanding. Towards the end of the chapter, I will then apply the newly developed models to strategic planning in the educational sector generally before I finally return to reflect on what the model reveals about the original project which triggered this research, the implementation of the DLS at RMIT.

This research on the DLS project experienced a series of challenges resulting from both external and internal factors. While the external factors (e.g. changes in government funding and accountability requirements) were beyond the control of the organisation, the internal strategic factors (e.g. the 60% strategic targets, the failure of the AMS and the organisational restructure) were within the control of the organisation. From my perspective, as a practitioner researcher within RMIT during this period, by far the major problems for the organisation arose as a consequence of the internal factors. The evidence presented in this study concerning the implementation of the DLS unearthed significant problems stemming directly from the organisational strategic processes and culture of RMIT. These problems included: a lack of involvement in the strategic planning process by the staff; a lack of resourcing associated with the
DLS project; a lack of understanding by management of the implications of change for teaching and academic staff, and the level of support required to bring about effective change; no embedded process to support the building of staff capability; ineffective processes to capture learning from experience to inform the project; and rigid hierarchical structures with inflexible annual budgetary and planning regimes.

One key realisation that emerged early during my research is that, due to the interrelated nature of the activities in an organisation, strategic projects such as the DLS, cannot be studied in isolation from the broader organisational context in which they occur. The outcomes of strategic change are heavily influenced by the other internal organisational factors such as the culture, processes, staff capabilities and structures, as well as external factors related to an increasingly unpredictable and uncertain future.

This study so far has therefore inexorably moved from the study of a specific strategic project to the study of the strategic organisational change at RMIT and beyond. In this chapter, I complete this shift in focus and present an investigation of organisational strategic change more generally. After beginning with a critical review of the literature to identify key theoretical ideas, I then outline the rationale for a holistic approach to strategic change which addresses many of the key issues arising from the study of the situation at RMIT. I conclude with a synthesis of these ideas into a model of strategic change and up to date versions of the processes. These are presented in the Portfolio in Items 12 and 14. However, as I am well aware, this area of knowledge will continue to develop and so too, no doubt, will my own understanding of it.

6.1 The Learning Organisation

The modern social and economic environment in which organisations operate is described as volatile, highly competitive, globalised and networked by new technologies (Chaffee 1985; Grant...
2003; Rae 1997; Mintzberg 1994; Ansoff 1994; Combe & Botschen 2002; Whittington & Malin 2003). It is an environment in which circumstances can change rapidly and unpredictably: a climate where knowledge driven organisations, less reliant on commodities and industrial production, need to become less hierarchical in structure, and more flexible and responsive to stakeholders. There is a growing recognition that new forms of organisation are required, ones in which the organisational values are linked directly to the strategic vision and are based around a culture of learning (McNiff 2000: 11).

McNiff (2000: 140-141) referred to two types of vision: unconstrained (or open) and constrained (or closed). Organisations operating with unconstrained vision reject an ‘either–or’ approach to ideas but apply a ‘both–and’ approach: where everything ‘is part of a transformative order of emergence.’ In arguing for the use of action research in organisations, she advocated new ‘generative transformational’ forms of learning as a means of dealing with an external reality, or context, in which everything is constantly evolving or ‘becoming’: change of a chaotic nature requiring the interrelatedness of learning and action, to manage the ‘fractal quality’ of human experience.

Tosey & Robinson (2002: 105-106) studied the use of the term ‘transformational change’ in the management literature and although they concluded that the term was largely used as a ‘discursive device’, they recognised that the form of change adopted (the means) in an organisation related to the underlying intention of the change (the ends). They presented a ‘transformation matrix’ of organisational change in which the ends or purpose of the change ranged from simple survival, to increased efficiency, to cultural change and ultimately to the development of potential. Each of these ends had corresponding means, which involved progressively less ‘programmed’ and controlled activities. At the controlled end of the range, organisations employ outcome focused change activities such Business Process Re-Engineering and Total Quality Management (TQM),
while at the other were ‘learning organisations’ and even ‘spiritual’ organisations, where the change is a process based activity, involving a ‘leap of faith.’ In these latter cases, where the outcomes are often unknown, the change process involves ‘intense pain and struggle’ as values, ideals and beliefs are questioned.

In learning to deal with rapid and unpredictable change, the form of the organisation is blurring, there is an ‘organisational duality’, a sense in which the ‘organization is the strategy’ (Whittington and Melin 2003: 37). Here, the structure of the organisation is in a state of constant ‘organizing’ flux as social collectives form and reform, organisations ‘continuously mutate’ and there are no organisational ‘end states.’

Thus the modern, highly uncertain environment requires a shift away from formal structures and pre-determined outcomes to flexibility and adaptability. Based on his study of non-linear networked systems, Stacey (1995: 485) identified that organisations have both formal and informal networks. The formal networks exist to promote order and stability and are represented by the formal structures and constraints established within an organisation. The informal networks, on the other hand, are ‘the shifting network of social and other informal contacts between people within an organisation and across its boundaries.’ Stacey (1995) saw the informal networks, not the formal, as the basis of revolutionary innovation and change. He claimed that true innovation and change require an organisation which is ‘internally and spontaneously changeable’. For an organisation to be ‘changeable’ the informal networks ‘must operate in a state of bounded instability’ (Stacey 1995: 486)

Thus organisational structures are required that support the process of ‘strategizing’, or strategy making, so that the organisation learns to deal effectively with the ‘emergent character’ of reality. As this ‘cannot be controlled centrally’, successful organisations will be those which are able to ‘continually restructure and respond effectively’ (Whittington & Melin 2003: 37-38).
Stacey (1995) argued that real innovation and change requires a state of paradox, disorder and ‘non-equilibrium system dynamics’ where strategy develops from a complex mix of politics, discussion, feedback and individual choice. In this view, the ultimate outcomes of a strategic action cannot be predicted, the ‘long term outcomes emerge from the detailed interactions between the agents' of the organisation. He argued that if the strategic goals are to promote innovation and creativity, an organisation must operate in this disordered state, (Stacey 1995:481-483).

This is in stark contrast to the chaotic state that existed in RMIT as described in Chapter One, which resulted from the disintegration of plans and attempts to drive a pre-determined strategic agenda without an understanding of the complexities involved. Stacey (1995) and Whittington & Melin (2003), on the other hand, describe a situation where organisations consciously accept a period of disorder as a pre-condition of learning and change: a situation where debate and discussion are encouraged as part of the creative process and from which a strategy will emerge.

The emphasis of the organisation thus needs to shift, from a focus on achieving specific strategic outcomes to one of facilitating organisational learning. This shift is evident in descriptions of ‘learning organisations,’ where the organisational processes and resources are deliberately geared for learning (Laurillard 1997; Senge 1990). The implications of such profound organisational changes have for the role of managers should not be underestimated (Stacey 1995: 486). These organisational forms challenge the tenets of conventional management wisdom and are sure to worry many managers. The dilemma of being held accountable for process over which they have limited control will require a degree of trust and courage, is what Tosey & Robinson (2002) referred to as ‘a leap of faith’.

De Wit and Meyer (1999: 120-121) pointed out that ‘when well managed major organisations make significant changes in strategy’ the processes used are ‘typically fragmented, evolutionary and largely intuitive’. In the strategic planning literature, the metaphor of the organisation as a living
organism is widely used, and organisations are described as passing through the stages of a ‘life-cycle’ involving introduction, growth, maturation and decline (Chaffee 1986). Wietzel & Jonnson (1999: 91-94) questioned this metaphor, which implies the inevitability of decline (death) and they proposed that constant ‘adjustments’ could ensure long-term viability. They linked organisational decline to a ‘failure to anticipate, recognize, avoid, neutralize, or adapt to external or internal pressures that threaten the organization’s long-term survival.’ They called for a ‘proactive’ approach to monitoring the internal and external conditions which might impact on an organisation, to assure its long term survival (Wietzel & Jonnson 1989: 94). In their view, ‘decline is the result of less than effective management of the organization, its resources and the sensing mechanisms related to its long-term survival’ (Weitzel & Jonnson 1989: 96). They believed that the earlier problems are detected, the more effective will be the intervention: ‘it is clear that a stable environment, if it ever exists, is at most a temporary phenomenon’ (Weitzel & Jonnson 1989: 98). However, intervention relies on ‘good information,’ ‘prompt action’ and ‘effective reorganization’ based around ‘less directive leadership’ and greater inclusiveness for those lower in the organisation who may have valuable information to add to decision making (Weitzel & Jonnson 1989: 102-103).

Owen (2003: 43) put forward a similar argument for an ‘evaluation culture’ where staff are included in the decision making process by contributing their knowledge, gained through practice, to the ongoing development of the organisation. He noted that knowledge of this nature ‘has the capacity to enhance decision-making and the effectiveness of organisations (but)...Enquiry of this nature is not undertaken routinely, but in response to the need for empirically based knowledge to contribute to issues regarded as strategic’.

This form of involvement goes beyond implementing a pre-determined plan, meeting set targets or the development of a shared vision, it calls for the experience of staff to directly influence strategic
decisions, ‘with the explicit purpose of contributing to the stock of its working knowledge’ (Owen 2003: 43). This is consistent with the approach to strategy formation advocated by Mintzberg (1994) and also describes how learning and evaluation form the basis of the feedback leading to improved strategic outcomes.

Clearly, with the DLS project at RMIT, the experiences of staff using the system in their teaching would have added greatly to the organisational understanding of the resource and PD implications. It may have enabled a re-think of the unrealistic strategic targets and less of a focus on the generation of product. This may have avoided the poor results of the DLS review (McNaught et al. 2000) as the expectations for initiatives such as the ‘Flagship programs’ could have been tempered with real understanding of the capability building requirements.

Thus learning from experience is the fundamental process which underpins the creation of sustainable organisations in the modern climate. An effective organisation is one which facilitates learning by the individuals within it and has processes to ensure that the learning is captured. The success of this approach is inevitably linked to the nature of the leadership within an organisation.

6.1.1 Building a Learning Organisation

There is a large body of literature on the nature of organisational learning and learning organisations (Actenhagen, Melin & Müllern 2003; Argyris and Schön 1996; Leitch, Harrison, Burgoyne & Blantern 1996; Pedlar, Burgoyne & Boydell 1991; Senge 1990; Sun & Scott 2003). While similar, these two terms are not referring to the same thing (Leitch et al. 1996: 34; Sun & Scott 2003). The first refers to formal learning geared to an organisational goal (e.g. skills training and organisational knowledge) while the second refers to an organisation which ‘facilitates the learning of all its members and continuously transforms itself’ on the basis of the learning (Senge 1990: 10). A learning organisation requires a leadership that promotes a culture supportive of
learning, and facilitates it by designing and implementing flatter power relationships and flexible structures to support learning (Leitch et al. 1996: 33).

To deal with the demands of the modern environment, organisational structures and processes need to have a focus on learning and adaptation. Leitch et al. (1996) posed the question of how does one create a learning company? Senge (1990: 11-12) argues that ‘a learning organisation is not something to be achieved’ but instead requires a ‘shift of mind’ so that it ‘builds its capacity to do things in a new way’ (p.15). This places capacity building, or learning, as central to a learning organisation, but the question still remains how can this be done without the risk of the change being viewed as yet another top-down driven management fad?

My major contention is that an approach based on the engagement of staff in the solution of genuine strategic problems is likely to encourage a learning culture and promote the level of commitment required. Without this level of commitment of staff and the ensuing understanding of the strategic context, it is unlikely that significant organisational change will eventuate anyway.

The strategic planning process presents a means of engaging staff by legitimising their learning as a valuable contribution to the learning of the organisation and its long-term sustainability. In this sense, the strategic planning process becomes a mechanism for creating a learning organisation. If this approach is well integrated into an organisation, supported by an appropriate culture and flexible processes, the desired transformation to a learning organisation would come about as a consequence of purposeful strategic activity.

Because of the connection between learning and radical strategic change (Kenny 2002, 2003a, 2003b) true organisational sustainability will only be achieved by the integration of organisational and individual learning as a key component of the strategy process, particularly in relation to revolutionary change and innovation. The individuals who make up organisations are necessarily
also implementors of organisational change, (Mintzberg 1994); particularly the managers, as the
designers and creators of the internal organisational cultures and processes (Senge 1990).

This was a key flaw in the DLS project at RMIT. There was no mechanism for the learning from
experience of staff using the system to be captured to inform the strategy. The fact that staff
capability building was not embedded into the implementation of the project underlined the
inadequacies of the project planning process with its focus on meeting the preset targets.

6.2 What is Strategic Planning?

Using strategic problems to integrate learning requires a closer look at the strategic planning
process itself. Strategic planning has become synonymous with responsible and accountable
management: a process considered vital for the sustainability and growth of organisations to enable
them to ‘deal with changing environments’ (Chaffee 1985: 89). Strategic planning comprises
‘s systematic, formalized approaches to strategy formulation,’ (Grant 2003: 491) even while ‘the
substance of strategy remains unstructured, unprogrammed, nonroutine, and nonrepetitive ... (and)
important enough to affect the overall welfare of the organisation’ (Chaffee 1985: 89). It is in
widespread use throughout all sectors of the economy, and is supported by a significant amount of
resources (Crebert 2000; Grant 2003; Rothschild, Balaban & Duggal 2004; Kaplan & Norton
2001).

Theoretical views on the development of strategy fall into two distinct groups: the ‘rational design’
approaches and ‘emergent’ approaches (Grant 2003; and Harrington et al. 2004). Stacey (1995:
477) referred to them as the ‘strategic choice’ and the ‘ecological’ perspectives. The first approach
is based on the view that organisations adjust to changes in their environment by making rational
decisions and choices and then planning to achieve the desired outcomes. The second is based on
an ecological paradigm, in which organisations respond to changes by adapting, in much the same
way as living organisms respond to their environments. A continual process of adjustment occurs within the organisation (either reactive or proactive) aimed at ‘co-alignment of the organization with its environment’ (Chaffee 1985: 91).

Other researchers have extended these two basic theoretical stances further. Chaffee identified three models of strategy: Linear, Adaptive and Interpretive, which incorporated both the rational and an expanded emergent approach containing interpretive strategy, which argued that strategy is ‘based on a social contract’ and an assumption that reality is ‘socially constructed’ by the interaction of the stakeholders of an organisation, (Chaffee 1985:93). Combe & Botschen (2002), who considered the relationship between strategy and the quality process, went further and listed 15 strategy paradigms grouped into five categories: rational, developmental, deterministic, probabilistic and chaos paradigms. They argued that these different paradigms arose in response to increasing complexity in the environment.

Strategic planning is a complex process that ‘involves both conceptual as well as analytical exercises’ (Chaffee 1985: 89). It entails two distinct but related processes, the ‘formation’ or formulation of strategy and the development and implementation of a considered response by the organisation to meet the perceived challenges, (Mintzberg 1994; Näsi & Aunola, 2003). The aim of the strategic planning process is, firstly to understand the complexities of the environment in which the organisation operates, then to develop appropriate responses, and finally to marshal the organisational resources to achieve the required outcomes. Many of the difficulties reported with strategic planning stem from the relative emphasis placed on each of these activities within an organisation, and from the level of involvement and roles of the different groups of the organisation in the process (Briggs 1998; Crebert 2000; Lines 2000; Rae 1997; Simpson 2002; Steane 1999).

The strategic planning process at RMIT was of the rational planning variety, with centralised top down strategic targets and goals used as a mechanism to ‘cascade’ the strategy throughout the
organisation as described by Lines (2000). It suffered from the complexities associated with various layers of convoluted and interlocking planning regimes, as reported by Crebert (2000), which were difficult to change once in place. The strategic planning process did not enable the responsiveness called for in situations of very high uncertainty (Kenny 2002, 2003b).

6.2.1 The Three Dimensions of Strategy

De Wit & Meyer (1999: 6) proposed a three dimensional construct of strategy encompassing the context in which it occurs, the content of the strategy itself and the process by which it is activated. This three dimensional construct is summarised in Table 6.1, and will be used as the basis for the deeper exploration of the strategic planning process to follow.

The Context Dimension of Strategy

Aspects of each of these dimensions were touched on briefly in the previous discussion. The context dimension for strategy in any organisation has two aspects: those related to its external environment and those related to its internal environment. The external strategy context for an organisation, as represented by the prevailing economic and political situation, as well as the vagaries of the sector of the economy in which it is located, is largely outside of the control of an organisation.

The internal context includes intangible aspects such as the organisational culture and values, the capabilities of the management and staff, as well as tangibles such as the organisational structures and processes in place. Each of these factors has a bearing on the ability of an organisation to respond to change. All of these factors are, to some degree, within the control of an organisation.
The Content Dimension of Strategy

The content of strategy relates to the nature of the change. Two types of change or innovation have been widely described: incremental (or evolutionary) change and discontinuous (or revolutionary) change (De Wit & Meyer 1999; Shenhar & Dvir 1996; Tushman & O’Reilly 1997). However, Tushman & Smith (2004) proposed three types: Incremental, Architectural and Discontinuous.

TABLE 6.1-The Three Dimensions of Strategy and Related Organisational Factors

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Aspects</th>
<th>Related factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>External factors:</td>
<td>Effects of prevailing external political and economic environment.</td>
</tr>
<tr>
<td></td>
<td>Internal factors:</td>
<td>Organisational culture, organisational structure (formal and informal), organisational processes, effects of other major change activities, financial situation, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Individual differences and capabilities of the staff.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>The nature of a particular strategy or innovation</td>
<td>Scope, urgency, use of new technology, degree of learning involved for individuals and the organisation.</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>The strategy model as applied in an organisation.</td>
<td>Vary in the degree of ownership, learning, autonomy, peer communication and power sharing involved e.g. Interpretive, Adaptive and Linear models.</td>
</tr>
</tbody>
</table>

‘Architectural innovation’, the adaptation, or innovative application of existing technologies, is an intermediate step between continuous and discontinuous innovation. The description of ‘discontinuous innovation’ as the generation of totally new technologies corresponds to the
‘revolutionary innovation’ described by Shenhar & Dvir (1996). Echoing the earlier discussion, they claimed that while conventional organisational structures and processes are able to deal with incremental innovation, it seems that other forms of innovation require less restrictive organisational structures and more open and flexible management processes (Tushman and Smith 2004: 25-28).

The Process Dimension of Strategy

Despite the importance placed on strategic planning as a management process, a scan of the literature indicates that there are significant problems with it. In many cases it has become a ‘calendar driven ritual’ (Hamel 1996: 70, cited in Grant 2003; Crebert 2000; Näsi & Aunola 2003; Priesmeyer 1992). A report by Fortune magazine revealed that less than 10% of strategies are ‘effectively executed’, that only 5% of the work-force understands strategy, and there is a significant lack of strategic alignment, indicated by the fact that 60% of organisations don’t link budgets to strategy, and 92 % do not report on lead indicators (Simpson 2002: 690).

Further, as strategic planning was originally developed for the business sector, its suitability for non-profit organisations has come under question (Steane 1999: 10). Non-profit organisations operate from quite a different value base to conventional businesses. In the education sector, for example, many writers reported suspicion of strategic planning, which was seen as a means of ensuring bureaucratic control over the activities of professional staff (Crebert 2000; Fenske 1980; Lines 2000; Patterson 2001; Rae 2001; Ramsden 1998).

Most business organisations use strategic planning to come to terms with their environment because it ‘cuts down on complexity and enables management to produce a plan.’ This focus on planning ‘works well so long as the actual outcomes are largely in line with the assumptions’ (Briggs 1998: 216). Briggs (1998) also observed that once a plan is in place, management can fall
into ‘planning traps’ which limit the capability of businesses to respond to changing circumstances. Weitzel & Jonsson (1989: 100) described this as a tendency for management to ‘increase commitment to the present course of action.’

Many organisations see the problems as arising from a lack of ‘alignment’ between the organisational budgets to strategic goals (Kaplan & Norton 1996, 2001; Rothschild et al. 2004). In the university sector, Crebert (2000: 74) reported problems in the response of heads of school at Griffiths University to the strategic planning process and noted that hierarchical structures ‘allow for little input from the lower levels to policy formulation or planning processes’. Management pushing through a plan without appropriate consultation raised the suspicions of staff and led to resistance (Rae 1997; Crebert 2000).

Kleiner & Brown (1997: 57-58) noted that there is ‘a direct relationship between the relative degree of change being sought and resistance to that change.’ To counter this resistance, they called for ‘holistic’ approaches to implementing change in corporate organisations which involved the creation of a common ‘vision’, with the organisation acting as a ‘unified body’ to ‘develop strategies and structures that can continually respond to the environment.’ Thus flexibility is an important component of the change process because ‘managers will be more open to learning and less afraid to make changes for improvement.’

De Wit & Meyer (1999: 141) and Rogers (1995: 397) pointed out that learning becomes a more vital part of strategic change or innovation, as the change becomes more revolutionary. The social interaction inherent in the learning process tends to alleviate the natural resistance to change. Mintzberg (1994: 287) called for staff to be seen as ‘co-strategists’ helping to inform radical strategic direction for an organisation, not just passive implementors of pre-determined goals. He argued that the ‘implementors have to become formulators. In its purest state … this is a “grass-roots model” of strategy formation’. He saw any move to separate the formation of strategy from its
implementation as a ‘fundamental problem (because it) concerns the separation of thinking from acting’ (Mintzberg (1994: 275). In this view, practice is seen as a testing ground for a strategy where learning from action influences the formation of strategy.

Thus holistic strategic processes, based on responsive structures and participatory learning from action are advocated as the means of reducing resistance to strategic change. However, according to Kleiner & Brown (1997), the major form of resistance to strategic change is likely to come from another source: the resistance of managers to open and participatory processes. Owen (2002: 505) also argued that the main barrier to establishing an appropriate learning culture is not resistance by individuals, but in ‘organisational designs’ and ‘political agendas’ that do not promote learning.

Resistance may also take the form of management complacency due to success of past practices, which Tushman and O’Reilly (1997: 28) described as the ‘dark side to success’ because it can lead to ‘structural inertia … resistance to change rooted in the size, complexity, and interdependence in the organization’s structures, systems and formal processes.’ This reluctance by management to adopt a learning culture was also observed by others (McNiff 2000; Leitch, Harrison, Burgoyne & Blanter 1996; Tosey & Robinson 2002).

Kleiner & Brown (1997: 505) claimed one reason for this reluctance stems from a prevailing view of strategy as a means of ‘control and domination of the workforce.’ They argued that rational planning approaches are expressly linked to this ‘control’ agenda, and that, while this might be appropriate in some contexts, particularly those requiring high levels of standardisation in output, it ‘may break down in other contexts’ (Kleiner & Brown 1997: 505). As the degree of uncertainty and unpredictability surrounding a strategy increases, the strategy process has to become less rigid, (Grant 2003, Harrington et al. 2004), which necessarily implies a reduction in the direct control of management.
6.2.2 Processes and Structures for Strategic Change

From the preceding discussion, strategic change is intricately bound up with the organisational processes and structures. Normal organisational process and structures are concerned with establishing order and predictability, whereas strategy is about dealing with the unknown. Thus complex change requires more flexible and learning focused processes, so that strategies can be ‘made and re-made continuously’ (Whittington & Melin 2003: 37), which does not fit into normal annual planning processes and rigid organisational structures. Somehow, organisations need to effectively separate the ongoing operational processes (which are concerned with control and predictability) from the participatory and unpredictable processes associated with the learning process that is central to radical strategic change. Dealing effectively with the tensions which arise from this is an important aspect of an effective strategic change process.

But tension in itself is not necessarily a bad thing. Sun & Scott (2003: 209) claimed that the tension can take two forms: negative tensions or ‘barriers’ to learning and positive ‘survival tensions’ or triggers for learning in an organisation. These act on the one hand to hinder, and on the other to promote, the transfer of learning from the individuals to the organisation. Thus expecting and finding ways of dealing with tension and ambiguity are an important part of the change process.

Tushman and Smith (2004: 12) proposed a structure called the ‘ambidextrous organisation,’ which has the capability ‘both to learn and incrementally build on its past.’ To deal with innovation, these organisations create entrepreneurial units which provide information from ‘learning by doing’ to generate and explore innovation. At the same time they maintain conventional organisational structures concerned with incremental improvement.

Leigh (2003) described a similar structural approach to enabling innovation. He reported how, in 1943, Lockheed set-up a group called ‘Skunk Works’ to promote innovation in aviation
technology. This group was essentially quarantined from the rest of the company and operated with minimal bureaucracy, and a flat structure to foster creativity. Other writers cited earlier have suggested similar structural solutions to managing innovation, involving the use of ‘self-managed project teams’ (Sheasley 1999; Lester 1998).

While many of these researchers were concerned with technological innovation, Leigh (2003) argued that similar groups could be set up as ‘foresight teams’ to assist with policy development. He warned though, that such groups need to gather evidence from a wide range of sources and publicise their findings so that they can be debated. There was agreement between all of these writers that the success of such groups depended on the support of senior management and their protection from interference. The importance of senior management support is widely identified as critical for the success of action based learning and research groups for tackling strategic problems and innovation (Alexander, McKenzie & Geissinger 1998; Kenny 2003b; McGill & Beaty 2001; 1997; Zuber-Skerritt 2001).

These approaches recognise the need to somehow circumvent the conventional bureaucratic organisational structures to achieve innovation and strategic change and an acceptance that contradiction and dialogue are the fuel of new ideas: they point to tension and disorderliness as conditions for real innovation and creativity and timely feedback as a foundation processes for organisational change. No matter what approach is taken, revolutionary change clearly occurs outside of the normal bureaucratic control processes and structures. Managers in these situations need to adopt a mindset of less control, and a willingness to actively encourage interaction and the free exchange of ideas as the basis of significant change; in short they need to facilitate learning.

If strategy is truly linked to organisational sustainability, then failure to establish flexible conditions conducive for learning, as described here, can only mean that, at best, real organisational change will be stifled, but it may mean that the organisation will go into decline.
6.2.3 A New Role for Managers

In the preceding discussion, managerial resistance to new forms of organisation was identified as a probable major impediment to revolutionary change. Because management hold the formal power in an organisation, Tosey & Robinson (2002: 107) pessimistically predicted there would be a lack of direct questioning of their control and the power structures, which ‘will constrain significantly the types of action and learning that are legitimized by the change process.’

It is little wonder therefore that the ‘planned emergence’ reported by Grant (2003: 515) led to ‘limited impact of the strategic planning process on the quality of strategic decisions … and little evidence that the systems of strategic planning were conducive to strategic innovation.’ In terms of achieving revolutionary change, other centrally controlled organisational process alignment approaches are unlikely to succeed. One such approach which has become popular is the ‘Balanced Score Card’ (BSC), designed by Kaplan and Norton (1996, 2001). BSC aims to align the organisational processes so that there is coherence and internal consistency linking the strategic outcomes to budgets, resourcing and reward systems, supported by an appropriate culture and processes to communicate the strategy. Commendably, BSC also takes a more holistic approach by basing performance measures on a broader set of performance criteria, beyond simply financial viability, by also encompassing learning and growth, internal business processes and customer satisfaction. However, as it is based on retaining management control and definition of the strategic agenda, through the implementation of clearly articulated strategic goals and targets, it is unlikely that, on its own, BSC will lead to revolutionary change, as it assumes the prior formation of strategy.

Organisations wishing to implement revolutionary change need to accept that the first stage in the process is an open ended exploratory approach geared to the formation of strategy. This stage is fundamental and its aim is to gain a better understanding of the strategic problem through a
conscious process of organisational and individual learning. By definition, in this form of change, the strategic goals are unknown and they must emerge from a diverse range of strategic learning activities and sources which are designed to be inclusive of learning from staff across the organisation, not just the executive management group.

In summary, there are cultural, structural and process barriers to the increased involvement of staff in the strategic planning process. However, increasing uncertainty associated with innovative strategic solutions is linked to a more active role of practitioners in the formation of strategy by drawing on learning from their experience. The persistence of centrally controlled planning and accountability processes stems from a view of management control of the strategic agenda. In the emerging view, the role of managers is more complex. While they remain responsible for the efficient allocation of resources and on-going operations, they also have a duty to promote creativity and innovation by facilitating learning and capturing the knowledge generated for the sustainability of the organisation. They are not to simply direct and control the agenda and limit the organisation to pre-set strategic outcomes, but to open up possibilities and support creativity. This complex role has been described as a form of ‘juggling’ (Tushman & O’Reilly 1997).

6.3 Strategy and Learning

De Wit and Meyer (1999: 33-34) called strategic problems ‘wicked’ problems, characterised by interconnectedness, complication, uncertainty, ambiguity, conflict and constraints and they argued that to effectively tackle such problems required two things: a ‘broad participation in the policy making process’ and the use of a ‘wider spectrum of information from diverse sources’.

Ehrmann (2002) described ‘transformative change’ as qualitatively different to conventional change and brings with it higher resource demands; as a particular form of large scale qualitative change in which the participants themselves are changed. Rogers (1995: 399) considered the
individuals in an organisation as the basis of the adoption process for innovation which they come to understand, largely through engaging in a process of ‘social construction’ with their peers. He maintained that, the more complex an innovation is, the more unstructured the implementation must be:

Some innovations are so radical and create such a high degree of uncertainty, that they must be adopted through an innovation process that is relatively unstructured and almost completely non-routine.

(Rogers 1995: 397)

How does an organisation learn to tackle ‘wicked’ strategic problems? What characteristics of the learning process are integral to the formation of strategy? In a ‘learning organisation’ Senge (1990) listed five disciplines which operate as a coherent whole, incorporating an organisational (system) perspective, individual, interpersonal and team based capabilities.

Actenhagen et al. (2003: 79-81) identified four theoretical types of learning cultures: conservative, adaptive, reformative and generative. While the conservative culture resists change and concentrates on refining ‘existing practices,’ the adaptive learning culture focuses on incremental change within the existing organisational framework. Reformative cultures try to explicitly develop existing practices and ‘ways of thinking’ by learning from external sources while the generative learning culture is committed to genuine renewal and research.

Similarly, Senge (1990: 14) referred to three forms of learning: generative learning, survival (or adaptive) learning and incremental learning. These ideas can be matched to those of Actenhagen et al. if the conservative and adaptive learning cultures are combined, as both are concerned with incremental learning. These three forms of learning correspond well with the three models of strategy: Interpretive, Adaptive and Linear (Chaffee 1985).
6.3.1 Learning Theory

Within the broad continuum of learning theories, two schools of learning theorists would be located at opposite ends: the behaviourists (or positivists) led by B.F. Skinner and Gagné (1965) and the constructivists, led by Piaget and Vygotsky, (Jaramillo 1996; Knight 2002; Quay 2003; Swain 2003). Behaviourist approaches to learning consider that there is ultimate truth or knowledge, which can be defined: that the learner can be led to an understanding of knowledge by appropriately structured and controlled learning experiences set-up to meet clearly defined learning objectives (Swain 2003). Traditionally, this has led to transmission approaches to learning, where knowledge is passed from an expert to a student (Jaramillo 1996).

Central figures in the constructivist movement were Piaget (1954) and Vygotsky (1978, 1981). Piaget’s constructivist perspective holds that individuals continuously construct knowledge as they interact with their environment and reconcile new experiences with their existing views of the world. Vygotsky extended these ideas to ‘social constructivism’ by arguing that social interaction and discussion are necessary components for higher order learning (Vygotsky 1978; 1981). He described ‘networks’ where discussion enables individuals to clarify ambiguities and complex ideas and come to greater understanding (Jaramillo 1996). In this view, discussion is vital to develop understanding of complex ideas, and can be done with a facilitator and/or with peers.

Constructivist approaches to learning lead to experientially based activities in which students learn by doing and reflecting on their experience. In this model, teachers become facilitators of learning rather than transmitters of content (Jaramillo 1996). Action research and action learning are learning approaches based on this view.

These two theoretical views of learning correspond well to the rational and emergent schools for strategy discussed earlier. The parallels between constructivism and the view that an innovation is
adopted through ‘social construction’ (Rogers 1995: 395-399) are obvious. Learning is thus an integral part of the strategy process, but the form of learning will need to correspond to the desired strategic goals. The constructivist, experientially based learning approaches are important to bring about significant change at all levels in an organisation, ‘the level of the individual (constructivism), the small group (social constructivism) and culture’ (Quay 2003: 107).

6.3.2 Managers as Learners

These two distinct forms of learning, positivist and constructivist, have direct relevance for managers. Leitch et al (1996: 31) identified positivism as the dominant learning paradigm in management education in western cultures, and claimed that this has had detrimental consequences for business, as this form of learning does not equip managers to meet the new challenges of their roles. They called instead for management education to consider ‘process-based approaches with an emphasis on holistic action skills’ and claimed that, by implication, this will lead to improved organisational performance.

The forms of learning, as described by a number of the researchers in the literature, are clearly of a constructivist nature (Ehrmann 2002; Laurillard 1997; Mintzberg 1994; Leitch et al. 1996, Rogers 1995; Argyris & Schön 1996 and Senge 1990). Each described learning based on action and reflection, an approach to learning which demonstrably sits within the emergent approaches to strategy. Constructivist approaches are also congruent with the conditions of ‘bounded instability’, (Stacey 1995), where the strategic goals are unclear, the situation is not understood, and feedback is needed to increase understanding and reduce the uncertainty. These situations necessitate a constructivist approach to learning, because, by definition, no-one knows what the solution will be: there is no expert to transmit the knowledge; it must be created by the individuals within the organisation.
Another key learning concept with parallels in the strategic management literature is ‘alignment’ (Biggs 1999), which holds that when designing learning, the assessment of performance must align with the learning goals. For instance, if the learning goal is to encourage higher order thinking, problem solving and creativity, the learning tasks undertaken must be consistent with this. The strategic literature applies this same principle to ensure that the organisational processes support the strategic goals, even though this has proven to be problematic.

Accepting that the strategic goals are bound up with organisational learning, as is the case with revolutionary change and innovation, and then the organisational processes must support this. If, for example, the expressed goal of an organisation is to be innovative and creative, yet assessment of performance is based on reductionist management objectives, there is a clear mismatch. Because of the risks involved, trust is an essential ingredient for effective learning on this level. Mixed messages from managers about what they value will destroy this trust. Staff will be well aware of the ‘theory in use’ as opposed to the ‘espoused theory’, (Schön 1987). In fact, Senge (1990: 25) claimed that the ‘inappropriate measurement of people’s performance’ can be viewed as a constraint on learning.

As is the case in learning, the assessment or performance measures in place are a clear statement of what is of real importance to those who established them. This is expressed, explicitly or implicitly, in the performance measures and reward processes in place. When these do not align with the stated strategic goals, there is clearly an inconsistency. The concept of alignment in the management literature therefore needs to include the learning goals inherent in a strategy, and the performance measures in place need to reflect the complexity of the process and reward the desired behaviours.

However, Leitch et al. (1996: 32-33) cited research (Mumford 1991), showing that ‘most managers … may not readily accept values such as openness, trust and confrontation or adopt the rationale
that personal development is an essential focus for organizational development.’ Thus moves to adopt an emergent strategy process necessitate support for managers and staff to acquire the necessary capabilities, if they are not already present.

Senge (1990: 340-342) described leaders in a learning organisation as ‘designers, stewards (and) teachers.’ Thus managers are designers of the organisation, through its policies, strategies and systems. Designing itself is a creative process, and, as good designers do, they need to check that their design works in practice.

While individual learning and personal growth underpins it, learning organisations are more than the sum of the learning of their individual members. The implications of learning by the individuals for the culture, processes and practices of the organisation itself must also be considered: a learning organisation is one that continuously transforms itself (Leitch et al. 1996: 35-36; Stacey 1995; Senge 1990; Whittington & Melin 2003).

Pedlar et al. (1994: 4) argued that discontinuous organisational learning involved managers in ‘working out what the next generation of systems should be and working towards those.’ However, as we have seen, managers cannot do this on their own: this form of revolutionary innovation is based on social and constructive forms of learning which rely on well developed interpersonal skills of both managers and staff to enable discussion and debate of ideas. ‘Wicked’ problems are complex and the role of managers is not to solve them, but to design and promote organisational processes that facilitate the learning process. Healthy conflict and debate become the essence of learning and meaningful change (McNiff 2000: 18-20). The next section explores the individual learning process and how this might fit into the organisational process.
6.3.3 Individual Learning

An organisation can only accumulate knowledge through the actions and capabilities of the individuals who make it up (Argyris & Schön 1996). In highly innovative or uncertain situations, individuals use discussion with their peers to reduce uncertainty and build their understanding. Rogers (1995: 397). Kemmis & McTaggart (2000: 583-585), based on Habermas (1972), proposed three ‘forms of inquiry’ or learning for individual practitioners: technical, practical and critical. Each form of inquiry is based on action, but they differ according to the nature of the learning goals and the relationship of the learner to the subject understudy.

Technical inquiry takes an objective view of practitioners, and from this perspective they are one element in an existing situation, policy or system. During the inquiry, the ends are not in question, only the means to achieve the ends. This form of inquiry is aimed at improvement or efficiency. Kemmis & McTaggart (2000) considered control processes such as quality improvement to be within this category of inquiry. This equates to what Schön (1987) called ‘single loop’ learning, and Eisner (2003: 41) called ‘first order learning.’

Practical inquiry accepts ‘both ends and means as problematic’ (Kemmis & McTaggart 2000: 583). This form of inquiry takes a subjective view of practice and considers practitioners as ‘autonomous and responsible persons’ (Kemmis & McTaggart 2000: 577) who make informed decisions and become aware of the political consequences. It acknowledges that the participants in the studies have perspectives of their own which will influence their behaviour. It is suited to understanding complex situations which involve conflicting sets of values. Schön (1987) referred to this type of learning as ‘double loop learning’ and Eisner (2003: 41) called it ‘second order learning,’ which ‘refers to exploration of alternative processes, routines or technologies.’
Sun & Scott (2003: 203) described ‘triple loop learning’ where ‘the organization’s mission, vision, market position and cultures are challenged.’ This third level of learning, also referred to as ‘critical inquiry’ (Kemmis & McTaggart 2000: 584) addresses ‘how a situation came about, as a result of human choices… and how things might be re-constructed so that they could be different in the future’. It considers not only the means and the ends, but also the very rationale for the current situation. It takes an empowerment or emancipatory stance, and considers the historical context of the situation, where it might lead and what might be the consequences of action. As the practitioners do not simply accept the status quo, but question how it came to be, there is potential for conflict, as it may challenge the agenda of the existing power structures within an organisation or system. McTaggart (1991: 40) reported difficulties initiating and maintaining critical action research approaches within organisations and concluded that it was probably due to the political tensions it generated, as it led to questioning of the agenda of those holding power. Yet, as already alluded to, unless there is freedom to undertake critical learning of this nature, open discussion is stifled, and with it, a crucial element in the development of innovative ideas and radical new approaches.

The foregoing discussion has indicated that each of the three levels of learning identified at the level of an organisation (Generative, Adaptive and Incremental) have their counterparts in individual learning (Critical, Practical and Technical). This correspondence implies that organisational learning of a third order (generative) requires individual learning of a third order (critical) and so on.

In the next section, these ideas about learning are considered in relation to the correspondence with three models for strategy (Interpretive, Adaptive and Linear) as proposed by Chaffee (1986). This discussion is based on the principle that strategic change requires the holistic alignment of appropriate organisational culture, structures and processes which promote and reward learning.
The model also considers the roles of managers and staff in the development of strategy within flexible and responsive organisations that can deal with high levels of unpredictability and uncertainty.

**6.4 A Maturity Model for Strategy**

The section argues that the strategic planning process provides a mechanism to unite and focus learning within an organisation. I contend that, as the level of understanding of the strategic problem grows, a strategy can be considered to mature or develop and thus different strategic approaches may be appropriate at different stages in its development. Each stage in the development of a strategy will have its own strategic goals and corresponding roles for management and staff within the organisation. The strategy model developed here considers managers as the designers of the organisational processes. As such, they need the ability to consciously choose and apply appropriate approaches to suit the ‘wickedness’ of the strategic problem in question. Staff are engaged in the strategy process by taking an active role in solving authentic strategic problems.

The model addresses the ‘gap’ noted by Sun and Scott (2003: 211), between the organisational learning and the learning organisation streams of theory, by aligning individuals’ learning and the learning of the organisation with the strategic approach. It also addresses each of the ‘ten challenges that limit change’ as put forward by Senge et al. (1999) and satisfies the ‘five components’ for the working approach to building a learning organisation as proposed by Pearn et al. (1995) as discussed by Sun & Scott (2003 212-213).
6.4.1 The Strategy Continuum

Based on a suggestion by Harrington et al. (2004: 18) Figure 6.1 is a diagram I propose which places the three models of strategy (Chaffee 1985) onto a continuum and relates each stage to the level of understanding (or uncertainty) for the strategy and the corresponding organisational and individual learning modes.

At the ‘Interpretive’ end of the continuum, the strategic process is based on a view of the organisation as a social entity, ‘a collection of social agreements entered into by individuals of free will.’ The strategic aim here is to ‘attract enough individuals to cooperate in mutually beneficial exchange,’ and to deal with ‘attitudinal and cognitive complexity’ (Chaffee 1985: 93). The interpretive approach assumes open structures that are able to respond rapidly to the environment. It accepts that the external reality is ‘socially constructed,’ may not be clearly defined and that the various stakeholders will have their own perceptions. A key strategic goal is to enable a dialogue within the organisation to come to a common understanding of the strategic problem and to explore possible solutions. It emphasises the importance of symbol manipulation, developing shared meaning and cooperative actions of individuals (Chaffee 1985: 93). The organisational learning
model is generative, which I argue clearly aligns with a critical or third order individual learning approach.

The assumptions that underlie strategy in the ‘Adaptive’ range of the continuum are different. Here the organisational processes are structured to continually monitor and adapt to changes in the environment. In this stage of development, the organisation is affected by environmental changes and it uses strategy to monitor and respond effectively. The organisational learning model is therefore adaptive and the organisation is engaged in developing new structures and procedures to meet the perceived demands. The corresponding individual learning model is practical or second order learning.

At the ‘Linear’ end of the continuum is the familiar rational approach, where ‘strategy consists of integrated decisions, actions or plans that will set and achieve viable organizational goals’ (Chaffee 1985: 90). The assumption underlying linear strategy is that the environment is relatively predictable or the organisation is ‘well insulated’ from the effects of external change. It further assumes that an organisation is ‘tightly coupled’, so that all decisions made at the top can be implemented throughout the organisation (Chaffee 1985:90). The organisational learning goal in this form of strategy is efficiency through continuous improvement which corresponds to individuals taking a technical or first order learning approach.

While (Chaffee 1985) felt that the appropriate strategy model should be chosen to match the complexity of a situation, the argument underpinning the continuum is that the strategic approach may change as the understanding of the strategic situation grows. What needs to be determined is the entry point to the continuum. Rather than seeing the three strategic approaches as a hierarchy of methods, they are seen to be serving different purposes for the organisation, at different stages in the development of its strategy.
Thus, Figure 6.1 can be viewed as a developmental continuum, where the entry point is governed by the level of uncertainty associated with the strategy, or alternatively, the level of understanding of the strategic problem. This implies that different strategy models suit different stages in the strategic planning process. The model of learning employed and the degree of planning detail involved should be appropriate to the level of understanding associated with the strategy. It also holds that, as learning is an individual and situational process, the various parts of the organisation may be operating at different points on this continuum as they adjust to change at different rates, due to their own unique perspectives, circumstances, rates of learning and capability sets.

When strategy involves revolutionary change, an ‘Interpretive Strategy Model’ is most appropriate as it emphasises generative learning for the organisation which is reliant on third order individual learning (critical inquiry). The priority is on gathering as much information as possible to better understand the strategic problem and to socially construct meaning within the organisation. Any plans developed at this stage need to be very flexible and resources need to be directed towards maximising learning. As the knowledge of the strategy grows, organisational management would make a conscious shift to an adaptive model of strategy. As the learning process continues and the strategy becomes much clearer, a further shift to a linear approach may become appropriate. This implies that a strategy can be considered to mature as knowledge is gained and the uncertainties are reduced. The key questions are: When should these decisions be made? Who should make them? In the next section, these ideas will be further developed to form a “Maturity Model for Strategy”.

6.4.2 A Maturity Model for Strategy

In looking for knowledge about how strategic change might develop in an organisation, the process described by Rogers (1995: 371) offered some possibilities. Rogers (1995) proposed a two stage approach for the adoption of innovation in an organisation which included an initiation stage and an implementation stage.
The aim of the initiation stage is to increase understanding of the strategic problem. This is achieved by the exploration of a range of alternative solutions which will lower the level of uncertainty surrounding the strategy. At some stage, the increased understanding from this learning will enable management to make a decision to enter the implementation stage.

Rogers (1995) argued that, by the time the organisation enters the implementation stage, management should have a sufficiently good understanding of the strategic problem to be able to consciously begin to design suitable organisational structures, appropriate accountability, resource planning and reward processes. The process for adoption of an innovation (Rogers 1995) was used in conjunction with the ideas surrounding the continuum of strategy models above (Figure 6.1) to create the “Maturity Model for Strategy”.

**Process: Initiation Stage**

During the initiation stage strategy is being formed and the situation is highly uncertain. An interpretive strategic approach is most appropriate at this stage. The key goal of this stage is to build organisational understanding of the situation to a point where management is sufficiently confident to proceed to the Implementation phase. The emphasis is on individual and organisational learning to reduce the uncertainties. A variety of activities such as scenario planning, research, pilot projects, feasibility studies, stakeholder consultations, etc. can be used to good effect to increase the understanding of the situation. Management needs to coordinate these activities and ensure the learning is captured, analysed and applied.

As referred to earlier, in times of very high uncertainty, part of the organisation may constantly need to operate in this strategy mode to ensure its long-term sustainability. However, as the organisation must also carry on its day to day functions simultaneously, it is likely that research and development teams may be formed and quarantined from the constrictions of the formal
bureaucratic processes in order to maximize opportunities for learning. In such development teams, it is essential that the staff involved take a third order or “critical” approach to learning during this stage of strategy formation. Feedback and formative evaluation is essential to provide the information and lay the foundations for a common understanding to develop in the organisation. The knowledge gained should provide valuable information regarding the most appropriate solutions, organisational processes, organisational structures and the level of resources required to meet the strategic challenges of particular solutions.

Ultimately, based on the knowledge gained and the constant monitoring of the external environment, management will be in a position to make a decision to move to the implementation stage. This is a significant decision point as it is likely to involve a considerable investment in technology, training and/or organisational structural change.

**Process: Implementation Stage (Establishment Phase)**

In the Maturity Model, the Implementation stage has been divided into two phases: the Establishment Phase and the Incorporation Phase. During the establishment phase, the chosen strategic solutions are applied more widely within the organisation. An adaptive strategy approach is most suitable. While the strategic goals have become clearer, there is still a great deal of learning to be done as the implementation proceeds. The strategic goal here is to clarify the strategic direction and develop a shared vision with a view to articulating the strategy more fully. A second order or practical approach to learning is adopted by the staff. The learning is concerned with the development of effective organisational processes, restructuring, refinement of the goals and building of staff capability to implement the change more widely. As there are likely to be significant resource implications, the planning process will need to become more defined. However, flexibility in planning is needed to deal with unforeseen problems. It is possible that
limited realistic strategic targets may be carefully introduced at this stage. Formative evaluation processes are needed to capture the learning.
TABLE 6.2: Outline of the Maturity Model for Strategy.

<table>
<thead>
<tr>
<th>Phase of Strategy Formation</th>
<th>Initiation</th>
<th>Implementation (Establishment)</th>
<th>Implementation (Incorporation)</th>
</tr>
</thead>
</table>
| **Aim of Strategy**         | • Monitoring the environment and increasing understanding of the change to reduce uncertainty  
                              • Developing innovative and sustainable responses.  
                              • Clarifying the change through social interaction.  
                              • Ensuring organisational plans are coherent  
                              • Setting and achieving organisational goals. |
| **Strategy Process Model**  | Interpretive | Adaptive | Adaptive/Linear |
| **Content of Strategy**     | • Unknown or very unclear  
                              • Partially understood  
                              • Well understood |
| **Context of Strategy**     | • Very high uncertainty  
                              • Medium to High uncertainty  
                              • Low uncertainty |
| **Organisational Learning Model** | • Generative Learning  
                              • Adaptive Learning  
                              • Incremental Learning |
| **Organisational Learning Goals** | • Revolutionary change, Discontinuous Innovation  
                                • Developing shared understanding of strategy.  
                                • Identifying staff capability requirements  
                                • Adaptive Change, Architectural Innovation  
                                • Developing a shared vision.  
                                • Building staff capability.  
                                • Evolutionary change, Continuous Innovation  
                                • Implementing the shared vision.  
                                • Building staff capability. |
| **Individual Learning Model** | • A third order or critical approach to learning  
                               • A second order or practical approach to learning.  
                               • A first order or technical approach to learning. |
### Maturity Model for Strategy

<table>
<thead>
<tr>
<th>Phase of Strategy Formation</th>
<th>Initiation</th>
<th>Implementation (Establishment)</th>
<th>Implementation (Incorporation)</th>
</tr>
</thead>
</table>
| **Role of Management**      | • Monitoring internal and external environment  
• Developing a common understanding  
• Gauging resource and capability requirements  
• Supporting and facilitating learning  
• Capturing, analysing and communicating learning  
• Evaluating progress  | • Monitoring internal and external environment  
• Building organisational shared vision of change  
• Building staff capability  
• Developing new workable processes  
• Restructuring the organisation as required  
• Building alignment of processes  
• Evaluating progress  
• Adjusting organisational processes, plans and structures to support the change  | • Clarifying and communicating performance goals  
• Building the change into normal on-going operations  
• Looking for efficiencies and improvements  
• Building staff capability  
• Monitoring medium and long term performance  |
| **Role of Staff**            | • Finding creative solutions.  
• Offering critical comment and feedback based on experience.  
• Building capability and taking risks.  | • Engaging and participating in change.  
• Undertaking staff development and training.  
• Looking for improvements and making suggestions based on experience.  | • Developing awareness of change.  
• Incorporation of change into normal practice.  
• Looking for efficiencies.  |
| **Key Activities**           | • Pilot projects, Research, Scenario planning, Stakeholder consultations, Discussion, Feedback, Communication, Sharing of Ideas.  | • Building staff capability: Action learning projects, training and staff development.  
• Building alignment of organisational structures, budgets, work planning.  | • Developing performance targets.  
• Building the strategy into normal operations.  
• Alignment of organisational  |
## Maturity Model for Strategy

<table>
<thead>
<tr>
<th>Phase of Strategy Formation</th>
<th>Initiation</th>
<th>Implementation (Establishment)</th>
<th>Implementation (Incorporation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Documenting learning, understanding implications and synthesizing ideas.</td>
<td>recruitment, reward systems, etc.</td>
<td>processes: budgets, plans</td>
</tr>
<tr>
<td>Evaluation Models</td>
<td>• Formative continuous evaluation and feedback.</td>
<td>• Formative continuous evaluation and feedback.</td>
<td>• Periodic evaluation of progress</td>
</tr>
<tr>
<td>Performance Measures</td>
<td>• Identification of key success factors, risks and resources requirements.</td>
<td>• Formative evaluation and feedback to monitor progress.</td>
<td>• Evaluation of long-term benefits of the change.</td>
</tr>
<tr>
<td></td>
<td>• Recommendation of possible solutions with a view to implementation.</td>
<td>• Development of shared vision.</td>
<td>• Achievement of performance targets.</td>
</tr>
</tbody>
</table>
Process: Implementation Stage (Incorporation Phase)

As it matures, the strategy may ultimately reach a point where it can be clearly articulated and the associated uncertainty is low. At this point a Linear Strategy Model may be appropriate, depending on the culture of the organisation. At this stage, the situation is well understood and the strategy can be implemented with confidence across the organisation. The key organisational learning goal at this stage is to build staff capability more generally and to monitor the outcomes of the change, looking for efficiencies and improvements.

A first order or technical learning approach is suitable, with the emphasis on continuous improvement. More traditional planning processes and performance measurement practices may be employed effectively. During this phase, the strategic change becomes an accepted part of practice within the organisation, a process which Rogers (1995) referred to this as “Routinising.”

It is unlikely that the strategy will pass through these stages in a uniform fashion throughout an organisation. It is more realistic to expect variations in the rate of learning across an organisation, particularly in the early stages, where the learning skills required may be unfamiliar to managers and staff. The continuum does provide a map of the strategic change process which may enable managers and staff to locate and monitor their own development. It is however, realistic to expect progress over time, provided the appropriate culture, supports and processes are in place.

6.5 Dealing with Uncertainty

The key determinant in deciding on the entry point to the strategy continuum is the degree of uncertainty (or level of understanding) associated with the proposed change. This is directly related to a number of factors related to the strategy, as discussed in the earlier sections and summarised in Table 6.1. This section further explores the concept of uncertainty, in terms of how it relates to strategic decisions. In Kenny (2002, 2003b), I presented a table to represent uncertainty and link it
to a typology of projects, thus building on ideas originally proposed by DeWit & Meyer (1999) and Shenhar & Dvir (1996). In this section, these ideas are extended further as a key part of the Maturity Model for Strategy.

6.5.1 Sources of Uncertainty

The concept of ‘uncertainty’ has been used by a number of researchers in relation to strategic change, innovation and new technology development projects (De Wit and Meyer 1999; Ehrmann 2002, Mintzberg 1994; Rogers 1995; Sheasley 1999; Lester 1998; Shenhar and Dvir 1996). De Wit & Meyer (1999) linked uncertainty with the magnitude and pace of strategic change. The magnitude of a change has two components: the scope of the change (i.e. how much of the organisation will need to change) and the amplitude (i.e. how radical it is). The pace of the change has two components: the tempo (i.e. urgency of a change) and the timing (i.e. how immediate).

It has also been linked to new the use of technology and new product development (Shenhar and Dvir 1996; Sheasley 1999; and Lester 1998) all of whom advocated the use of looser management practices and self-managed teams to reduce uncertainty through communication and sharing of ideas. The level of uncertainty has also been associated with the degree of learning required of individual staff (Rogers 1995; Mintzberg 1994) while Ehrmann linked all these factors to what he called ‘transformational’ change (Ehrmann 2002).

Each of these characteristics therefore contributes to the level of uncertainty associated with strategic change in an organisation. Revolutionary change is disruptive, ‘the more significant the change is, the more intense the shock will be’ (De Wit and Meyer 1999: 141). To understand the nature of strategic change, it is important therefore that managers are aware of the levels of uncertainty associated with it, because ‘changes at the various levels are linked and organisational change requires a holistic view of the entire range’ (De Wit & Meyer 1999: 148). This implies that
one of the key responsibilities of management is to manage the demands due to change within an organisation, as they are the ones with the decision making power and access to the full picture.

TABLE 6.3: Description of Uncertainty Factors Related to Dimensions of Strategy

<table>
<thead>
<tr>
<th>Dimension: Source of Uncertainty</th>
<th>Description: Related Factors per dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Content Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Rapidity (R)</td>
<td>An estimate of the urgency associated with the project.</td>
</tr>
<tr>
<td>Technology (T)</td>
<td>An estimate of the degree of new technology associated with the project.</td>
</tr>
<tr>
<td>Learning (L1)</td>
<td>An estimate of the degree of learning for staff required to implement the change.</td>
</tr>
<tr>
<td>Learning (L2)</td>
<td>An estimate of the degree of organisational learning.</td>
</tr>
<tr>
<td><strong>Strategic Context Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Internal Factors (I)</td>
<td>An estimate of the influence of significant factors at play in an organisation which may have an impact on the strategy.</td>
</tr>
<tr>
<td>External factors (E)</td>
<td>An estimate of the influence of external political and/or economic factors which may have an impact on the strategy.</td>
</tr>
<tr>
<td><strong>Strategic Process Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Scope (S)</td>
<td>An estimate of the extent or how widespread the change will be: Array, system, organisation or local.</td>
</tr>
<tr>
<td>Work Fraction (w)</td>
<td>An estimate of the average time fraction or workload for the project by members of the project team.</td>
</tr>
</tbody>
</table>
| **Uncertainty Index**            | \[U = \text{Content} \times \text{Context} \times \text{Process} \]

\[U = (1-w) S (I+E) (R+T+L1+L2)\]
The more radical a strategy is, the more learning is required and the greater the scope, the more uncertainty will be associated with it. To assist management, this section develops a means of estimating the levels of uncertainty. Table 6.3 presents a description of the range of factors associated with uncertainty, which fall within each of the three dimensions of strategy: content, context and process as presented by De Wit & Meyer (1999), and discussed in Table 6.1.

To illustrate how internal factors, for instance, might contribute to the uncertainty of a strategic change, consider how the organisational re-structure and financial crisis at RMIT affected the staff involved in the DLS implementation. The extra workload demands and loss of confidence in LTS clearly added to the general level of uncertainty in the organisation. Similarly, the external political and/or economic climate, which is beyond the control of the organisation, can also add to the uncertainty surrounding organisational change as in, for example, the oil crisis of 1972 (Grant 2003).

Each of the factors contributing to the uncertainty could be considered separately. However, a more holistic view would be to estimate the overall impact from all sources. The equation given for the Uncertainty Index, U (in Table 6.3 and the box above) is proposed as a means of estimating the combined effect of all of the factors which might have a bearing on the uncertainty associated with a strategic change. It attempts to take account of the context, content and process factors and to use these to determine an estimate of their overall effect. The equation is based on the assumption that the process factors, content factors and context factors of uncertainty will compound each other. In essence, each set of factors for each dimension is estimated separately; the totals are then multiplied.

$$U = \text{Scope} \times \text{Context} \times \text{Content}$$

$$U = (1-w) S (I+E) (R+T+L1+L2)$$
The ‘Uncertainty Index’, U, may prove to be a useful concept as it enables an estimate of the uncertainty at play when making strategic decisions. The usefulness of the equation and ratings lay more in their ability to alert management to the relevant sources of uncertainty and risk for a project and as a tool to stimulate discussion. More real value for an organisation may be derived from the actual process of deciding on an appropriate value for the each of the various factors, which could lead to useful discussion within and between various stakeholder groups. This discussion could also contribute to the development of a shared understanding of the strategy. The next section proposes some tools which maybe of use in promoting this discussion and developing values for each factor leading to an estimate of uncertainty.

6.5.2 Estimating Uncertainty

Table 6.4 provides a means of estimating the contribution of each factor to the uncertainty, by providing a range of ratings (from 1-4), with the higher ratings representing a greater contribution to the overall uncertainty.

The value chosen for each factor will clearly be subjective, and is best determined by discussion with appropriate stakeholders and with reference to the nature of the strategy itself. For example, the Scope of a strategy refers to the intended extent of the change and this clearly has a bearing on the complexity of change. Four scope categories are presented: array (4), system (3), organisation (2) and local (1) and these are rated to reflect their likely effect on the uncertainty. The descriptions of array and system are based on the descriptions given by Shenhar and Dvir (1996). On this scale, a system is a collection of organisations, whereas an array is a large and widely dispersed collection of systems.

Thus, a strategic change with a system wide scope is one that affects a number of organisations: for example, a new government health strategy can have implications for a large number of different
hospitals within the health system. A strategic change at the level of an array will affect a number of systems: for example, a new public transport policy has implications for the bus system, the rail system and the taxi industry, each of which may consist of numerous separate organisations. The strategic projects considered in this study have largely been those with an organisational level scope. Note that the Scope (S) is considered a process factor, as it is a decision of management on how widespread any change will be.

TABLE 6.4 - Uncertainty Ratings for Factors

<table>
<thead>
<tr>
<th>Uncertainty Factor</th>
<th>Uncertainty ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope-(S)</td>
<td>Array</td>
</tr>
<tr>
<td>Individual Learning Model-(L1)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisational Learning Model-(L2)</td>
<td>N/A</td>
</tr>
<tr>
<td>Rapidity of Change-(R)</td>
<td>N/A</td>
</tr>
<tr>
<td>Technology-(T)</td>
<td>Super High</td>
</tr>
<tr>
<td>Internal Context Factors-(I)</td>
<td>Excessive</td>
</tr>
<tr>
<td>External Context Factors-(E)</td>
<td>Excessive</td>
</tr>
<tr>
<td>Work fraction-(w)</td>
<td>Average work fraction devoted to project by members of the project team</td>
</tr>
<tr>
<td></td>
<td>(w is given a value between 0.1 and 0.9)</td>
</tr>
</tbody>
</table>
Determining the ratings for each of the uncertainty factors also provides a means of describing the uncertainty profile for any change project and would enable management to identify the relative contributions to the overall uncertainty caused by various factors, which could assist in making decisions about how to reduce the uncertainty. Valuable discussion and organisational learning opportunities could also arise by using the values of the individual factors to identify which ones need priority attention, in order to lower the uncertainty to manageable levels, or to guide decisions on priorities for action.

When determining the most appropriate rating for each factor, management need to pose the question: “For Strategy (or Project) Y, what rating best describes the effect of Factor X?” When all values have been agreed and assigned, the uncertainty index, U can be calculated. The value for U should not be viewed as an absolute value for uncertainty, but rather, as an indicative value.

Also note that the average work fraction (w) for a project team is determined by management and is linked to the strategic process chosen. It represents an estimate of the average fraction of their workload that staff on the project team will devote to the project. Lester (1998) argued that members of ‘Venture Teams’ working on innovative projects should work a minimum of 50% of their time on the project, those working less than this he considered as resources for the project team. The values for the work fraction, (w) vary from 0.1 to 0.9 and it is represented in the formula as (1-w). The rationale behind this is when staff have more time to devote to the project, there will be more time for the implementation of the effective communication, formative evaluation and learning activities such as sharing ideas and so the uncertainty will be reduced. This was a key finding from the survey of project managers reported in Kenny (2004).

The ratings for the Technology factor are again drawn from Shenhar & Dvir (1996), who identified four levels of uncertainty due to technology: Super High refers to technology not in existence yet,
but which has to be developed during a project; High refers to uncertainty due to the use of new or emerging technology; Medium refers to uncertainty caused by new applications or innovative applications of existing technology; and Low refers to the uncertainty caused by use of existing and proven technology or no technology, in other words, where the technology has little effect on the uncertainty associated with a project.

TABLE 6.5 - Provisional Scale for Uncertainty Index (U)

<table>
<thead>
<tr>
<th>Nature of change</th>
<th>Evolutionary (Continuous)</th>
<th>Adaptive (Architectural)</th>
<th>Revolutionary (Discontinuous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Model</td>
<td>Linear</td>
<td>Adaptive</td>
<td>Interpretive</td>
</tr>
<tr>
<td>Array</td>
<td>0-40</td>
<td>40-80</td>
<td>80-120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-120</td>
<td>120-160</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>160-200+</td>
</tr>
<tr>
<td>Systemic</td>
<td>0-30</td>
<td>30-60</td>
<td>60-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>90-120</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>120-150+</td>
</tr>
<tr>
<td>Organisational</td>
<td>0-20</td>
<td>20-40</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>80-100+</td>
</tr>
<tr>
<td>Local</td>
<td>0-10</td>
<td>10-20</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30-40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40-50+</td>
</tr>
<tr>
<td>Uncertainty Rating</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Very High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Extreme</td>
</tr>
</tbody>
</table>

To complete this section, Table 6.5 is presented as a reference scale against which the uncertainty index, U, for any particular project can be compared. The scale also maps onto the recommend strategic approach from the Maturity Model and may assist in locating a strategy on the continuum over time. The values in the scale have been validated in a preliminary way by my own experiences with projects at RMIT. Further research is needed to investigate the validity and usefulness of the Uncertainty Index as a management tool. Table 6.5 represents a further development of the Typology of projects shown in the Portfolio in Items 6 and 7 (Kenny 2003b, 2002) and the shaded area in the table incorporates the earlier version of the Typology.
The values for U given in Table 6.5 are nominal values. To find the actual value for U, the nominal value will need to be multiplied by the work fraction factor (1-\(w\)). The aim of management should be to set up the strategic project so that the actual value for U is established with the ranges given in the Table 6.5. This is particularly important for those projects with very high levels of uncertainty.

A numerical value for U determined using these tools would enable the uncertainty associated with a range of strategic change projects in an organisation to be estimated and compared. The value of U could be used to guide decisions concerned with allocation of resources or to identify means to reduce uncertainty before a project begins. Periodic discussions around the scale may also be conducted, to monitor the development of a strategy over time as the index value reduces.

### 6.6 A Process for Managing Strategic Change

This section explores how these ideas might be applied in an organisation. The search for an effective, holistic organisational process for managing change was the initial basis for my research. The value of this goal has been supported by the literature reviewed in this chapter. On the basis of the research, it is my belief that the effective management of change required an organisational approach based on the interrelatedness of organisational processes and roles. In this section, these ideas are further developed, particularly those outlined in Kenny and McNaught (2000), Kenny (2000) and the process diagrams shown in Items 6, and 7 in the Portfolio, (Kenny 2003a, 2003b). These earlier diagrams are superceded by the following four diagrams, Figures 6.3, 6.4, 6.5, and 6.6.

Figure 6.2 is an overview diagram that illustrates how these four diagrams are linked. It shows the key information flows between the strategic management group and the project teams. These flows
include the strategic goals and decisions flowing through the organisation (Paths A and B), as well as evaluation and feedback information flowing back to inform the strategy (Paths C1 and C2).

Note that Figure 6.6 is embedded within Figure 6.4. It represents the action learning /action research (ALAR) processes which are at the heart of the organisational strategic process and where most of the learning occurs.


Figure 6.3 below presents a process flow chart that outlines how the Strategy Initiation Process is managed. There is a high level group who manage the strategic decision making process. During this initiation stage, the focus is on gaining information and building understanding of the strategic problem. The management group establishes a strategic program, or portfolio of strategic activities which may include pilot projects, feasibility studies, scenario planning and research activities, etc. If the strategic program is one involving very high levels of uncertainty, an interpretive strategic approach is adopted. Many of the projects created will have high levels of uncertainty associated with them. These are called Type A projects, and they are set up, via Path A, with the appropriate management process as outlined in Figure 6.4. The key features as identified in the research are
FIGURE 6.3: Strategic Project Initiation Process

**Strategy Management Group**

**Goal:**  
- To maximise organisational understanding of the strategic problem.  
- Gathering information to form the strategic approach

---

**Initiation-**  
Evaluate options and implications  
- Feasibility studies, pilot projects, ALAR, research, etc.

**Implementation- (Establishment)**  
Develop Implementation Plan  
Develop effective processes

---

**Feedback from projects informs strategy formation process**

---

**Do we know enough to move into implementation phase?**

---

**Portfolio of Projects decided**

---

**For each project decide: Is the project feasible?**

---

Type A  
To Fig 6.4

---

Type B  
To Fig 6.5

---

**For each project decide: Is the level of uncertainty very high?**

---

Feedback paths  
C1 or C2

---

Project ceases
open management structures based on action research (as indicated in Figure 6.4) and the success factors outlined in Item 12.3 in the Portfolio.

FIGURE 6.4: Management Process for Type A Projects (High to Very High Levels of Uncertainty)
Any more conventional projects are set-up as Type B and connect to Figure 6.5 via path B. The overall strategic goal is to maximise organisational learning about the strategy in order to make a decision about if, how and when to implement the strategic change.

FIGURE 6.5: Management Process for Type B Projects (with Low to Medium Uncertainty)

The management group collects formal feedback data from each of the projects via Paths C1 and C2, which refer to the formative evaluation and summative evaluation process respectively, as were developed in the unpublished paper, Item 9 in the Portfolio and presented in Portfolio Item 12.
For Type A projects, the Action Learning / Action Research (ALAR) based self-managed project teams are established, as described in more detail in Figure 6.6 (and is also presented as Item 11.4 in the Portfolio). This is based on the work presented in Portfolio Item 8 (Kenny 2003a).

FIGURE 6.6: ALAR Based Team Structure for Innovative Projects.

In the Maturity Model, before making a decision to move to the implementation stage, the management group needs to collect and analyse the learning from a ‘wider spectrum of information from diverse sources’ (De Wit and Meyer 1999: 33-34). On the basis of this information, and a continual monitoring of the external environment, they will eventually be able to make an informed decision. This decision requires realistic information which has been critically evaluated and reported on in terms of the consequences of implementation, including such things as the likely effects of change, the expected outcomes, expected benefits and disadvantages, the likely resource requirements, structural changes, costs, etc.

When a decision is made to move into the implementation phase, the organisational strategic approach governing them will shift to an Adaptive Strategic model. During the Establishment phase of the Implementation, the strategic goal is building a shared understanding, and obtaining buy-in by working with staff to develop structural changes and effective process that align with the strategic goal. During this phase of the implementation, the goal is adaptive learning as the strategy
is put into widespread action. At some later stage, the implementation will move into the consolidation phase, where it becomes more widespread across the organisation. At this stage, the change process is well understood and resourced, the focus shifts to continuous improvement, efficiency and refinement of the strategy.

6.6.1 Summary

The previous work completes the development of the Maturity Model for Strategy. A large number of common themes were identified across a range of industries and sectors during the study, which implies that generalisations can be made about strategic planning. I found the extent of these commonalities surprising at first, but, as strategic planning and management are in widespread use, it stands to reason that there is a strong element of universality to the model. However, each sector, and each organisation within it, will have its own historical and cultural context to address when attempting to apply the strategic model outlined here. It is likely that the issues will manifest differently in different sectors. It is to this aspect of the problem that I will now address.

This research began as a study of the management of a particular educational change project, but it quickly broadened to include the Strategic Planning and Change process more generally. To complete the study, I now return to a discussion of the implications of the Maturity Model for Strategy when it is applied to the educational sector. This will then be followed by an application of the Maturity Model to the specific problem which motivated this work, the implementation of the DLS at RMIT. In doing so, this final phase will enable me to specifically address the research questions for this study.
6.7 Implications for the Education Sector

The general strategic planning process outlined in the Maturity Model for Strategy, with its emphasis on integrated organisational and individual learning, should have particular resonance when applied to a sector that specialises in education. This section explores some of the specific implications of the research for educational organisations.

6.7.1 The Context

In the modern economic and political climate, universities no longer serve an elite group of students, but are required to meet the needs of a more diverse student body, in addition, falling government funding is forcing them to compete for students and rely on their research and entrepreneurial capabilities to maintain viability (Ramsden 1998; Dearn et al. 2002). There has been a rapid growth in the number of students attending universities resulting from system wide structural changes (Guest & Duhs 2003; Lines 2000). This has led to a shift from the traditionally collegial management styles in these organisations, towards bureaucratic and corporate management styles (Ramsden 1998). In line with these changes, many organisations have adopted or have been required to adopt, strategic planning processes, with centrally determined strategic priorities, budgetary controls and increased accountability mechanisms (Rae 1997).

In addition, there is an increasing casualisation of ‘academic labour’ (Dearman 2003). Political leaders insisting, on greater accountability for educational organisations, have moved to gain direct control over the outcomes of professional labour, which have become evident in a drive to cut costs and a desire to ‘codify’ the work of academics and teachers. This has put pressure on the ‘discretionary judgement’ of professional teachers and academics from managerial and market forces and has led to ‘work intensification’ (Dearman 2003: 26). Drawing on the economic theory of Thévenot (1984), Dearman (2003) argued that up until now in organisations based primarily on
professional interaction, work has been difficult to codify. He predicted that new technology would enable this codification to occur leading to greater management control, de-skilling and loss of employment.

Dearman’s (2003) claim concerning new technology has to some extent been realised. In his presentation of a key note address to the AUSWEB 03 conference, Hilsberg (2003b) described the rise of private ‘for profit’ providers such as ‘NextEd’ and ‘Global University Alliance’ (GUA). He referred to higher education as an ‘industry’ undergoing rapid change driven by economic imperatives and a huge demand, particularly in Asia. He outlined a scenario where students pick and choose from courses provided anywhere in the globe and spoke of the business of education in terms of ‘supply chains’ and investment to deliver a ‘product’, where Internet has become the means of supply. The technology has opened up new markets, where ‘education comes to the student’ rather than the other way around.

In a later address Hilsberg (2003a) explained how the technology is lowering the ‘break-even point’ for such ventures because we can ‘automate the hell out of everything’. Once it is developed, the technology facilitates the delivery, student assessment and the rapid re-purposing of the content to suit different markets. He also claimed that the economic viability of these ventures is further enhanced because the management and delivery of such courses can be kept ‘away from high wage countries’. To paraphrase him: instead of getting an Australian academic to deliver a course at $80 an hour, we can get an Indian with a Ph.D. at $2 an hour. He went on to make a prediction that public education will become ‘the new textile and footwear industry’ where learning and education are viewed as content and academics become the content suppliers for the ‘university in a box’. As Hilsberg (2003a) acknowledged, his vision relies on the standardisation of education, where the content is clearly defined and codified; where the assessment is based on techniques such as standardised testing and academics are rewarded on results.
In the current market climates it is not easy for academics to retain strong educational values in the face of pressures to turn profits. The success of university programmes these days is judged increasingly in terms of profit. Colleagues working in formal contexts fight serious battles … they withstand the grossest forms of market pressure …

McNiff (2000: 235)

Due to these shifts, real pressure has come to bear on practitioners caught between the values of the increasingly market oriented approach and the traditional values and beliefs of educational organisations. These tensions arise due to quite different conceptions of the work of teachers. One views their work as a craft, a series of techniques to be applied; where the work can be codified and practitioners can be controlled and held accountable to the organisation. The other takes a professional view, where their work is non-routine and requires high levels of judgement and expertise, and the accountability is to the profession and the clients (ACE-National Discussion Paper, 2000; Dearn, Fraser & Ryan 2002; Haertel 1991; Kemmis & McTaggart 2000).

In relation to strategic innovation and change in educational institutions, if the strategic goal is to find innovative and educationally sound solutions, the strategic approach adopted should align with these goals. Unfortunately, so far, the drive for improvement has been dominated by increased pressures for accountability, promoted by governments of all persuasions in Australia in recent years, resulting in the widespread application of rational, centrally controlled planning regimes. This thinking has reached its low point in the scenario painted by Hilsberg (2003a). The application of linear strategic planning processes is most suitable to continuous improvement and represents a clear indicator that the power in the education sector lays outside of the control of the professional educators. The Maturity Model for Strategy argues that, if, the strategic goal is to encourage innovative educational change, the rational strategic planning approaches will be counter productive. Educational organisations, like any other wishing to implement innovative change, will need to adopt processes which engage their staff to undertake in creative and innovative activities and which empower rather than emasculate their capabilities. Interpretive strategic approaches with
their greater emphasis on individual and organisational learning are required. The associated ALAR approaches to learning respect teachers’ capabilities and are based on a view of teachers as professionals.

### 6.7.2 The Educational Organisation

To underline the degree of commonality of the strategic problem, consider the following quote from Hargreaves (1995). This quote could have been written as a succinct summary of material found in the management literature reported on earlier:

> (The) kinds of organizations most likely to prosper in the postindustrial, postmodern world, it is widely argued, are ones characterized by flexibility, adaptability, creativity, opportunism, collaboration, continuous improvement, a positive orientation towards problem solving and commitment to maximizing their capacity to learn about their environment and themselves.

Hargreaves (1995: 63)

Kanter et al. (1992: 3), cited by Hargreaves (1995), described these new organisations as responsive to stakeholders and the environment, they ‘have few levels of formal hierarchy and loose boundaries among functions and units. They empower people to take action and be entrepreneurial, reward them for contributions and help them to gain in skill.’

Patterson (2001: 163) also noted that academics have a ‘high degree of professional autonomy and authoritativeness at the operating level of the university’. Mintzberg (1994) described universities as examples of ‘professional organisation(s),’ which are ‘loosely coupled’ and where independent professionals, within a traditionally collegial culture, are protective of their independence and resistant to bureaucratic and rational forms of planning. The values and beliefs operating in these organisations, along with high levels of expertise of the practitioners, can be viewed as an advantage in attempts to establish conditions for a learning organisation (Ramsden 1998). Ramsden (1998: 5-6) listed four management styles operating in universities, see Table 6.6. He identified a shift from collegial organisations to bureaucracies, but he advocated that more entrepreneurial
organisations are needed to deal with the modern environment. In this case, he saw the independence and expertise of academics as an asset to be fostered rather than something to be controlled (Ramsden 1998).


<table>
<thead>
<tr>
<th>Model</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collegium</td>
<td>The traditional ‘university’. Loose control over policy definition and loose control over policy implementation. Focus is on freedom. Management style is permissive. Evaluation is by peer review.</td>
</tr>
<tr>
<td>Bureaucracy</td>
<td>Focus is on compliance. Policies are set in relation to external factors. Management style is concerned with compliance. Evaluation based on audit.</td>
</tr>
<tr>
<td>Corporation</td>
<td>Tight control over policy and implementation. Focus is on loyalty to the organisation. Competitive ethos. Management style is charismatic. Evaluation based on performance indicators.</td>
</tr>
<tr>
<td>Enterprise</td>
<td>Focus on competence and adapting to change. Management style is devolved leadership emphasizing accountable, professional expertise, built around project teams. Evaluation based on achievement and repeat business.</td>
</tr>
</tbody>
</table>

Fullan (1997: 223) argued that we must work from an acceptance that ‘complexity and diversity is endemic in postmodern society, and always brings disagreement and frustration’, but the key is to find ways ‘to reconcile positive and negative emotion’. In a transition to these new forms of organisation, cultural and structural changes will need to be made.

Hargreaves (1995: 256) maintained that structural changes that ‘increase opportunities for meaningful working relationships’ will have to be put in place to enable a more collaborative culture to develop. He called for increased trust from all parties in the process of change, for a
balance between centralised direction and localised inflexion brought about through a process of ‘collaboration and restructuring … located within an ethical discourse and political parameters that guide the efforts’, where the ethical principles are themselves ‘contestable’ (Hargreaves 1995: 259). This balance ensures a wider view is taken into account and protects against the potential pitfalls of narrowness and prejudice. It also guards against the excesses of bureaucratic control and provides a ‘voice’ for debate and dissent in the task of building a shared vision (Hargreaves 1995: 249-250).

Hargreaves (1995) argued that trust is basic to these organisations. Trust occurs on two levels, the more personal levels where the ‘local unit of enterprise is more meaningful to those working within it and more empowered to respond to the needs of its environment.’ This is balanced by trust in processes which ‘maximize the organization’s collective expertise and improve its problem solving capabilities. These include improved communication, shared decision making, creation of opportunities for collegial learning, networking with outside environments, commitment to continuous inquiry, and so on’ (Hargreaves 1995: 252-254).

However, the educational sector has not been immune to the changes in the external economic and political environment as referred to earlier. Trust on both levels referred to by Fullan (1997) has been damaged by the intensification of the work of teachers and academics and the imposition of bureaucratic control mechanisms. Fullan (1997: 219) reflected on the demoralising effects which ‘a continuous stream of superficial and unconnected innovations’ has had on teachers. He claimed that strategies to engage the ‘early adopters’ often only widened the gap between them and the resisters to change. He advocated the need to legitimise dissent in the consideration of change. That the ‘role of enthusiasts has been overestimated, and the value of resisters has been missed’ (Fullan 1997: 223).

Nayler & Bull (2000: 55) argued that ‘teachers must be regarded as the most important learners’ in that they are pivotal to any reform agenda. Echoing the similar call for changes to management
education (Leitch et al. 1996), they called for teacher learning which is more suited to the post-modern era, an era which is permeated by ‘relativistic standpoints’.

The process of dissent and learning mentioned above parallels calls for a focus on critical learning as a key to strategic educational change and gets to the heart of how professionals engage in the change process.

The common experience of many practitioners and managers is that change arouses emotions in people, both positive and negative and that an effective change process has to allow these feelings to be expressed (Fullan 1997). Drawing on Goleman’s (1995) conception of ‘emotional intelligence’ his description parallels the identification by Senge (1990) of personal mastery as a key factor in a ‘learning organisation;’ the need for ‘social construction’ of meaning for an innovation by Rogers (1995) and the call by Mintzberg (1994) for practitioners to be seen as ‘co strategists.’ In relation to the question of power,

Nayler and Bull (2000: 61) linked professional growth to four roles for teachers: as collaborative learners, creators of knowledge, designers of purposes and participants in power sharing. Action Learning and Action Research (ALAR) addresses the first three of these roles. The final point, the sharing of power, has been problematic in bureaucratic organisations as discussed earlier, but its resolution is an essential component of effective educational change and is inherent in the adoption of interpretive approaches to strategic change as outlined in the Maturity Model for Strategy.

6.8 An Analysis of the RMIT Situation

This final section completes the study by applying the learning from the research to the strategic project where it all began, the implementation of the DLS at RMIT. The strategic process at RMIT
and the developments of various strategic initiatives will be evaluated against the proposals of the Maturity Model.

From my perspective as a staff member at RMIT, the strategic planning process used at RMIT was linear in nature, similar to the situation described by Crebert (2000). It was largely determined by senior management, with minimal input from staff in general, as indicated by the staff interview data. The strategy document was a professionally produced colour printed document, with no doubt a considerable cost attached. The RMIT Teaching and Learning Strategy 1998-2000 detailed six strategic goals, each with several operational priorities and over 40 sub-strategies, along with several performance indicators for each.

The strategy placed a strong emphasis on alignment between the infrastructure and the support services to achieve the strategic goals, but paid little attention to the learning model to be adopted. Faculties were to develop their own contextualised version of the Teaching and Learning Strategy for implementation. Central services such as LTS were to support the implementation of the faculty plans and feedback from staff and students was identified as an ‘important feature’ to operate through the annual reporting cycles as part of the quality improvement process. The implementation was to be overseen by the ‘Teaching and Learning Strategy Committee.’ The strategy document promoted high ideals and mapped out a strategic implementation process which, on paper, included a great deal of interaction and was to cascade through the organisational as a basis of the planning process.

In practice, however, the strategy was viewed as a top-down process driven by a need to meet unrealistic strategic targets (Kenny 2004b). The strategic vision was far from a shared vision. The creation and dissemination of an expensively produced, fully formed strategic document implied that the organisation was locked into a certain course of action for the next three years. It meant there was virtually no scope to refine and develop the strategy on the basis of experience. The
strategic model in use was essentially a centralised rational model, which according to the Maturity Model, is totally unsuitable for the innovative change called for in the strategic documents.

The strategy set targets for the DLS project which were not based on reality and reflected a lack of understanding of the complexity of the change process. Pressure was exerted to meet the targets which involved getting large numbers of courses onto the DLS as quickly as possible. The consequence of this was that there was little time to explore the technical and professional implications for using the DLS on teaching practice, staff workloads and resourcing before it moved into full implementation. Many of these factors were identified very early as problem areas (Kenny 2000). A more extensive and exploratory initiation stage in the project would have enabled management to have gained a better understanding of the implications of using the DLS and to develop more effective professional development and implementation approaches. Unfortunately the pre-determined strategic targets tended to drive decision making, rather than experience and learning from action.

Table 6.7 shows my estimates of the uncertainty factors (from Table 6.4) for the DLS project based on the situation as described in Chapter One. The resulting value calculated for the Uncertainty Index, is U=118.8. When this is compared to the uncertainty scale in Table 6.5, the DLS project clearly comes in the extreme range of uncertainty for an organisational level project. On the same basis, local level projects (S=1) flowing from the strategy were also rated in the extreme range at 59.4.

With these levels of uncertainty, the Maturity Model recommends an initiation stage as essential for the strategic project. This would enable pilot studies and research activities to be conducted to increase the understanding of the strategic situation, provide a broader degree of input to the strategy, and clarify the likely resource demands of its implementation. The use of the DLS relied
to a large extent on academics and teaching staff making significant changes to their teaching practice. It required teachers and academics to engage with the new technology and apply it to their teaching. The technology itself was emerging and the educational change associated with its use was not well understood. In reality though, the Initiation stage was curtailed by an organisational drive to meet the strategic targets (Kenny 2004b), which led to rapid growth in the use of the DLS and marked a pre-mature flow into the Implementation stage, before the strategy was sufficiently understood.

**TABLE 6.7: Estimating the Uncertainty for the Implementation of the DLS**

<table>
<thead>
<tr>
<th>Uncertainty Factors</th>
<th>Rationale</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Factors (P)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapidity (R)</td>
<td>Project targets were very tight.</td>
<td>2</td>
</tr>
<tr>
<td>Technology (T)</td>
<td>New and emerging technology.</td>
<td>3</td>
</tr>
<tr>
<td>Learning (L1)</td>
<td>Involved significant change in teaching practice.</td>
<td>3</td>
</tr>
<tr>
<td>Organisational learning (L2)</td>
<td>Involved generative organisational learning</td>
<td>3</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>P=(R+T+L1+L2)</td>
<td><strong>P=11</strong></td>
</tr>
<tr>
<td><strong>Context Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal factors (I)</strong></td>
<td>Premature closure of the Initiation stage. Organisational chaos due to the failure of the AMS. Financial crisis. Major organisational restructure. Other significant change projects: introduction of program renewal and internationalisation.</td>
<td><strong>I=4</strong></td>
</tr>
<tr>
<td><strong>External factors (E)</strong></td>
<td>Reductions in government spending, increased globalisation and increased pressure for user pays</td>
<td><strong>E=2</strong></td>
</tr>
<tr>
<td><strong>Context Factors Subtotal</strong></td>
<td>(I+E)</td>
<td>(I+E)=6</td>
</tr>
<tr>
<td><strong>Process Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope (S)</td>
<td>It was an organisation wide initiative.</td>
<td>2</td>
</tr>
<tr>
<td><strong>Content sub-total</strong></td>
<td></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td><strong>Nominal Value</strong></td>
<td>U=S(I+E) (R+T+L1+L2)</td>
<td><strong>132</strong></td>
</tr>
</tbody>
</table>
Having entered the implementation phase prematurely, the increasingly unrealistic strategic targets put added pressure on operational performance. There was virtually no establishment phase which led to problems as this phase supports the development and refinement of new processes and practices, firstly through the development of a ‘shared understanding’ of the strategy; and then by developing and refining the processes which would make it work effectively. It is critical at this stage to provide adequate support for staff and to enable them to discuss and make sense of strategy and its implications for their own work, based on the ‘social construction’ of meaning, on going feedback and learning.

As explained in Chapter One, however, staff were given little support or time to do the development work. It was expected to be done as part of their normal operational workloads. This accounts for the work fraction in Table 6.6 being set at $w=0.1$ and is also indicative of the ‘intensification’ of the workloads of teachers in recent times, (Hargreaves 1995: 118).

In view of the absence of an Initiation phase, the 60% strategic targets, set by management in the case of the DLS, were meaningless and arbitrary, as they were not based on any realistic assessments of the demands of the change process. The hierarchical structure and convoluted linear planning processes were inflexible and gave little opportunity for feedback from experience.

Other contextual factors contributing to the uncertainty at the time, as outlined in Chapter One, relate to an extraordinary amount of other change account for the internal factors being set at $I=4$. Clearly, these factors had a significant effect on the ability of the staff and the organisation to respond to change. The disconnection between the resources and support to do the development work to meet the targets was reflected in the feedback from staff (Kenny 2004b).
Although external events also contributed to the level of uncertainty, in the form of a political and economic climate consisting of reductions in government spending, increased pressure on student fees and increased accountability, by far, the most significant effects on the DLS project were the compounding effects of the internal change at RMIT, which resulted from a series of management decisions. Often, these decisions were implemented without a full understanding of the resource implications of the change. With a greater awareness of the degree of uncertainty operating within the organisation, management may have been in a position to make different decisions, such as delay the organisational restructure for instance, until a more suitable time.

While the strategic intentions of each initiative may have been laudable, they needed to be explored thoroughly first in the context of whatever else was happening in the organisation at the time. This would have allowed for investigations of the appropriate resourcing levels and change implications prior to implementation from a holistic standpoint and would have significantly reduced the levels of uncertainty operating.

Clearly in the initiation stages of the DLS project, staff were essentially involved in research and pilot projects. An increase in their work fraction spent on the projects, in recognition of the time and effort required, would have been appropriate. This would have enabled the projects to be organised as action research projects, thus maximising the learning opportunities for the individuals and the organisation. Even an increase in the work fraction to $w=0.5$, for example, immediately reduces organisational level uncertainty considerably from $U=118.8$ to $U=66$, and brings it into a more acceptable range. A range of other possible approaches is suggested in Table 6.7, which management may be have been able to follow to reduce the overall uncertainty index to a figure within the recommended ranges.

As has been demonstrated in this study, a holistic approach must be taken which recognises that activities in an organisation are interrelated. The operation of an organisation is built on...
partnerships between the various groups which make it up. To bring about significant change, an organisation must accept that each group has a valid but different set of values driving its decisions. Healthy partnerships are built on a systemic balance of power, respect and clearly articulated roles working towards shared goals. On one hand, this needs an organisation and system which promotes learning, establishes supportive processes, provides adequate resources, values debate and monitors outcomes.

TABLE 6.8: Strategies to Reduce Uncertainty

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Effect on Uncertainty factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase implementation of change, e.g. not all the functionality or aspects are introduced at once.</td>
<td>This reduces the learning requirement on the staff (L1) but may reduce the immediate effectiveness of the implementation.</td>
</tr>
<tr>
<td>Introduce in manageable stages rather than all at once throughout the organisation.</td>
<td>Reduces S factor and allows learning from experience and modification as the implementation progresses.</td>
</tr>
<tr>
<td>Increase time line for implementation.</td>
<td>Reduces the urgency factor (U) and allows staff more time to adjust to the change.</td>
</tr>
<tr>
<td>Provide adequate training and support for staff during the change.</td>
<td>If the learning factor (L1) is high, this is essential</td>
</tr>
<tr>
<td>Allow staff to use iterative approach to change such as action learning.</td>
<td>Reduces (L1) factor by allowing staff to adjust and learn from practice and peers.</td>
</tr>
<tr>
<td>Significant change cannot be expected to occur in addition to other duties. Increase time on project.</td>
<td>Increasing workload factor (w) reduces uncertainty. Allows more time for learning process, communication and support.</td>
</tr>
<tr>
<td>Ensure there is an initiation phase for radical change that leads to learning and realistic planning for the implementation process.</td>
<td>Can reduce the uncertainty by ensuring the planning identifies the (L) learning factors and resource implications (S and C) at play and looks for synergies.</td>
</tr>
<tr>
<td>At a strategic level, look for synergies between change projects.</td>
<td>Reduces the perception of the “intensification” and feelings of overload. Reduces the internal uncertainty factor (C).</td>
</tr>
<tr>
<td>Shield projects from other internal and external factors and limitations of bureaucracy.</td>
<td>For high levels of uncertainty, set project teams up as self-managed teams with adequate resources. Reduces effects of (I) factor. Increased ownership makes learning more effective.</td>
</tr>
</tbody>
</table>
On the other hand, forming healthy partnerships needs practitioners who engage in professional activities based around ALAR, who are willing and self-confident enough to explore new ideas and offer critical input to improving their own practice and that of the organisation. The challenge for managers of educational organisations is to foster and support the tendencies to collegiality and learning which are inherent in educational cultures, not smother them in bureaucratic planning and accountability processes nor work ‘intensification.’
Chapter Seven Implications

Two research questions were posed at the beginning of this study. One was concerned with the outcomes of the specific project to implement the Distributed Learning System at RMIT University. The second was concerned with general principles concerning strategic change. The discussion from the previous chapters and the Portfolio are drawn together here to provide considered answers to the two questions which are:

1. What are the key lessons from the strategic project to implement the DLS at RMIT University?
2. What principles and processes could be applied to ensure the effective implementation of strategic change projects in the future?

I believe that, through the data collected and the literature reviewed, I am now in a position to address each question with confidence. The journey in search of answers to these questions took me from the specific case of the DLS implementation into the general case of organisational strategic change. In this chapter, I will retrace this path, in reverse order and address the second question first.

7.1 Response to Research Question 2

What principles and processes could be applied to ensure the effective implementation of strategic change projects in the future?

This research illustrates that organisational strategic change has to be approached holistically. Revolutionary strategic change and innovation involves a degree of faith; a leap into the unknown. The full meaning of any such change can only become clear from a holistic, systemic approach based on learning. It relies on a working partnership between the practitioners, (individually and collectively) and management of an organisation. It relies on developing a unified vision of the
direction the organisation must take and a preparedness to explore a variety of ways of getting there.

The ability of an organisation to effectively undergo radical change is directly linked to its culture and the management processes in place. As very high levels of uncertainty accompany revolutionary change, the outcomes cannot be fully planned. Change of this nature requires staff in an organisation to be willing to explore the implications of the strategy for their practice and use their learning to improve their own performance and that of the organisation of which they are a part. It is only through the experiences of the staff, as they come to terms with change, that its full effect on and meaning for the organisation can be gauged. Change does not exist as an entity on its own, but exists because of the transformative experiences of managers and practitioners, through their actions and their reflection on those actions.

With this understanding clearly in mind, the main focus of the management in an organisation intent on revolutionary change should be to enable it to happen. Their role is to provide adequate resources and encourage staff to engage in a critical discussion to help the organisation to clarify and articulate its vision. The challenge is to do this in a way that will reconcile the tensions between creativity and accountability. Management needs to establish a culture which values learning through open discussion. They need to design and resource processes that encourage communication of ideas and reward those who generate or develop them.

Management has the ability to mobilise resources towards the achievement of its goals. In the case of revolutionary strategic change, it must be accepted that these goals may be very unclear at first due to high levels of uncertainty. The primary strategic goal therefore is to clarify them and reduce the uncertainty by coming to understand more about the change. The key activities at this stage are geared towards organisational and individual learning about the strategic problem. The uncertainty associated with a project is related to a number of factors both internal and external. The equation
below for the uncertainty index, U, can be used to guide discussion about the factors causing uncertainty in an organisation and to get an estimate of its severity in any given situation. Please note, the prime value of this equation is that it enables a numerical estimate which can be determined from the very subjective opinions of staff. The numerical value is of little value in itself, it is not meant to be anything absolute. However, it does enable easy comparison of changes to uncertainty over time and between projects, which may guide decision making. The usefulness and validity of this as a management tool will need further investigation in realistic contexts.

\[
\text{Uncertainty Index, } U = (1-w)S(I+E)(R+T+L1+L2)
\]

Where \(0.1<w<0.9\).

Resistance to strategic change emanates not only from staff fearful or suspicious of change, but also from managers themselves. Managers can subvert change through a reluctance to free up control to the extent needed for staff to develop creative and innovative ideas. When initiating revolutionary strategic change, the role of managers is central. They need to focus on facilitating learning by using interpretive strategy models. Activities such as pilot projects, scenario planning, research and feasibility studies will provide important data on which to base decisions. It is important to also monitor the external environment and be responsive to learning and changes in circumstances as they occur. Regular feedback is critical during this phase. Staff need to be viewed as ‘co-strategists’ as they will provide valuable on the ground information to inform the formation of strategy.

The Maturity Model for Strategy contends that a strategy matures as the organisation and the individuals in it come to a better understanding of it. As this occurs, the strategic goals will change, so the strategic approach will need to change to suit the desired goals. As in good learning theory, the strategic learning process must be designed to align with the desired outcomes.
Revolutionary change requires a two stage process involving an Initiation Stage and an Implementation Stage. It can be counter productive for an organisation to push for premature closure of the initiation stage as this is the means by which the organisation comes to understand the strategy more fully by exploring the pros and cons of various solutions, the likely resource and support implications and the likely response of staff to the change. The underlying culture and organisational processes must foster risk-taking and sharing ideas. Staff learning needs to be seen as central to success. At some point, however, management have to make a considered judgement based on a wide range of data on what is the best course of action. This must be done with care, as moving into the implementation stage may lock the organisation into a particular solution or approach (Rogers 1994).

The strategy then enters the Implementation stage. Initially, there is a period of establishment where an adaptive strategy model is suitable. The organisational strategic goal is to develop a shared understanding, build capability, develop and refine appropriate organisational structures, processes and resourcing models to support the change. Eventually the change will move into a consolidation phase where it is absorbed into the normal operations of the organisation.

The normal planning structures and practices in an organisation are geared towards order, control and predictability. However radical change and innovation involves approaches which do not easily fit within the normal bureaucratic structures. They involve high levels of communication and empowerment where the hierarchies are suspended in the interests of exploring and dealing with issues as they arise. Radical solutions and ideas may not be in accord with accepted practices, policies or agendas within an organisation and political tensions can arise due to power relationships. The possibility of conflict and resistance to ideas will not necessarily entice practitioners to embark on this path unless organisation gears its culture and processes to support individuals and teams to generate ideas and management is open to learning from their experience.
The literature and the data are largely in accord on this question. The implementation of radical strategic change in an organisation introduces uncertainty. This study outlines an organisational approach to strategic change which tries to balance the need for accountability with the freedom needed for creative innovation or change. It identifies that revolutionary change and innovation needs to be evaluated on several levels including the learning for the organisation and the staff.

In highly uncertain situations, evaluation needs to occur formatively, particularly during the critical initiation stages, to reduce uncertainties and address emerging problems and clarify learning. Much of this is necessarily done informally within the project team. Informal activities help to identify and reduce uncertainties and can be incorporated into the normal team function and communication processes. They enable rapid identification of issues and modifications to plans as required.

There are significant challenges for managers and staff of organisations wishing to pursue radical change and/or innovation. The role of managers, in particular, is more complex. They will need to accept a dual role of maintaining the efficient operations of an organisation, while at the same time, empowering staff through less hierarchical structures and more self-management that promote innovative ideas and revolutionary change. Let the juggling begin!

### 7.2 Response to Research Question 1

**What are the key lessons from the strategic project to implement the DLS at RMIT University?**

The key lessons to come from the DLS project at RMIT relate to the lack of understanding of the complexity of the change process associated with the project and the application of an inappropriate strategic planning process.
The two strategic documents which drove the DLS project, the RMIT Teaching and Learning Strategy (1998-2000, 2000-2003), presented a laudable vision for the organisation. However, they largely reflected the views of senior management and were a long way from representing a ‘shared vision.’ The annual planning process to implement the strategy was linear, top down, inflexible and difficult to align. The DLS planning largely occurred outside of the faculty planning process. There was little understanding, within LTS or faculties, of the resources required for staff to adapt to using the technology in their teaching programs or the change process involved.

The application of unrealistic strategic targets caused management to focus on putting course content online, so there was little consideration of the educational implications of doing so. Using the DLS effectively required a re-think of course structure and design, it involved a high degree of uncertainty for teachers and academics learning to use it. It also required a high degree of learning for the organisation, as new processes and systems had to be developed and perfected.

These uncertainties necessitated an Initiation phase to the project, based on an Interpretive strategy approach, in order to build understanding of the organisational implications of the using the DLS. Unfortunately the push to meet the targets cut-short the Initiation phase and the learning opportunities about how to proceed in an effective way were missed. There was insufficient attention given to the lessons of the early attempts of using the DLS and little scope in the plans for the learning to affect the directions of the project. Instead of the implementation decision being made on the grounds of real understanding of the situation, it was driven by the pre-determined strategic performance goals and deadlines.

The DLS project therefore had moved into the implementation stage before it was sufficiently developed. However, once there, the problem was exacerbated because the system usage grew so rapidly that there was no adequate establishment phase either. The resultant technical problems and lack of attention to professional development and support led to considerable difficulties. Many
staff were trained in the use of the DLS software, without any consideration of how or why it may benefit their students or improve their courses. There was a clear focus on the delivery of product and expanding markets, but a lack of understanding of the change process which those using the DLS had to go through. This was further indicated by the expectation that the change could be done as a part of normal workloads.

In the end, the failure of the DLS to deliver high quality, flexible, online, and well designed student centred learning experiences, in accordance with the strategic targets, led to even more demanding strategic targets being set. Changes in strategic goals, such as the ‘Strategic Course Renewal’ (SCR) and ‘Capability Based Curriculum’ program renewal, left many staff using the DLS without educational design support and increased the burden on managers and staff to deliver, often without the provision of sufficient resources to do the work.

The DLS project would have benefited greatly from a stronger focus on staff development and feedback in the early stages. A concentration on supporting fewer courses, but aiming to ensure the educational re-thinking occurred, that staff had time to do the redevelopment work and that the projects were fully evaluated to maximise organisational learning, would have delivered valuable information for the subsequent phases of the project. This could have been done through the creation of action research groups and extended mentoring programs, which would have enabled a range of the issues and problems to be identified early and their effects minimised. It may have also minimised the technical problems which plagued the project from the outset and affected staff attitudes towards it.

While not directly a part of the DLS project, the other problems which arose within the organisation, such as: the failure of the AMS, and later the organisational re-structure, had a bearing on effectiveness of the project. They were symptomatic of a strategic process that was out of touch with the realities of change and which ignored the interrelationships between activities
with the organisation. The management of the DLS and other strategic projects needed to be seen in the context of a dynamic and highly uncertain environment. Senior management need to consider the problems holistically and to design organisational processes and structures that encouraged learning and experimentation to occur, while at the same time finding effective means of capturing the learning through feedback.

The strategic model developed in this study provides a sound basis on which to develop innovative strategic change programs in the future and avoid much of the pain and frustration that accompanied the well-intentioned but poorly designed strategic process at RMIT University.

**Closing Comment**

In the final analysis, the connection between the two research questions in this project can be explained if we see the DLS implementation as a specific example of a widespread practice: namely the use of top-down rationalistic management approaches to implement radical strategic change. I hope that this research has served to further clarify the complexity and chaotic nature of the change process. Radical strategic change has consequences at every level of an organisation, for each individual staff member, each work group, each business unit and division. At every level the change has to be interpreted through discussion and trial and error, as people and the organisation make sense of it. This is not a linear rational process, but a complex interplay of ideas driven by interpersonal interactions. This needs to be accepted by organisational managers if they are to have success in harnessing the creative potential of their staff to bring about radical change.
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Kenny, J, Quealy, J & Young, J 2002. ‘RMIT ICT DLS Competency Framework - A basis for effective staff development’. *UltiBase Online Journal*, Nov. RMIT Faculty of Education Language and Community Services, RMIT University, Australia. <http://ultibase.rmit.edu.au/Articles/nov02/kenny1.htm>


Next Ed <http://www.nexted.com/>


RMIT ICT literacy policy <http://www.rmit.edu.au/browse?SIMID=encrufvr0gm4z>

RMIT Information Technology Alignment Program (ITAP). <http://www.rmit.edu.au/browse;ID=876cewumb6el;STATUS=A?QRY=ITAP&STYPE=ENTIRE>


Appendices

Appendix One- Project Management Questionnaire

Thank you for taking the time to complete this survey. Please answer all of the questions and then click the submit button at the bottom of the page.

1 of 20. Your name

2 of 20. Name of your Institution

3 of 20. I have had adequate prior experience with managing educational projects using new technology.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

4 of 20. Please give a brief description of the project(s) on which you are working or have worked in the last three years.

5 of 20. Select from the list any areas of experience or qualifications which you believe are relevant to your role to lead such projects. (You may select more than one)

<table>
<thead>
<tr>
<th>Teaching experience</th>
<th>Prior experience managing technology projects</th>
<th>Technical skills</th>
<th>Course team leader</th>
<th>Project management qualifications</th>
<th>Content expertise</th>
<th>Other</th>
</tr>
</thead>
</table>
6 of 20. My institution provided clear project management guidelines to follow.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

7 of 20. The project management guidelines provided helped me in my role as a project manager.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

8 of 20. Select the form of any support offered to you as project manager. (You may select more than one)

<table>
<thead>
<tr>
<th>Time release from other duties</th>
<th>Training specific to the role</th>
<th>Mentoring by an experienced project manager</th>
<th>Process documentation templates</th>
<th>Technical support</th>
<th>Senior management back-up</th>
<th>Adequate funding</th>
<th>Insufficient support was offered</th>
<th>Other</th>
</tr>
</thead>
</table>
9 of 20. I am/was offered sufficient support by my institution/department to carry out my project management functions.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
<th>Agree</th>
</tr>
</thead>
</table>

10 of 20. I had sufficient autonomy to work effectively in my role as project manager.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

11 of 20. I had sufficient autonomy over the human resources for the project.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

12 of 20. I had sufficient autonomy over the budget for the project.

<table>
<thead>
<tr>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>
13 of 20. I had sufficient autonomy over the timeline for the project.

<table>
<thead>
<tr>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally agree</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Totally disagree</td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

14 of 20. Select what best describes the proportion of your time available to manage the project(s).

<table>
<thead>
<tr>
<th>Proportion of Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time</td>
<td></td>
</tr>
<tr>
<td>Between 80% and 90% of time</td>
<td></td>
</tr>
<tr>
<td>Between 50% and 80% of time</td>
<td></td>
</tr>
<tr>
<td>Between 40% and 50% of time</td>
<td></td>
</tr>
<tr>
<td>Between 20% and 40% of time</td>
<td></td>
</tr>
<tr>
<td>Less than 20% of time</td>
<td></td>
</tr>
<tr>
<td>No time</td>
<td></td>
</tr>
</tbody>
</table>

15 of 20. Select the form of any support offered to members of your project team(s). (You may select more than one)

<table>
<thead>
<tr>
<th>Support Form</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time release from other duties</td>
<td></td>
</tr>
<tr>
<td>Training specific to the role</td>
<td></td>
</tr>
<tr>
<td>Mentoring by an experienced project manager</td>
<td></td>
</tr>
<tr>
<td>Process documentation templates</td>
<td></td>
</tr>
<tr>
<td>Technical support</td>
<td></td>
</tr>
<tr>
<td>Senior management back-up</td>
<td></td>
</tr>
<tr>
<td>Adequate funding</td>
<td></td>
</tr>
<tr>
<td>Insufficient support was offered</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
16 of 20. From the list of roles given below, select any which were a part of the project team(s) you have managed. (You may select more than one)

<table>
<thead>
<tr>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project manager</td>
</tr>
<tr>
<td>Educational designer</td>
</tr>
<tr>
<td>Web programmer</td>
</tr>
<tr>
<td>Graphic designer</td>
</tr>
<tr>
<td>Content experts</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

17 of 20. Select from the list the alternative which best describes the state of development of the project management processes within your institution.

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad-Hoc- There are no defined systems and processes, project success depends upon the effort of individuals.</td>
</tr>
<tr>
<td>Abbreviated- There are limited systems in place, mainly to track</td>
</tr>
<tr>
<td>Organised- There are standardised project management processes and systems that are integrated into the rest of the organisation</td>
</tr>
<tr>
<td>Managed- Management collects and uses detailed measures of the effectiveness of the project management processes</td>
</tr>
<tr>
<td>Adaptive- Feedback from the project management process is used to drive continuous improvement</td>
</tr>
</tbody>
</table>

18 of 20. Explain what you think worked or is working in your project(s).

19 of 20. Outline the biggest obstacles you have encountered as a project manager.

20 of 20. Explain what you want to improve next time you are offered a project to manage.
**Appendix Two: Student Feedback Questionnaire**

The questionnaire was made available to students via a link on the DLS login page between April 4th and June 15th 2001. As there was a link to a generic login area, student identity information was not recorded with the data. A copy of the questions is used is provided below.

**Key:** TA= Totally Agree, A= Agree, U= Unsure, D= Disagree, TD= Totally Disagree, NA= Not Applicable

<table>
<thead>
<tr>
<th>1. What faculty are you in?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. What is the code for your subject?</td>
<td></td>
</tr>
<tr>
<td>3. Are you a TAFE or Higher Education student?</td>
<td>TAFE</td>
</tr>
<tr>
<td>4. Are you full-time or part-time?</td>
<td>Full-Time</td>
</tr>
<tr>
<td>5. Up to now, how much experience have you had using online activities and materials provided as part of your program?</td>
<td>None</td>
</tr>
<tr>
<td>6. When you used the DLS for online study, select from the list which one or more of the tools you used.</td>
<td>CourseInfo (BlackBoard)</td>
</tr>
<tr>
<td>7. Using the DLS made it easy to work at my own pace.</td>
<td>TA</td>
</tr>
<tr>
<td>8. Using the DLS reduced the number of times I had to travel to campus.</td>
<td>TA</td>
</tr>
<tr>
<td>9. Using the DLS to submit my work electronically was convenient.</td>
<td>TA</td>
</tr>
</tbody>
</table>
10. Using the DLS made it easy to discipline myself to complete work. | TA | A | U | D | TD | NA
11. Using the DLS made it easy to contact my lecturer/tutor. | TA | A | U | D | TD | NA
12. Using the DLS made it easy to discuss difficulties and share information with other students. | TA | A | U | D | TD | NA
13. Using the DLS I was able to get prompt feedback on my progress. | TA | A | U | D | TD | NA
14. Using the online tests with feedback helped me to learn. | TA | A | U | D | TD | NA
15. Using the DLS made it easy to receive important course information and announcements. | TA | A | U | D | TD | NA
16. Using the DLS made it easy to link to useful websites for information. | TA | A | U | D | TD | NA
17. Using the DLS made it easier to access library resources. | TA | A | U | D | TD | NA
18. Overall, having the course in the DLS helped me to learn. | TA | A | U | D | TD | NA
19. On the basis of my experience in this course, I am happy to do more courses on the DLS. | TA | A | U | D | TD | NA
20. I think I had enough training and information to use the DLS effectively. | TA | A | U | D | TD | NA
21. I found the DLS support desk helpful. | TA | A | U | D | TD | NA
22. The places which I normally used to access the DLS were (you may choose more than one). | Home | Dept Computer Lab | RMIT Library | Work | Community Library | Other
23. The DLS was reliable and easy to access. | TA | A | U | D | TD | NA
24. If any of your course was online, please choose one or more from the list to describe the sort of online activities you did.

<table>
<thead>
<tr>
<th>Accessible off campus</th>
<th>Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful</td>
<td>Hard to access</td>
</tr>
<tr>
<td>Flexible</td>
<td>Challenging</td>
</tr>
<tr>
<td>Frustrating</td>
<td>Lonely</td>
</tr>
<tr>
<td>Helped my learning</td>
<td>Enjoyable</td>
</tr>
</tbody>
</table>

25. If any of your course was online, please choose one or more from the list to describe the sort of online activities you did?

- Accessed lecture notes
- Received regular announcements
- Looked at course guides
- Accessed information about labs or tutorials
- Completed quizzes or surveys
- Referred to detailed course schedule or learning guide
- Communicated with my lecturer/tutor(s)
- Engaged in online discussions with other students
- Submitted assignments electronically
- Researched information from other websites

26. Explain what improvements you would like to make to the RMIT's online learning system.

Free text response.
**Appendix Three: Evaluation of Staff PD Workshops**

The approach of the workshops was to guide staff through the process of developing an online course. The evaluations of the DLS had shown that while many staff did the initial training and set-up a course, very little development of the course occurred after this.

### Evaluation

<table>
<thead>
<tr>
<th>Title of Workshop</th>
<th>Workshop Series:</th>
<th>Presenter</th>
<th>Date</th>
<th>Key: SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree, SD = Strongly Disagree. Not Applicable = NA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Workshop Series:</td>
<td>John Kenny</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Please tick the most appropriate response to each statement to reflect your impressions of the workshops.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The workshop addressed my needs.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
</tr>
<tr>
<td>The information presented was useful and relevant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The workshops were well paced.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The material was presented in a professional and organized manner.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The workshop contained a good mix of discussion and activity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The workshops helped me to better understand the online environment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The workshop introduced me to new ideas and thinking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because of the workshops, I am able to apply some of the ideas presented to improve my professional practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
<th>NA</th>
</tr>
</thead>
</table>

**General Comments**
Appendix Four- Staff Interview Questions and Process Outline

Process
The target group was staff who had been involved in the project from the beginning. I was particularly looking for people who would be in a position to provide a historical and developmental perspective on the project. Eleven staff were contacted and seven agreed to participate in the interviews. Mutually convenient times were arranged with each individual and the interviews were conducted between 23rd May and 8th August 2003 at a neutral location.

I took notes during the interview, transcribed these into an electronic file. The relevant file was sent to each interviewee for them to make any alterations they wished to make to the contents. The copy which they returned to me then became the definitive record of the interview.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>1. What is your role at RMIT?</td>
<td></td>
</tr>
<tr>
<td>2. How does use of the DLS relate to your role?</td>
<td></td>
</tr>
<tr>
<td>3. When did you first use the DLS?</td>
<td></td>
</tr>
<tr>
<td>4. What prompted you to use the DLS?</td>
<td></td>
</tr>
<tr>
<td>5. When you first used it, what were you feelings towards the DLS technology?</td>
<td></td>
</tr>
<tr>
<td>6. Have your feelings towards the DLS changed with your experience since? Explain.</td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
</tr>
<tr>
<td>7. How did you initially make use of the DLS in your teaching?</td>
<td></td>
</tr>
<tr>
<td>8. Has using the technology changed your teaching? Explain.</td>
<td></td>
</tr>
<tr>
<td>9. How have your students responded to the use of the DLS?</td>
<td></td>
</tr>
<tr>
<td>10. How do you think you will use the DLS in the future?</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
</tr>
<tr>
<td>11. How do you think the organisation could have managed the introduction of the DLS better?</td>
<td></td>
</tr>
<tr>
<td>12. How do you think the organisation could have supported you better?</td>
<td></td>
</tr>
<tr>
<td>General Comments:</td>
<td></td>
</tr>
</tbody>
</table>
Portfolio: Strategy and Learning-
A path to organisational change

John D. Kenny

(Doctor of Philosophy)

2005

RMIT University
Declaration for Ph D by Project.

Submitted for Examination in January 2005.

John D. Kenny- Student Number: 2015402E

I declare that, except where acknowledgement has been made, this Exegesis and the accompanying Portfolio is my own original work.

This exegesis has not been submitted previously, in whole or in part, to qualify for any other academic award.

The content of the Exegesis is the result of work that has been conducted since the official commencement of the research program.

I also declare that any editorial work, paid or unpaid, carried out by a third party has been duly acknowledged.

Signed

Date
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Introduction
This document brings together the processes and tools developed during the research for my PhD by project. The portfolio presents the various components together as a coherent whole. The theoretical and research background underlying the items presented in this document can be found in the accompanying Exegesis.

This paper includes 15 items produced during or as a result of this research.

**Items 1-10- Papers**

Please note, there is a degree of duplication in some of the text due to the developmental and independent aspects of the papers. To minimise this, the abstracts have been excluded and the references have been consolidated into one section at the end of the Exegesis document. Some of the formatting has been changed for consistency, but the text is unaltered from the published versions.

**Item 1. Paper: A study of educational technology project management process in Australian universities**


**Introduction**

Project management has evolved as a means of effectively managing human and other resources gathered to deliver a pre-determined product or service with specified technical requirements, time scale, budget and quality standards. In classic project management, certain techniques and processes are applied to bring projects in ‘on time and within budget’. These techniques are used effectively across a wide range of industries.

Increasingly, with the use of new technologies in the development and delivery of educational material, these techniques are being applied to the production of courseware. For example, Kenny and McNaught (2000) described how teams of specialists work together on educational development activities for online learning and the *Learning and Teaching Strategy* of the Open University in the UK proposes that course leaders need to develop project management skills to increase the speed and efficiency of course development projects.

However, Phelps et al. (2000) reported problems with the use project management processes in the university sector. They recounted their experiences as project managers leading teams of academic staff through a project management process designed to adapt teaching and learning practices to the use of new technology. They concluded that the “introduction of project management methodology into the academic environment creates cultural and procedural dissonance.”

Phelps et al (2000) questioned the application of project management processes to curriculum development in an educational institution. They pointed to several problems, including the cultural aspects of the educational environment, and the independent nature of academic work. However, they still saw a role for aspects of the project management process “particularly with regards to infrastructure.”

Bates (2000) felt that the main advantage of the project management approach to educational projects is the efficient allocation and use of scarce resources. He also noted a tension between the
classical project management approach and the nature of academic work. In an attempt to overcome this problem, he advocated a looser approach to project management which:

Does not attempt to quantify every activity on a micro level. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life. … However at the end of the day, there still has to be a course developed and deadlines met.

Bates, 2000, p.73

This paper further explores how educational projects are structured in universities. It arose as part of a doctoral study when a degree of resistance was encountered to a project management approaches to course development using new technology at RMIT. The study set out to explore the suitability of project management processes for educational projects. It considered project management per se and drew on the literature and a survey of project managers to identify suitable approaches for the effective management of educational projects.

The nature of project management

The Project Management Institute (PMI) is based in the United States and was founded in 1969. PMI has almost 100,000 members worldwide and publishes *A Guide to the Project Management Body of Knowledge, PMBOK Guide* (2000), wherein project management is defined as "the application of knowledge, skills, tools, and techniques to a broad range of activities in order to meet the requirements of a particular project."

Shenhar and Dvir (1996), Sheasley (1999) and Lester (1998) noted that project teams involved in innovation operated with high levels of uncertainty. The reduction of uncertainty was achieved by setting up self-managed project teams with open communication, looser management structures and an iterative approach to learning.

Mintzberg (1994) and De Wit and Meyer (1999) associated uncertainty with the radical strategic change. Rogers (1995) linked the degree of uncertainty associated with implementing an innovation to the “amount of knowledge” it required of the staff to adopt it. The level of uncertainty increased with the degree of change expected of the individuals.

The more radical an innovation, indexed by the amount of knowledge that organisational members must acquire in order to adopt, the more uncertainty it creates and the more difficult its implementation.

Rogers (1995, page 397)

Ehrmann (2002) also identified learning as a key component of “transformative change”, and noted that when technology was involved in such change “the stakes and risks are even higher than normal.” Bates (2000) explained how the implementation of a technological innovation in the educational sector has implications for teaching practice:

Teaching with technology requires a high skill level and this necessitates training not just in technological matters but also in educational practice. Training needs to be embedded in the course development process and the project management model can assist this.

Bates (2000, p.3)


Many staff may need professional development in some of these areas to go along with the training and professional development associated with the use of new learning technologies themselves. … Teachers may therefore feel uneasy on two accounts; they are learning new skills while operating within an unfamiliar environment.

Traditionally, the project management process itself does not distinguish between different types of projects; the choice of which particular processes will be employed in any situation is left to the judgment of the individual project manager. However, Kenny (2003b) and Kenny (2002) proposed
that projects can be distinguished on the basis of their scope and the degree of uncertainty
associated with them. He developed a typology to classify projects on these criteria. Some
illustrative examples using this typology are shown in Table 1.

Thus, new learning technologies require staff to acquire not only skills to use the technology in a
learning environment, but also to re-consider its implications for educational design and teaching
practices. Bates (2000, p.3) suggested that project management can assist the learning process by
ensuring that the resources needed are provided. It seems that the value of project management in
cases where there is a great deal of uncertainty, is not to micro-schedule, enforce strict deadlines
and outcomes, but to ensure that adequate resources are provided to enable the project to proceed
effectively, and to maximise the opportunities for learning and growth inherent in projects of this
nature.

<table>
<thead>
<tr>
<th>Project category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category One</td>
<td>Broad radical strategic change or innovation.</td>
<td>• Strategic Projects with high to very high levels of uncertainty and wide organisational impact.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Major organisational re-structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implementation of an organisational or system wide innovation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implementation of a new strategic direction or policy for the organisation with significant implications for practice.</td>
</tr>
<tr>
<td>Category Two</td>
<td>Localised radical change or innovation.</td>
<td>• Projects with high to very high levels of uncertainty but low organisational impact.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Preliminary pilot study related to a category one project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Development of a new program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radical change or innovation project initiated at the work unit level</td>
</tr>
<tr>
<td>Category Three</td>
<td>Broad incremental change or continuous improvement activity.</td>
<td>• Projects with low levels of uncertainty but wide organisational impact.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Routine improvements to an existing subject or course.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Systemic quality assurance process</td>
</tr>
<tr>
<td>Category Four</td>
<td>Localised incremental change or continuous improvement activity.</td>
<td>• Projects or activities with low levels of uncertainty and low organisational impact.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Routine improvements to an existing subject or course.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quality assurance activity</td>
</tr>
</tbody>
</table>

Table 1: Examples of project categories

proposed a project management designed for “development ideas”. It had six stages: Feasibility,
Requirements Analysis, Design, Implementation and Evaluation. They claimed that the focus of
this model is to justify and plan the infrastructure to support learning as well as to support the project. Thus, on a macro level, project management can link into organisational processes ensuring adequate resourcing is provided, as called for by Kenny and McNaught (2000).

**Embedding Learning in Projects**

The typology presented by Kenny (2002) indicates that projects with higher levels of uncertainty (Category One and Category Two) need to be set-up and managed differently from conventional projects, with the emphasis on self-managed teams and open communication to maximise learning. When independent professionals such as academics and teachers are involved in an innovative project, the project management process needs to support practices that enable professional growth and learning. Action research and action learning (ALAR) are widely acknowledged processes for this purpose, see Zuber-Skerritt (2000), Elliot (1991), McGill and Beaty (2001), Biggs (1999).

Senge (1990) also discusses the importance of the reflection and the inquiry processes for promoting a learning organisation. He talks of ‘mental models’ that every manager possesses and how these must be brought to awareness and then examined critically. In order to effectively bring about a change in practice, the inherent conditions to enable professional growth must be addressed.

Rogers (1995) described “social construction” as the single most important part in the adoption of an innovation, as it enables the practitioners to learn and reduce the level of uncertainty. However, Elliott (1991) observed that time for reflection is often given a low priority in organisations.

Integral to the ALAR process is reflection on learning, sharing the learning with others and applying the learning to improve the next iteration. Zuber-Skerritt (2001) noted that the effective adoption of ALAR requires support of senior management in organisation. Lester (1998) also included this in his list of organisational success factors for innovative projects.

In summary, the literature referred to supports a project management process for innovative educational projects based on self-managed development teams working within an iterative process of learning. Action learning as a process fits very well into this paradigm and is an accepted model for the growth of professional practitioners. The operation of action learning requires a culture in the organisation which is supportive of risk-taking and entrepreneurial activity.

**Survey of project managers**

The survey presented here was designed and circulated to get information about the nature of project management processes used in tertiary institutions. It was initiated in 2001 as part of a wider doctoral study, in response to a perceived resistance by certain academic staff, to the use of a project based approach to educational development projects. The design enabled the collection of both quantitative data (using a Likert type scale) and qualitative data using free text responses. It was provided, for the convenience of the respondents, as an online questionnaire and as an email attachment. The target audience for the questionnaire was practitioners within the tertiary sector who had managed educational projects involving new technology within the last three years.

The responding group consisted of some individuals contacted directly because they were known to be involved in managing these types of projects. Another group of respondents came from participants contacted via a posting in the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) discussion forums, ‘Development Units’ and ‘Research’.

The survey aimed to identify any peculiarities associated with the tertiary environment in relation to the management of projects. It queried the project managers about certain aspects of their work as project managers and how this related to other duties they had. In particular, the survey asked about:

- The extent of their experience, and qualifications in project management.
• The state of any institutional project management processes and guidelines available to them
• The supports offered to them and their team in their role.
• The levels of control and autonomy they had over projects of which they were in charge.
• The proportion of their time devoted to the project management role.
• What worked well, what blocks they encountered and what they would do better in future projects.

The combination of qualitative data enabled patterns to be investigated as well as providing a richer description of issues which emerged. The quantitative data was analysed using statistical methods. Responses to the free text questions were considered using a grounded analysis. A series of categories emerged from the data and these were tallied to gauge the frequency of each.

**Data Summary and Analysis**

Twenty-five responses were received from project managers working in sixteen different tertiary institutions within Australia, as well as one from a consulting firm which had done project work for tertiary institutions. The only requirement was that they were to have had recent experience in managing educational projects involving new technology.

**Background and support**

The group as a whole was very experienced. The majority (88%) of the respondents selected either “totally agree” or “agree” to the statement that they had adequate prior experience with managing educational projects using new technology.

**Experience and qualifications**

<table>
<thead>
<tr>
<th>Experience and qualifications</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching experience</td>
<td>20</td>
<td>80%</td>
</tr>
<tr>
<td>Prior experience managing technology projects</td>
<td>18</td>
<td>72%</td>
</tr>
<tr>
<td>Technical skills</td>
<td>14</td>
<td>56%</td>
</tr>
<tr>
<td>Content expertise</td>
<td>10</td>
<td>40%</td>
</tr>
<tr>
<td>Project management qualifications</td>
<td>7</td>
<td>28%</td>
</tr>
<tr>
<td>Course team leader</td>
<td>4</td>
<td>16%</td>
</tr>
</tbody>
</table>

Table 2: Relevant prior experience

Table 2 summarises the background experience or qualifications which the respondents felt was relevant to their role in leading educational projects using new technology. 80% of the respondents felt that their teaching experience was relevant. 72% of the respondents selected prior experience with managing educational projects using new technology and 56% identified specific technical skills as relevant.

Table 3 shows the range educational projects on which the respondents had worked. According to the typology of Kenny (2002), all of the projects would be considered category two projects, consisting of localised change or innovation.

When asked to select from a list of supports offered to them in their roles as project managers (Table 4) the largest area of support selected was process documentation templates at 64% of the respondents. It is interesting to note that less than half (48%) of the respondents felt that they had adequate funding and only about a third (36%) felt that they had senior management back-up. This last point was clearly identified in the literature as a key success factor for projects by Alexander et al. (1998) and Lester (1998). The fact that only 7 (28%) of respondents identified “training specific to their role” as a support offered to them as project managers and only 5 (20%) identified “mentoring by an experienced project manager,” indicates that most respondents carry out their
role without formal qualifications in project management and rely on process documentation or prior experience.

<table>
<thead>
<tr>
<th>Project type</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website development</td>
<td>5</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>8</td>
</tr>
<tr>
<td>Online course design, development</td>
<td>13</td>
</tr>
<tr>
<td>Simulations, animations and interactive games</td>
<td>3</td>
</tr>
<tr>
<td>Video</td>
<td>2</td>
</tr>
<tr>
<td>Consultancy</td>
<td>3</td>
</tr>
<tr>
<td>Management</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3 shows the range of educational projects on which the respondents had worked.

Only six (24%) of the respondents saw wider institutional issues as having a direct influence on their projects. This indicates that while some of the projects were initiated as a part of some organisational strategic push, the majority were concerned with the application of new technological approaches to localised teaching and learning projects. Eleven (44%) respondents agreed that their institution provided clear project management guidelines, and 15 (60%) felt that they were sufficient support to carry out their project management functions.

The multi disciplinary nature of the project teams was evident through the range of roles reported in the projects. Aside from the project manager, over 80% of the projects included educational design, content and graphic design expertise, while web programming expertise was reported in 68% of projects.

**Autonomy**

While 80% of respondents agreed that they had sufficient autonomy to work effectively as project managers, only 60% agreed they were offered sufficient support by their institution or department to carry out their project management functions. The survey probed further on the issue of autonomy in their role as project managers, in particular in relation to the selection of human resources for their projects, the budget for their projects and the timelines. Just over half (52%) felt that they had sufficient autonomy in each of these aspects of their projects: human resources, budget and timelines. When the data was examined more closely across the three aspects, 20% of the respondents indicated that they were working full time as project managers. Sixteen respondents reported a lack of autonomy over any of the three and a further 8 reported (32%) reported insufficient autonomy on at least two of the aspects. This meant that, in effect, 52% of the project managers surveyed had little or no control over two of the three key aspects of their projects.

<table>
<thead>
<tr>
<th>Autonomy rating</th>
<th>Human resources</th>
<th>Budget</th>
<th>Timelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally Agree/ Agree</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Totally Disagree/Disagree</td>
<td>11</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 5: Response to the statement “I had sufficient autonomy over…”

When asked to select the time fraction of their work which was devoted to managing projects, the results, shown in Table 6, indicate that 20% selected full-time, 40% selected time fractions ‘between 20% and 80%’, and 36% selected ‘less than 20%’.
This means that 64% estimated that less than 50% of their time was allocated to project management. Lester (1998) stated that members of the ‘Venture Teams’ set up for innovative projects needed to have over 50% of their time working on the project, otherwise they were classed as “resources” for the team to draw on. On this basis, nearly two thirds of the project managers would not be considered members of the project team!

<table>
<thead>
<tr>
<th>Estimated Time Fraction as Project Manager</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20%</td>
<td>9</td>
<td>36%</td>
</tr>
<tr>
<td>Between 20% and 40%</td>
<td>4</td>
<td>16%</td>
</tr>
<tr>
<td>Between 40% and 50%</td>
<td>3</td>
<td>12%</td>
</tr>
<tr>
<td>Between 50% and 80%</td>
<td>3</td>
<td>12%</td>
</tr>
<tr>
<td>Between 80% and 90%</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Full time</td>
<td>5</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 6: Estimated time fraction working as a project manager.

**Roles**

The range of roles involved in the projects reported by the respondents is revealed in Table 7 below. It indicates the multi-disciplinary nature of the project teams. The fact that project teams perform the work underscores the need for appropriate team based processes and resourcing to ensure they can function effectively.

<table>
<thead>
<tr>
<th>Identified roles involved in the projects</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project manager</td>
<td>25</td>
<td>100%</td>
</tr>
<tr>
<td>Educational designer</td>
<td>24</td>
<td>96%</td>
</tr>
<tr>
<td>Content expertise</td>
<td>21</td>
<td>84%</td>
</tr>
<tr>
<td>Graphic designer</td>
<td>20</td>
<td>80%</td>
</tr>
<tr>
<td>Web programmer</td>
<td>17</td>
<td>68%</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>44%</td>
</tr>
</tbody>
</table>

Table 7: Specific roles involved in the projects.

**Analysis of the qualitative data**

The free text response questions allowed the respondents to explain in their own words any particular aspects of their projects which had worked well, to identify the obstacles they encountered and also to suggest what they would do differently for a future project. The text responses were analysed and grouped into three aspects: Project Team Processes, Project Resources and Project Management Issues. These aspects categories were also further divided into eleven sub groups. A tally was kept for each and the results are shown in Table 8.

If we consider the raw number of times a particular issue arose as an indicator of the importance of the issue for the respondents, whether or not it was mentioned as an obstacle or as something that worked well, this gives a means of estimating what the respondents saw it as important factors in their projects. These are given in the totals column. For example, in Table 8, “Project Management Issues” received 36 (13+23) mentions in the totals indicating its significance to the effective management of the projects in the opinion of the respondents. “Project Team Processes” were mentioned a total of twenty five times (16+9). The highest ratings (8 and above) were, in order,
communication processes, project management processes, human resources and technical support, adequate time release and support of senior management.

<table>
<thead>
<tr>
<th>Aspects of the projects mentioned by respondents</th>
<th>What worked well</th>
<th>Major obstacles</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Team Processes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication-meetings</td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Identified Team Roles</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Staff Development Approach</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td><strong>Project Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate Time Release</td>
<td>1</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Human Resources &amp; Technical support</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Institutional Processes/Policies</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td><strong>Project Management Issues</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Realistic Timelines</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Support of Senior Management</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Adequate Budget</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Project Management Processes</td>
<td>7</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13</td>
<td>23</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 8: Respondents’ comments on what worked well and what the obstacles were.

**Success factors**

The key features associated with successful projects mentioned by the respondents included: an identified team with shared goals, clearly defined roles and good communication:

Having a multi-disciplinary team work in a coordinated effort on a set of shared objectives is the most beneficial aspect of the projects.

The documentation is quite specific enabling all team members some shared consistent information about the project and the roles and responsibilities of each team member. It also documents timelines and deliverables and has sign off points outlined clearly. Regular project meetings are held weekly or fortnightly which also enables timelines and milestones to be continually monitored.

The projects that work well have a very dedicated Project Leader/manager, who is able to bring all of the elements (people, resources) together into a coherent whole. When all members of the project team can meet, especially in the early phases of a project, the project has much more coherence. I have worked on two such projects.
We have good systems in place for project management and are flexible in our approach so that we adapt to the needs of the project and the client.

Enthusiasm of the staff was also mentioned and this was linked to staff development, engagement and support at all stages of the project and during implementation.

Much of the success of the project is due to the enthusiasm of academic staff to be involved in the online development - it was very much seen as a staff development opportunity. The academics are engaged in the development of their units at every stage and support from the project continues throughout the delivery of the units.

The projects that have been the most successful however have been those where the faculty member who has taken on the technology has been willing to learn and do a large part of the work themselves and where they have been willing to look at new ways of doing things. I provide them with the training and support they need to use the technology and they go ahead and do it.

Results indicate that many of the staff who manage educational projects in universities have significant amounts of their time doing other duties. This fact could lead to possible conflicts in prioritising of time and resources. This was borne out by some of the comments in relation to the obstacles encountered and it appeared to apply to not only the project managers but also the academics.

Juggling so many projects. I am spread thin across a number of projects.

Content provision is our single biggest bottleneck. Time always short as we have too many projects.

Expanding on the resources issue, there appeared to be a lack of awareness by the organisational managers of what is involved in educational technology development projects:

- Inadequate resources allocated to the project initially (through not understanding the requirements of technology-based projects)

- Sufficient time to allow all members of a project team to meet regularly. Lack of understanding of the time commitment required to achieve effective outcomes from senior management

Organisational practices seemed to underlie most of the obstacles identified by the respondents in the university environment with staff having to juggle competing priorities. Because of their role in the allocation of resources, it would seem that organisational managers need to be more aware of the demands that these projects place on staff.

- Time release for content experts to be able to conceptualise and develop their part of the project. Juggling human resources between competing projects not enough skilled staff (in the technical areas) to do the job

- Limited time and motivation for improved communication and cohesiveness of team members when they all report to different line managers. Human and other resources not explicitly allocated to the project prior to commitment to it.

- Time to work effectively on all projects. Access to sufficient, appropriate people with the right technical expertise. Sufficient time to allow all members of a project team to meet regularly. Lack of understanding of the time commitment required to achieve effective outcomes from senior management.
The competing demands on their time of staff could obviously lead to competing loyalties and priorities affecting the cohesion of the project team. The view of academics as the “content suppliers” presented some problems for projects managers as it did not necessarily lead to the academics feeling fully engaged with the project:

It has often been seen as an IT initiative - academics often expressed concern at being used as content suppliers and IT using ‘their’ online units to build up the IT empire.

The involvement of the team members has already been highlighted as a success factor and this instance acts to emphasise this point from the negative. The feedback indicated that the staff working on projects were usually employees of the university and that involvement in the project is added to their list of duties. This would explain why salaries of the project staff was not a major concern of the respondents. This, along with the tendency for staff to work on several projects or have a range of other duties in addition to their project responsibilities distinguishes projects in this environment from the classical project management model, where the project manager controls the budget and has the authority to hire and fire staff.

The need to fully scope a project at the outset was seen as a success factor also. It is important that the management and the participants in a project are fully aware of the demands a project will place on staff prior to the project beginning. This process also linked to assessing the feasibility of projects and ensuring they are adequately resourced.

In all projects, I now spend a good deal of effort in the planning and analysis stages of any project before committing a great deal of resources in product development. The second most important factor is to ensure the content expert understands the parameters of their roles and time involved to realise the outcomes required and the funding to ensure this time is possible.

From this data, it is clear that management have to be fully aware of the needs of educational development projects and ensure that they are set-up within the parameters of the organisational budgeting and planning processes so that they are adequately resourced and funded. Clearly, there is a need for an organisational process to coordinate the range of projects which are underway and ensure this happens.

The evidence here suggests that the competing workloads demands on academics and the structuring of some projects, which reduce opportunities for learning, might be a more pertinent reason for the “dissonance” reported by Phelps et al (2000) than some inherent resistance to project management. The survey indicated a general under-resourcing of projects which was evident in a widely reported lack of time to devote to tasks, because of competing demands placed on staff. This may well be more

Ehrmann (2002), Kenny and McNaught (2000), Kenny (2001), Laurillard (1997) and Bain (1999) all pointed out that, because of resource requirements of these projects, the project management processes must be embedded within the organisational processes. In project management terms this amounts to the need for realistic scoping of requirements for these projects to be carried out 'up front', with sign off and approval by management for the level of resourcing required. The level of resourcing must acknowledge the exploratory nature of these projects and the needs for staff to share ideas and construct meaning.

**Summary**

The survey results give a ‘pen picture’ of a typical educational technology project manager in a university. As we have seen, tertiary educational environments present certain cultural and work practice issues that do not necessarily fit with a classical project management approach. Project managers need to be aware of these issues, particularly in relation to projects involving large amounts of change and innovation.
On the basis of this sample of respondents, the typical project manager in a tertiary institution would have the following characteristics:

- Have a teaching background and some acquired technical skills.
- Have no formal training in project management practice.
- Have other duties aside from their project management role, for at least 50% of their time.
- Work in an institution which has few formal project management guidelines and little formal evaluation of the effectiveness of the projects or processes.
- Work in an institution where limited processes exist to share the learning in a project with others.
- Have little control over the budget, human resources or timelines for the projects, and little direct authority over the project team.
- Often encounter a shortage of resources in terms of technical expertise, or time for content experts to develop materials.

**Conclusions**

Many projects in a tertiary environment lend themselves to a classical project management approach, but those that involve changes in the practices of academics or teachers introduce high levels of uncertainty. Projects of this nature need to be structured to enable learning and must acknowledge the autonomous nature of academic work. Activities such as course re-developments, which employ new approaches to learning, for example using new technology, have many of the characteristics of innovative projects. They must be set up to enable open communication channels, loose management structures and professional development opportunities. Action learning must be an integral part of the project management process as it provides an opportunity for the staff concerned to share ideas and reflect on learning.

The value of project management in this environment is not to micro-manage academics, but to ensure that the resources and conditions that will enable the project to be successful are identified early in the set up stages.

The project manager, in this environment, has more of a coordination and facilitation role, rather than a classical management role. The aim is to ensure that academic staff are involved in the project, are supported in the development and implementation phases, and that the project is evaluated and the learning is shared with the organisation.

Treating academics as “content experts” with little other involvement in a project is unlikely to develop the degree of understanding, ownership and capability the staff will need to be able to update and maintain the materials beyond the immediate life of the project.

The project management process has to be embedded within the organisational planning processes and in tune with the natural rhythms of the organisation. The support of senior management is important and can be demonstrated by the provision of adequate resources based on a thorough project scoping process prior to a decision to proceed. The key is for the organisational culture, infrastructure and resourcing to be coordinated in a way which will enable these projects to proceed effectively.
Item 2. Paper: Student Perceptions of the Use of Online Learning Technology in Their Courses.

During the second half of 2002, I conducted an online survey of students using the DLS. This provided a large amount of feedback data which was published in the next paper.

Kenny, J 2003c. ‘Student perception of the use of online learning technology in their courses’. *UltiBase Online Journal March 2003*. RMIT Faculty of Education Language and Community Services, RMIT University, Australia.

<http://ultibase.rmit.edu.au/Articles/march03/kenny2.htm>

Introduction

At RMIT, the Distributed Learning System (DLS) has been in place since 1999. The DLS is a suite of web-based learning tools integrated behind a secure portal which can be used to develop and deliver online courseware. The staff decide, with guidance, which is the most appropriate tool for their needs. The DLS is centrally supported, maintained and funded. A suite of four tools was offered by the DLS at the time of this survey: BlackBoard, WebBoard, WebLearn, QM perception. Alternatively, staff could also create their own website and upload it to the DLS servers. The list of tools are commercial products except for WebLearn, which is a web-based assessment tool developed at RMIT in the faculty of Applied Science.

Several evaluations of the impact of the DLS have been carried out since it was launched, and some of these have been reported in the literature. (McNaught et al. 1999), (Kenny, 2000) and Kenny 2001). Each of these early evaluations incorporated student feedback, but, in the early days, there were only small numbers of students involved. Feedback was obtained indirectly from help desk messages, a small number of questionnaires and some focus groups. The educational questions associated with the use of the DLS technology tended to be overshadowed by the early technical issues.

As the DLS settled and technical issues became less predominant, an effort was made to reach a larger number of the students by developing an online questionnaire. The aim was to get feedback from as many students as possible, on how using the DLS had affected their learning. By September 2001, about 10 000 students were using DLS on a regular basis per month, a regular user being defined as a student accessing the DLS at least 5 times per month. This figure has increased to about 10 000 and 13 000 per month at the time of writing.

Literature Review

The literature on student feedback with online learning tends to vary quite a bit in the contexts being studied. Brace-Govan and Clulow (2000) observed that there is a “paucity of studies about how students actually experience online learning”, on the basis of this review, it was revealed that this is statement is particularly true for institution wide or longitudinal studies of student feedback. Most studies in the literature are concerned with a group of students in a particular course. They are usually comparative studies in which a course was delivered in two parallel modes, one being an online mode and the other a totally face to face mode.

One study involving a large number of students is a longitudinal study by Palmer and Bray (2001). They were concerned with the computer use habits of 325 engineering students. They conducted three surveys between 1998 and 2001. They found that student access rates to computers was consistently very high. This might be associated with the fact that, as engineering students, they are likely to have been keen users of technology. They also found that the proportion of students indicating ‘Home’ as the source of their internet access rose by more than 60% over the this time. The number describing themselves as regular users rose by 70 % in the same period. They did not explore student perceptions of how using computers affected their learning.
In their exploratory study, Brace-Govan and Clulow (2000) recorded student perceptions of online learning for 14 students in an undergraduate marketing subject. The students had volunteered to do the subject in a totally online mode. In particular, they explored student perceptions around their expectations of learning online, the levels of communication with staff and others in the course, and how the technology affected their work patterns.

Students reported that they had volunteered to participate because of the ‘novelty effect’ and their expectations that the study mode would be more convenient for them. They also found that the students’ perceptions were influenced by what prior experiences they had to compare. Those entering with little experience of ‘online learning’ expected to have less interaction with students and teachers. The students expressed approval of the organised structure of the learning materials. Some students were critical of response times to their questions in a discussion board, where they had expected to receive an immediate response.

They concluded that students found online learning was an attractive alternative to print-based distance education, but it was not so popular as an alternative to face-to-face classes. For text-dense materials, the students preferred hard copy materials over screen text. They identified a need for staff to manage students’ expectations of the online learning experience.

Talay-Ongan & Gosper (2000) investigated student feedback in relation to two undergraduate courses which were delivered in face-to-face mode with web-supported delivery. The feedback involved 320 students from two courses over a two-year period: 115 students and 107 students in 1998 and 1999 from one course, and 98 students in 1999 from another course.

They found a general increase in student web-skills and positive shifts in their attitudes towards the online learning experience. Both courses originally had a two-hour face-to-face lecture and a one-hour tutorial. The one-hour tutorial was replaced by a web-based tutorial. The students' rating of the online tutorial as “satisfactory or higher” rose from 39% in 1998 to 61% in 1999. They also noted an increase from 28% to 61% in satisfaction with the interaction with other students. The rating for the overall learning experience rose from 40% in 1998 to over 80% in 1999. In 1998 only 40% wanted to see more learning units on the web, but in 1999 this rose to about 70%. They concluded that introducing more flexible options to the courses led to this increase in satisfaction, but the results could also be due to a growth in confidence of the staff and students with the online mode.

Benson and de Zwart (2000) studied 10 volunteer law students using a web-based learning system provided by the institution to study a subject in fully online mode. The system provided a website linked to an online conferencing tool and a means to submit assignments. Three of the students subsequently withdrew.

They found that students responded well to the online subject, despite the experiencing technical problems and access difficulties due to firewalls and administrative delays. The flexibility of access to and the design of the resources were positively received by the students. Students also appreciated the contact with the subject coordinator. The students reported that the workload was heavy and difficult to manage. Expectations around the need for self-managed learning skills need to be discussed with students.

From a student support perspective, Taynton (2000) studied the personal issues of students presenting for counselling and assistance with their learning. They conclude that online learning is likely to be most effective when used in conjunction with other proven strategies such as face-to-face tutorials.

Felix (2001), collected data from a total of 111 language students. The courses they were involved in came from a variety of institutions and involved a number of different teachers. The teachers in the study had been chosen especially for the high level of teaching skill.
He concluded that the web is a viable environment for language learning, especially as a support for face to face teaching. He also found that student comfort with and enjoyment of using the web increased significantly during their studies. He noted that the quality of the materials used in the study was a factor in this.

Analysing the web materials for how students perceived the usefulness of materials, the key factors were: clear and logically organised content, clear objectives, meaningful feedback and easy navigation. He reports that qualitative feedback identified a number of advantages and disadvantages (see Table One).

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Time flexibility</td>
<td>o Lack of practice (speaking)</td>
</tr>
<tr>
<td>o Wealth of Information</td>
<td>o Distraction</td>
</tr>
<tr>
<td>o Reinforcement of learning</td>
<td>o No interaction with peers</td>
</tr>
<tr>
<td>o Privacy</td>
<td>o Inadequate feedback</td>
</tr>
<tr>
<td>o Ability to repeat exercises</td>
<td>o Absence of teacher</td>
</tr>
<tr>
<td>o Gaining computer literacy</td>
<td></td>
</tr>
</tbody>
</table>

Table One: Summary of Qualitative Feedback after Felix (2001)

Stacey and Fountain (2001) reflected on the use of online communication tools to support research students. Many of the students were located interstate and overseas. They observed a trend towards supervision of students remote from the institution and concluded that the traditional supervisory process used with face to face situations will need to be adapted to this new mode of supervision.

They recommend that familiarity with online communication tools will need to be included in induction sessions for future research students. They pointed to the need to have a strong ‘social presence’ within the online environment to establish trust and to make communication easier. They referred also to the difficulty of establishing discussion forums for research students as opposed to a class, due to the individual nature of their study. They proposed that the establishment of networks to enable peer and expert interactions would address this. Another key factor was the confidence of the student to be able to achieve success within this context.

In a series of case studies Kenny (2001) noted that there is likely to be a transitional period as institutions, teachers and staff make the shift to more ‘online’ learning. He identified underlying fears that arose in students and the need for these to be accounted for in the change process. These fears include the loss of face to face interaction and lack of skill in use of the technology or software.

He also described a problem in establishing a discussion forum for a course conducted in self-paced mode. The students who surged ahead in the course had no one with whom to discuss issues.

Aspect of the change process which students have to go through with a move to online learning were outlined in focus groups sessions. Many of the students in the online classes still had a conventional view of what teaching and learning as essentially a ‘face to face’ activity. Some students requested a need for more structure in the course materials. There was also an expression of difficulty in managing and organising time for online classes in comparison to normal classes and criticism of having to deal with large amounts of text on screen. The student feedback from the case studies is summarized in the table below.

Arbaugh (2001) studied student satisfaction in relation to instructor “immediacy behaviours”. Immediacy behaviours were defined as behaviours which help people to communicate effectively. In a normal setting, this would include verbal and non-verbal characteristics such as eye contact, smiling, demeanour, use of humour, feedback, etc. Accepting that such behaviour is linked to
student motivation, he proposed that immediacy behaviours would have an effect on students involved in remote learning situations. He predicted that verbal behaviours, in particular, could be mimicked in the virtual classroom. Students doing online courses in an MBA program were surveyed.

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• accessibility to materials</td>
<td>• technical problems</td>
</tr>
<tr>
<td>• convenience</td>
<td>• fear the loss of face to face interaction,</td>
</tr>
<tr>
<td>• learning valuable IT skills</td>
<td>• lack of skill in use of the technology or</td>
</tr>
<tr>
<td>• works well combined with face to face</td>
<td>• need for more structure in course materials.</td>
</tr>
<tr>
<td>sessions</td>
<td>• difficulty in managing and organising time</td>
</tr>
<tr>
<td></td>
<td>• delivering large amounts of text on screen</td>
</tr>
<tr>
<td></td>
<td>• firewall issues</td>
</tr>
</tbody>
</table>

Table Two: Summary of Feedback Kenny (2001)

Arbaugh (2001) concluded that the online learning environment “can in fact reduce the traditional social distance between instructor and student” and that instructor immediacy behaviours did enhance student satisfaction. Such instructor behaviours included: providing personal examples, demonstrating a sense of humour, comfort with the online experience, encouraging expression of ideas and discussion. This is consistent with the need for a “social presence” reported by Stacey and Fountain (2001). He also found that student attitudes to the software medium used to deliver the course affected satisfaction.

Leonard and Guha (2001) surveyed the attitudes of 20 volunteer Early Childhood pre-service teachers who chose to complete online versions of two courses and compared their attitudes to online learning with those of 24 students who studied in the conventional way. They found that students who did the online study were more positive about the effectiveness and potential of online learning to prepare them for teaching careers. This is not surprising as the 24 from the conventional mode class would have been only speculating about online learning. They also noted that the student volunteers had a high level of technical skill to begin with.

**Methodology**

Harvey (1998, p.12) identified qualitative evaluation techniques (focus groups, interviews, etc.) as particularly suitable for exploratory studies and to identify possible issues for further investigation. Quantitative studies lend themselves well to the identification of patterns and trends and the analysis of large amounts of data. Since several evaluation activities had been carried out prior to this survey, many of the key issues were already identified. As in the case of “Grounded Theory” proposed by Glaser and Strauss (1967), issues had emerged from the earlier data and a direct bearing on the framing of the questions for the survey.

The likelihood of receiving a large number of responses was another reason that a quantitative survey was preferred in this study. It was felt that students would be more likely to complete simple response questions than extended response questions. For these reasons, the survey was designed using mainly closed question types such as ‘Likert’ scale questions. This would facilitate the analysis of the data and enable the exploration of possible relationships between the variables. To ensure that some qualitative data could still be collected, a free text response question was...
added at the end of the survey. It is planned that the survey may be used over several years to collect some longitudinal data.

The questionnaire used in this study was made available to students between April 9th and June 14th 2001, via a link on the DLS login page, accompanied by a brief message inviting students to complete the survey. Any student using the DLS was able to fill it in on a voluntary basis. Anonymity was assured by providing generic login information.

The Likert questions presented students with a set of statements for which they had to choose a response. Each statement asked the students to select from six possible responses: TA= Totally Agree, A= Agree, U= Undecided, D= Disagree, TD= Totally Disagree NA= Not Applicable.

The survey was designed to get feedback on a range of issues concerning the learning experience of the students using the DLS. The questions fell into three categories:

1. Background information
2. Educational issues
   - flexibility of the learning,
   - opportunities for interaction and communication,
   - assessment experiences, administration,
   - access to learning resources
   - overall affects on learning as perceived by the students
3. Technical issues
   - login and access

The aim of this questionnaire was to gain an overview of the range of student concerns when using the DLS and to identify trends and issues. Most students were able to complete the questionnaire within ten minutes.

Data Analysis

A note about terminology. Recently RMIT terminology changed to comply with a new computerised student management system. In the new terminology, a ‘subject’ is now called a ‘course’ and a ‘course’ is now referred to as a ‘program’. For example, “Mathematics 101” would now be called now a course and a “Bachelor of Science” would now be referred to as a program. The new terminology is applied consistently by the author, but in some student feedback quoted, the old terminology is used.

A total of 620 students responded to the survey and 431 of these submitted a response to the extended answer question.

Students were asked to give the code of their online course, but many of them did not know it, or gave an incomplete or obviously erroneous code. Several students offered a number of codes. The course data received is therefore not completely clear on this point. For these reasons, only complete and obviously correct codes were counted. An estimate of the number of courses represented in the data, based on the restrictions mentioned above, is approximately 150. This includes courses from each of the seven faculties at the University.

Table 3 shows the data for background information on the students. The questionnaire did not collect data on gender or age. Future versions will include these variables to bring it into line with other studies in the literature.

RMIT is a dual sector institution in that it has both a University sector and a Technical and Further Education (TAFE) sector. The DLS is available for staff and students from both sectors. Higher Education (University) students accounted for 94% of the responses and Technical and Further Education (TAFE) students only 6%. This reflects the situation at the time at RMIT, where there had been little use of the DLS by TAFE staff. 79% of the students were full-time.
Prior experience

When asked to choose a description of their prior experience of using online activities and materials as a part of their program, 45% of the students selected “a great deal” or “quite a lot” as their response. Combined with the 24% who selected “some” as their response, this meant that 69% of the students had had some experience of using online materials as a part of their program.

<table>
<thead>
<tr>
<th>3. Are you a TAFE or Higher Education student?</th>
<th>Number</th>
<th>%</th>
<th>4. Are you full time or part time?</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAFE</td>
<td>35</td>
<td>6%</td>
<td>Higher Ed</td>
<td>549</td>
<td>94%</td>
</tr>
<tr>
<td>Full-time</td>
<td>462</td>
<td>79%</td>
<td>Part-Time</td>
<td>120</td>
<td>21%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Up to now, how much experience have you had using online activities and materials provided as part of your program?</th>
<th>Number</th>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>87</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>A Little</td>
<td>92</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Some</td>
<td>137</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Quite a lot</td>
<td>181</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>A great deal</td>
<td>83</td>
<td>14%</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Student responses to background questions.

Use of tools

When asked to select from the list which one or more of the software tools available in the DLS were used in their course, students returned the figures in Table 4.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Percentage of reported use</th>
</tr>
</thead>
<tbody>
<tr>
<td>CourseInfo (BlackBoard)</td>
<td>90%</td>
</tr>
<tr>
<td>QM Perception</td>
<td>28.5%</td>
</tr>
<tr>
<td>WebBoard</td>
<td>23%</td>
</tr>
<tr>
<td>WebLearn</td>
<td>23%</td>
</tr>
<tr>
<td>Course Website</td>
<td>18.5%</td>
</tr>
</tbody>
</table>

Table 4: Use of the DLS Tools

The BlackBoard is by far the most used tool as indicated by these results. This corresponds with the DLS monthly user reports which put usage of Blackboard at around 90% but the user figures for the other tools is well above that figures from the user data, all of which are below 10%. The figure for BlackBoard probably reflects the fact that it is the tool which has been supported the most with central training resources and is the most versatile of the tools offered in the DLS.

Educational issues

In the open response question, the students’ comments about using the DLS for the learning were mainly positive. They suggested improvements such as: the need to make the learning materials more flexible to allow more independent learning to occur. There was also strong support among students for the DLS to be used more extensively to support learning.

In the discussion that follows, “Agree” refers to the students who selected “totally agree” or “agree” in response to a question. “Disagree” refers to the students who selected “totally disagree” or “disagree”.

John Kenny
Flexibility, convenience and self-paced learning

Table 6 shows the results to questions related to flexibility and convenience. There was general agreement that the DLS offered flexibility and convenience. 62% agreed that the DLS made it easy to work at their own pace and 46.5% agreed it reduced the need to travel to a campus.

<table>
<thead>
<tr>
<th>Question</th>
<th>TA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>TD</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Using the DLS made it easy to work at my own pace.</td>
<td>104</td>
<td>256</td>
<td>84</td>
<td>83</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>44%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>8. Using the DLS reduced the number of time I had to travel to campus.</td>
<td>95</td>
<td>173</td>
<td>49</td>
<td>121</td>
<td>95</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>16.5%</td>
<td>30%</td>
<td>8.5%</td>
<td>21%</td>
<td>16.5%</td>
<td>7%</td>
</tr>
<tr>
<td>10. Using the DLS made it easy to discipline myself to complete work.</td>
<td>32</td>
<td>130</td>
<td>134</td>
<td>129</td>
<td>102</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>22%</td>
<td>23%</td>
<td>22%</td>
<td>18%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table 6: Results for questions on flexibility

Some students were critical of lecture notes going up too late. This restricted their ability to prepare or pre-read the information, particularly if they had limited access to a computer.

Lecture notes were not accessible on time - I could not work ahead when time was available.

A number of students questioned the motives behind the move to online learning expressing underlying fears about the loss of face to face sessions. 40% felt that it was not easy to discipline themselves to complete work and 23% were undecided about this.

Online testing

Online testing functionality is provided by three of the DLS tools: BlackBoard, QM Perception and WebLearn. The results in Table 7 indicate that the question was “Not Applicable” in 30% of the cases. This could mean that up to 70% of the students experienced online testing as a part of their course. Comparison with the system data on this figure, where the online testing tools are used by between 5% and 15% of the students, would indicate that this sample of students was skewed towards those who use the system regularly to complete online testing activities.

Using the online testing functions in the DLS is one means of promoting independent study for students by the provision of self-correcting tests with feedback. 60% of the students who experienced online testing agreed that the tests, with feedback, helped them to learn.

<table>
<thead>
<tr>
<th>Question</th>
<th>TA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>TD</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Using the online tests with feedback helped me to learn</td>
<td>55</td>
<td>144</td>
<td>89</td>
<td>76</td>
<td>39</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>25%</td>
<td>15%</td>
<td>13%</td>
<td>7%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Table 7: Results for question on online testing

There was some criticism when the online testing did not provide students with the answers and/or feedback on the questions they got wrong:

Generally I am very impressed with the online service as it enables you to work at your own pace, and progress forward if you wish. My only criticism is the tests - I feel that you are not really able to judge your learning progress, as you cannot find out results of your
Students also commented on the design of the questions:

Marking on quizzes did not give any indication as to why it was incorrect - suggest giving examples of similar (but different) questions with correct resolutions (hotlink?). This was very important as the quizzes were often significantly more complex than the course material. …Overall, I really liked the concept as it saved me an enormous amount of travel time.

Interaction and communication-feedback

Table 8 shows the results for questions related to interaction with others and feedback on their progress. As the question of feedback was raised in the previous section it is an important issue from the perspective of the students:

<table>
<thead>
<tr>
<th>Question</th>
<th>TA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>TD</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Using the DLS made it easy to contact my lecturer/tutor.</td>
<td>65</td>
<td>211</td>
<td>92</td>
<td>103</td>
<td>58</td>
<td>42</td>
</tr>
<tr>
<td>(%)</td>
<td>11%</td>
<td>37%</td>
<td>16%</td>
<td>18%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>12. Using the DLS made it easy to discuss difficulties and share information with other students.</td>
<td>37</td>
<td>130</td>
<td>130</td>
<td>131</td>
<td>84</td>
<td>61</td>
</tr>
<tr>
<td>(%)</td>
<td>6%</td>
<td>23%</td>
<td>23%</td>
<td>23%</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>13. Using the DLS I was able to get prompt feedback on my progress</td>
<td>44</td>
<td>157</td>
<td>106</td>
<td>135</td>
<td>75</td>
<td>10</td>
</tr>
<tr>
<td>(%)</td>
<td>8%</td>
<td>27%</td>
<td>18%</td>
<td>24%</td>
<td>13%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Table 8: Questions about interaction and communication.

While for question 11, 48% of students agreed that it was easier to contact their lecturer/tutor 28% disagreed. In response to question 12, only 29% agreed using the DLS made it easier to discuss difficulties with other students. In question 13, the fact that 57% selected “Not Applicable” and 37% actually disagreed they could get prompt feedback by using the DLS indicates that this is a key area for improvement. The DLS certainly enables feedback to be given promptly, but it would seem that from these figures, it is not used well enough for this purpose by a number of staff.

Using the online system is alot different to what I expected, coming into this course. I had never expected that most of our work is done online. A great improvement which would help a great deal would be more feedback on assignments and tests. I feel I am not learning to the best of my ability in relation to assignments and tests, as there is no feedback. I never know what answers I did get right and those wrong. Knowing would help in a great way as then I would know what I can improve on.

Active involvement by teaching staff in the website, by means of timely feedback, reports on progress and interaction are important aspects for satisfaction of students in the online courses.
Question 25 asked the students to indicate the sort of online activities in which they were involved while doing their course. They were given a number of responses from which they could select one or more answers. The results are summarized in Table 9.

<table>
<thead>
<tr>
<th>Reasons for accessing the Course Websites as Selected by Students</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessed lecture notes</td>
<td>459</td>
<td>74%</td>
</tr>
<tr>
<td>Received regular announcements</td>
<td>453</td>
<td>73%</td>
</tr>
<tr>
<td>Looked at the course guide</td>
<td>415</td>
<td>67%</td>
</tr>
<tr>
<td>Accessed information about labs or tutorials</td>
<td>299</td>
<td>48%</td>
</tr>
<tr>
<td>Completed quizzes or surveys</td>
<td>234</td>
<td>38%</td>
</tr>
<tr>
<td>Referred to detailed course schedule or learning</td>
<td>216</td>
<td>35%</td>
</tr>
<tr>
<td>Communicated with my lecturer/ tutor(s)</td>
<td>185</td>
<td>30%</td>
</tr>
<tr>
<td>Engaged in online discussions with other students</td>
<td>184</td>
<td>30%</td>
</tr>
<tr>
<td>Submitted assignments electronically</td>
<td>153</td>
<td>25%</td>
</tr>
<tr>
<td>Researched information from other websites</td>
<td>138</td>
<td>22%</td>
</tr>
</tbody>
</table>

Table 9: Student choices for the activities types in their online courses.

Five of the top six responses were concerned with using the DLS to access information. Accessing lecture notes and course management information such as course guides and documents as well as announcements pre-dominated the reasons given for accessing the DLS. The more interactive communication aspects were selected in only 30% of cases. Other functionality available through the DLS, such as submitting assignments electronically or using the web to research were also low at 25% and 22% respectively. This indicates a predominance at this stage of using the technology as a delivery mechanism for course materials and information.

In relation to obtaining documentation from the web, there were a considerable number of negative comments about courses which provided material with large amounts of text online which students would usually print off:

An overall comment: the system is shifting the cost burden of providing printed documentation to students … by requiring them to print all their own lecture and tutorial notes. This should be explained prior to enrolment because not everyone has ready access to computers and reliable printers to print large documents (it is not tolerated by all workplaces).

**Overall effects on learning**

As indicated in Table 10, for question 19, a clear majority of the students (63%) said they would be happy to do other courses using the DLS based on their experience in their current course. In question 18, 55% agreed that having the course on the DLS helped them to learn, but 20% were undecided and 24% disagreed.
19. On the basis of my experience in this course, I am happy to do more courses on the DLS in future.

Table 10: Overall effects on learning

<table>
<thead>
<tr>
<th>Adjective</th>
<th>Number (Percentage)</th>
<th>Adjective</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible off campus</td>
<td>422 (68%)</td>
<td>Interesting</td>
<td>165 (27%)</td>
</tr>
<tr>
<td>Useful</td>
<td>327 (53%)</td>
<td>Hard to access</td>
<td>131 (21%)</td>
</tr>
<tr>
<td>Flexible</td>
<td>296 (48%)</td>
<td>Challenging</td>
<td>109 (18%)</td>
</tr>
<tr>
<td>Frustrating</td>
<td>246 (40%)</td>
<td>Lonely</td>
<td>102 (16%)</td>
</tr>
<tr>
<td>Helped my learning</td>
<td>195 (31%)</td>
<td>Enjoyable</td>
<td>67 (11%)</td>
</tr>
</tbody>
</table>

Table 11: Adjectives selected by students to describe their online learning experience.

There is a noticeable difference between the 31% who selected “Helped my learning” with the figure in question 18 where 55% either “agreed or totally agreed” with the statement that the DLS helped them to learn. To explore this information more closely, the responses in Table 11 were matched to responses to the statement of question 18- “Overall, having the course in the DLS helped me to learn” (see Table 10), and the results are shown in Table 12.

Table 12: Linking “Overall effect on learning” to chosen adjectives.

<table>
<thead>
<tr>
<th>Chosen adjectives contained….</th>
<th>Totally agree or agree</th>
<th>Undecided</th>
<th>Totally disagree or disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful</td>
<td>218 (64%)</td>
<td>105 (85%)</td>
<td>31 (22%)</td>
</tr>
<tr>
<td>Frustrating</td>
<td>59 (17%)</td>
<td>49 (40%)</td>
<td>37 (26%)</td>
</tr>
<tr>
<td>Hard to access</td>
<td>27 (8%)</td>
<td>27 (22%)</td>
<td>77 (54%)</td>
</tr>
<tr>
<td>Lonely</td>
<td>21 (6%)</td>
<td>24 (20%)</td>
<td>69 (49%)</td>
</tr>
<tr>
<td>Enjoyable</td>
<td>43 (13%)</td>
<td>6 (5%)</td>
<td>1 (&lt;1%)</td>
</tr>
</tbody>
</table>

Table 12: Linking “Overall effect on learning” to chosen adjectives.

64% of the students who were positive about the effect of the DLS on their learning (question 18) described their experience of using the DLS as “Useful”. A surprising result is that 85% of those who selected “Undecided” also selected “Useful”. This might indicate that a lot of students can see
the potential of the online technology but that this does not necessarily match with their experience, a stance which was reflected in the responses to the free text question.

40% who were undecided about the effect of the DLS on their learning also selected “Frustrating” to describe their experience of using the DLS. Of those who responded negatively to question 18, 54% selected “Hard to access” and 49% selected “Lonely”.

Student comments ranged across the spectrum, but, in general, attitudes to using the DLS were in favour. Quite a lot of students urged a greater use of the DLS. They found it annoying that only some of their courses were online and others were not.

I believe that the system is absolutely terrific it offers me the flexibility to stay at home rather than travel the one and a half hours to uni which it would normally take me for every class. I also believe that RMIT in accordance with its flexible learning policy should make it mandatory for all subjects to be made available through the online system....

However, there is a body of students who do not like the change:

Personally, I hate learning off the Internet and I hope that this does not become the way of the future. I need to hear and see a lecturer explaining concepts. I also do not have adequate Internet facilities, nor enough money to pay for the excessive Internet hours which I would need to clock up.

Statistical Analysis

The Likert questions used enabled the data to be statistically analysed for possible relationships using a chi-square analysis. For ease of analysis, the Likert question responses were reduced from six to three categories. In most cases, the NA category was left out of the calculations.

This reduced the number of degrees of freedom, but ensured there was sufficient data in each category for the statistical analysis to be valid. Various hypotheses were then tested to determine if there were any statistically significant relationships between certain variables. The relationships considered are listed in the discussion below.

The experience of full-time and part-time students

The responses of full-time and part-time students were compared to determine if there was any significant difference in their responses to three questions. The results are summarized in Table 13

<table>
<thead>
<tr>
<th>Full-time and part-time students...</th>
<th>Degrees of freedom</th>
<th>Chi-squared</th>
<th>Confidence level</th>
<th>Reject null hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>……..and their perceived overall effect on their learning</td>
<td>2</td>
<td>3.299</td>
<td>p&gt;.05</td>
<td>No</td>
</tr>
<tr>
<td>…whether they described themselves as having “A great deal” or “Quite a lot” of prior experience</td>
<td>2</td>
<td>175</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…willingness to do another course</td>
<td>2</td>
<td>3.22</td>
<td>p&gt;.05</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 13: Chi-squared results for three relationships around full-time and part-time students

At the 5% level, no difference was found between how full-time or part-time students perceived the effects of the DLS on their learning or on their willingness to do another course using the DLS in future. However, there is a clear difference in how they described their experience with using online learning activities. Full-time students were more likely to describe themselves as having had “A great deal” or “Quite a lot” of prior experience with online learning.
The overall effect on learning

A number of other variables were related to student selections for the overall effects on learning. Table 14 summarises the results.

<table>
<thead>
<tr>
<th>How overall effect on learning relates to…</th>
<th>Degrees of freedom</th>
<th>Chi-squared</th>
<th>Confidence level</th>
<th>Reject null hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>…contact with lecturer</td>
<td>4</td>
<td>102.63</td>
<td>P&lt;0.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>….working at own pace</td>
<td>4</td>
<td>198.99</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…access to library resources</td>
<td>4</td>
<td>51.9</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>….receiving prompt feedback</td>
<td>4</td>
<td>76.54</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…whether they felt they had enough training?</td>
<td>4</td>
<td>66.29</td>
<td>P&lt;0.0005</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 14: results exploring relationships to the overall effect on learning

Very strong relationships were found in each case, with those students who agreed that the DLS helped them to learn also being more likely to agree that:

- they could contact their lecturer
- work at their own pace
- access library resources
- receive prompt feedback
- had enough training to use the DLS.

Students willingness to do more courses online

Table 15 summarises the results for how the willingness of students to do more course online using the DLS related to a range of other variables.

<table>
<thead>
<tr>
<th>Student willingness to do more courses online and…</th>
<th>Degrees of freedom</th>
<th>Chi-squared</th>
<th>Confidence level</th>
<th>Reject null hypothesis?</th>
</tr>
</thead>
<tbody>
<tr>
<td>…prior experience levels of using online materials?</td>
<td>4</td>
<td>13.50</td>
<td>P&lt;.01</td>
<td>Yes</td>
</tr>
<tr>
<td>…receiving prompt feedback</td>
<td>4</td>
<td>70.46</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…whether it reduced their need to travel to campus?</td>
<td>4</td>
<td>45.90</td>
<td>P&lt;.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…more easily contact lecturer</td>
<td>4</td>
<td>45.68</td>
<td>P&lt; .0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…working at own pace</td>
<td>4</td>
<td>165.32</td>
<td>P&lt; .0005</td>
<td>Yes</td>
</tr>
<tr>
<td>…opportunities to discuss and share ideas with other students.</td>
<td>4</td>
<td>89.00</td>
<td>P&lt; .0005</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 15: results exploring relationships to the willingness to do more courses

Again very strong relationships were found with those who were willing to do more courses, also more likely to agree that

- their prior experience levels were “A great deal” or Quite a lot”
- their perceptions of receiving prompt feedback;
- the DLS reduced their need to travel to campus;
- the DLS made it easier to contact with the lecturer/tutor
- they could work at their own pace;
the DLS provided opportunities to share and discuss with other students.

Staff Development Issues

Some students criticised the lack of consistency in layout of the materials and also the skills of some lecturers to use the DLS tools effectively. Also a number of students urged staff to make a greater use of the potential of the tools in the DLS.

Each lecturer has set up their subject differently on the system, and uses it to a different extent and for different purposes. RMIT needs to enforce a policy of consistency amongst lecturers on how they use the system, what they call documents and where they are placed on the system. … Many features were also not used - e.g. putting marks online, establishing pages for sharing documents by groups etc. These would all be beneficial. …

Tools such as BlackBoard offer the advantage that staff can quickly upload learning materials to go online. The question of how to structure and organise these learning materials within is a more difficult one.

I … did cc070 online. This subject was very well designed and applicable to the web. It made study easy and flexible. In contrast XX111 and XX112 (codes changed) have not been designed for online learning, they are just a bunch of notes plonked on the Internet.

The ability to develop meaningful learning activities and to acquire the skills to effectively facilitate in the online environment will require concerted professional development.

The biggest thing that could be done is to train lecturers on how to use the DLS to its full potential. I had four or five subjects on the learning hub and only one of those was used properly and regularly by the lecturers. I think the reason for this is that they simply don't know what all the features are and how to utilise them effectively.

The results indicate that the DLS is still largely being used as a means of delivering content to students. The comments on feedback above indicate that the ability of the DLS to enhance communication between staff and students and between students is underutilized. Many staff may need clearer professional development on how they to structure their site in the DLS and to interact with students online.

It is likely that the concerns of students would be considerably lessened by ensuring appropriate clear guidance for lecturers. Courses which contain well structured materials, higher levels of interaction and prompt feedback on queries are more appealing to students.

These comments point to the fact that many lecturers will start by using only the basic functionality to deliver information and to develop their own confidence. The more interactive and learning activities require a greater level of educational re-design of teaching materials and changes in teaching practice which will not happen without professional development support.

Technical issues

Technical and access problems were the biggest area of comment by the students in the open response comments. There was confusion around the login procedure and a lot of frustration with having multiple logins to access resources. Many students also complained about the difficulty of access in some computer labs.

The password system is a pain. At home its ok because I can bookmark but on RMIT computers, typing 3 passwords and usernames for access is a nuisance.

Access

Table 16 shows the regular access points reported by the students. It is significant that 82% of students accessed their courses from home on a regular basis. This supports the view that students find the convenience a positive.
Table 16: Student access points for the DLS.

<table>
<thead>
<tr>
<th>Access point</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>82%</td>
</tr>
<tr>
<td>Dept Computer Lab</td>
<td>44.7%</td>
</tr>
<tr>
<td>RMIT Library</td>
<td>36.9%</td>
</tr>
<tr>
<td>Work</td>
<td>20%</td>
</tr>
<tr>
<td>Community Library</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Reliability

Table 17 summarises the results for question 23. Overall the majority of students (59%) felt that the DLS was reliable and easy to access while (28%) disagreed (Table Sixteen). However, the students who disagreed were often very adamant and forceful in their opinions, which indicates they had very bad experiences and/or have considerable fear and resistance to the change to online delivery.

<table>
<thead>
<tr>
<th>Question</th>
<th>TA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>TD</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. The DLS was reliable and easy to access.</td>
<td>79</td>
<td>255</td>
<td>74</td>
<td>103</td>
<td>59</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>14%</td>
<td>45%</td>
<td>13%</td>
<td>18%</td>
<td>10%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

Table 17: Student responses to the reliability and user friendliness of the DLS.

A lot of the negative comments were fuelled by technical problems, which seemed to happen earlier in the semester. This would have undermined the confidence of the students in the system. The access problems can seriously affect the quality of the experience of the learners. Several students commented on improved reliability later in the semester.

At the beginning of semester, the system was not reliable, not well put together, the support was poor and the response to complaints inadequate. Performance was totally inadequate. Lack of ownership and accountability between departments was a big problem. As the semester progressed the system appeared to become reliable. It is totally crucial the system is reliable from day 1…

Support

Table 18 gives the results to two questions concerned with the support received by students. Some attention needs to be paid also to student induction and support to use the DLS. 32% felt that they had not had sufficient preparation to use the DLS.

<table>
<thead>
<tr>
<th>Question</th>
<th>TA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>TD</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. I think I had enough training and information to use the DLS effectively.</td>
<td>85</td>
<td>238</td>
<td>61</td>
<td>113</td>
<td>67</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>42%</td>
<td>11%</td>
<td>20%</td>
<td>12%</td>
<td>1%</td>
</tr>
<tr>
<td>21. I found the DLS support desk helpful.</td>
<td>20</td>
<td>86</td>
<td>150</td>
<td>69</td>
<td>54</td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>3.5%</td>
<td>15%</td>
<td>26%</td>
<td>12%</td>
<td>10%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Table 18: Student responses to training and support of the DLS.

At RMIT, induction is largely the responsibility of the lecturer of a course, but in view of the previous comments criticizing the skill and understanding of the DLS by the lecturers, there is an obvious need for more support from central services.
I also think that it would be good having introductory activities that require you to navigate around the learning site ensuring you become familiar with the site and its resources before starting introductory activities for the course.

The results also show dissatisfaction with the support desk operation, only 18.5% agreed it was a helpful service, 22% disagreed and 26% were undecided. Some commented on the delays in getting a response. There was found to be a strong relationship between the satisfaction with support offered and the students’ willingness to do more courses as well as their perceived overall effect on their learning.

**Conclusions**

There are a number of themes running through the literature which are also supported in the results of this study. There is a strong relationship between students’ confidence and familiarity with online technology and their satisfaction with online courses. Students are also more positive about courses which are designed to be flexible, are clear and easy to follow, allow them to move at their own pace, provide prompt feedback and enable contact with lecturers and other students. The importance of a ‘staff social presence’, in the form of interaction with and feedback to students is also highlighted as an important factor in student satisfaction with their online experience.

However, some students are clearly suspicious of a perceived trend to reduce face to face learning situations. An assumption that students possess the independent learning and time management skills which maybe associated with online delivery is also to be contested. It is an area where some students will need support. This is particularly true for students whose confidence in the use of online technology is limited. Clearly any move to online learning involves consideration of change management issues around student expectations about their learning. Their skills, confidence and the understanding of how online learning benefits them will have a bearing on their attitude to the change.

Students’ confidence with the technology seems to develop with their experience during a course so much so that they are generally willing to do more courses with online components. Staff deciding to incorporate online learning will need to think about how to manage student expectations and how to induct them into the use of the technology. Obviously some understanding of the student population for a course will be an important component of the course design. Despite students reporting poor online experiences due to technical issues, lack of skills of the facilitator and/or poorly design materials, there seems to be a general willingness by students to engage with the technology. Students seem to appreciate the flexibility and convenience offered by being able to access their materials at a time and place that suits them.

This seems to support the argument for phasing in the use of technology with an existing course so that students can adjust to the use of online technologies. The more prior experience students have with online technologies, the more open they are to it as a part of their course and the more ready they are to extending its use.

Staff skills and understanding of the online learning environment and their effective use of the tools is a key factor in student satisfaction. These results indicate that staff tend to initially use the online environment as a means to deliver course information and materials. Many lecturers/teachers start by using only the basic online functionality to deliver course information, lecture notes etc. This is approach fits well with the stages of adopting an innovation, as outlined by Rogers (1995), in which staff will first try to make sense of the technology. However, while using the technology solely to deliver course content is useful, it may not encourage, on its own, sufficient regular use to build confidence.

Course management tools enable staff to easily upload course content to the web. While this is advantageous at one level, the ability to choose the most appropriate medium for content is also important. A trend to deliver “text-dense” content online was not viewed favourably by students. It
was seen as a form of cost shifting, as they invariably tended to print off the materials anyway. Print must still be viewed as the most appropriate medium for such materials, possibly with electronic versions as a back-up.

Staff development which simply addresses training in the mechanics of online tools is insufficient to produce satisfactory online learning activities. Staff developing online learning for the first time need, in addition to the basic training, some supported professional development as they think through how the online tools might add value to their courses and how to best structure the course materials so that they are meaningful to students and have a degree of consistency with other online courses which students might encounter.

Usually there will be a phase of transition. Using the online environment to support face to face teaching without making other significant changes to the course is a common approach adopted. Even at this beginning stage, there needs to be some careful thought about how to incorporate the online environment into a course. Particularly in the situation where staff and/or students are inexperienced users, encouraging some level of regular use would help to build the confidence and legitimise the use of the technology as an integral part of a course.

Regular access to the online environment might be encouraged through the inclusion of relatively simple strategies in addition to the provision of access to content and course information. Such strategies might include: using the technology to post regular announcements or email students, providing samples of solutions to online assessments, allow electronic submission of assignment work, posting of an FAQ section in a discussion board, creation and use of self-help tests with feedback, etc. Staff should aim to create some level of “social presence” even at these rudimentary levels to encourage students to use the site and enhance their online experience.

At the next level, the development of quality, more interactive learning activities which integrate the use of online technology requires more careful educational design. The development of learning activities which include for example, interactive discussion boards, requires a greater level of educational rethinking, increased online management skills and change in teaching practice. This is unlikely to happen without direct professional development support of some kind. This is best done, in the experience of RMIT, with a centrally (or locally) supported mentoring or action learning activities, as staff work through the development process (Kenny, Quealy and Young, 2002).

It is likely that the concerns of students would be considerably lessened by ensuring appropriate clear guidance for staff. Courses which contain well structured materials, higher levels of interaction and prompt feedback on queries are more appealing to students.
**Item 3. Paper: A staff perspective on strategic change and technological innovation**


**Introduction**

This paper reports on the experiences of seven staff during the introduction of the enterprise wide Distributed Learning System (DLS) at RMIT University in the period 1999-2003. The DLS consisted of a web-based portal incorporating a number of integrated commercial and locally designed web-based learning management tools such as Blackboard and WebBoard.

The DLS began in semester one 1999 with 45 registered courses and there are now over 5000 such courses and over 45 000 registered students on the system.

Its creation was a strategic decision which resulted from the implementation of the RMIT Teaching and Learning Strategy (1998-2000). This paper explores the implementation from the perspective of seven staff and to give an insight into some of the practical consequences associated with making the strategy operational. The staff involved included academic, managerial and support staff who had been involved in the project from the outset.

**Literature Review**

In recent years, the use of corporate management processes such as strategic planning in universities has increased. Ramsden (1998) identified a shift towards bureaucratic and corporate management styles. Patterson (2001) and Fenske (1980) doubted the suitability of such approaches, which are derived from corporate environments, to the university sector. Lines (2000) was concerned that these approaches led to control and over management.

Mintzberg (1994) questioned the notion of strategic planning per se, especially in relation to radical strategic change. He saw planning as a process was primarily aimed at ensuring order and predictability, whereas the process involved in the “formation” of radical strategies was unpredictable and contained many uncertainties. He suggested that the formation of strategy has to occur outside of the planning process and must be closely linked to practice to reduce the uncertainties.

Patterson (2001) and Mintzberg (1994) both pointed to the independent nature of teachers and academics in universities as a key reason for the lack of suitability of corporate approaches. Mintzberg (1994) described the staff in professional organisations as “notoriously loosely coupled” to the organisational processes. Ramsden (1998) maintained that universities need to become more entrepreneurial to be effective, and he saw the independence of academics as a positive in this context.

Bates (2000) discussed problems associated with the application of project management techniques in educational projects and proposed a more open approach. Phelps et al. (2000) concluded there was a fundamental “cultural dissonance” between such management approaches and the way that academics traditionally work.

Rogers (1995) noted that the adoption of an innovation is largely an individual process in which one’s peers are the most influential factor. Along with Bates (2000), Taylor (2000) and Ehrmann (2002) he linked uncertainty due to change to the degree of learning required of the staff as they adjust to change. Kenny (2003a) argued that educational change projects must be shaped by the practitioners who put them into practice. He described the function of management, therefore, as
being to create the conditions and provide the resources for learning to happen and be captured for
the benefit of the organisation.

Using the Typology of projects presented by Kenny (2003a and 2003b), the implementation of the
DLS would be categorised as a Category One project, as it involved an organisational initiative
with significant change implications for the practice of teachers and academics.

Methodology

This study reports on the experience of staff who had been involved with the project to implement
the DLS. Eleven staff, who had involved since early in the life of the project were approached and
seven of them agreed to be interviewed. The aim was to document their experience of the
implementation.

A semi-structured interview was conducted with a series of open questions around three broad
areas: their background, their experience of the implementation process and any effects they had
noticed on staff and students.

Notes were taken during the interviews and transcribed afterwards. Each participant was then sent
a copy of the transcript for perusal and alteration if necessary. The changed transcripts were
returned as the official record of the interviews. The transcripts were then analysed for patterns and
themes. In the discussion, relevant quotations from staff are presented along with the analysis.

Data analysis

The seven interviewees consisted of three males and four females with varied roles within RMIT.
Six had teaching experience using the DLS and five of these were teaching at the time of interview.
The group consisted of one acting associate dean, two program managers, one senior lecturer, two
lecturers and one central support person.

Four of the staff would be classed as “early adopters” by Rogers (1995), in that they were using
technology prior to the existence of the DLS. The other three staff had been encouraged into using
the DLS by strategic performance targets set by the organisation.

Strategic Planning issues

The establishment of the DLS was a key strategic initiative for RMIT. It provided a means to
expand the “market” and increase the flexibility of program offerings.

The “early adopters” among them saw the DLS as an improvement on the faculty based solutions
they had been exploring up until then. They recognised clear advantages were to be had in
switching to the DLS. For example, it promised a coordinated toolset which was regulated and
supported centrally, and had the ability to provide an authentication system to control access to
resources.

The RMIT Teaching and Learning Strategy (2000-2002) established organisational targets which
resulted in a rapid growth in the number of courses in the DLS. All the staff interviewed said that
the targets were a factor in their initial engagement with the DLS. Six interviewees claimed,
however, that they had also been personally motivated to use the DLS to learn about its
possibilities.

However, one interviewee explained that his initial involvement with the DLS coming about
because of “management decree”.

There was a lot of politics in the decision…There was no clear definition of what was
understood by “online materials”- it became clear that many people were thinking of a
textbook online. No argument had been put forward for an online pedagogy for the
program…
The academic concerned here reported that there had been little consultation in this decision, which was driven by the need to meet the strategic targets.

This experience indicated a point of tension within the organisation at the interface between strategic and educational decisions. Despite the willingness to participate in the project, other interviewees expressed similar disapproval with the effect of the organisational performance targets.

There tended to be a rush across RMIT and within the faculty to get into the DLS. I believe it was fuelled by a desire to “tick the box” saying we used the DLS. In fact we rushed everyone into the DLS at the lowest level of engagement. This was very short sighted. While it got us into the DLS quickly, we haven’t progressed.

Another recalled how the performance targets tended to produce “quantity rather than quality” and called for more effective development processes to including staff development:

RMIT need to be clearer about what it wanted ... For example the 60% target tended to drive quantity rather than quality. Much better quality systems were needed. Not just QA (quality assurance) at the end, but better development processes and appropriate staff development.

The notion of the application of top down performance driven systems was roundly criticised as leading to poor educational outcomes.

What we have now is a compliance approach. It was driven by bizarre targets written as performance indicators. In academia (the use of) industry developed performance measures may have little relevance to academic performance….Academics resist the idea. They were forced to put materials online to meet performance criteria and targets for senior management.

There was broad agreement that the implementation of the DLS needed to be driven by a clearer idea of the educational advantages of introducing an online learning system. There were also calls for a more exploratory approach to allow staff to engage with the technology and learn. “Give people time to make mistakes. Unless we do this, everyone just looks for shortcuts to meet targets. We just get an attitude of compliance.”

It was also clear that the managers needed to have a better understanding of the time required to develop quality outcomes and that this has to be recognised and supported by the adequate resourcing:

There seemed to be little understanding of the implications of implementing the DLS by departmental managers. This caused problems, as there are financial and work planning repercussions of a decision to use the DLS...It was difficult to get recognition for staff of an appropriate time to develop materials.

This same point had been reported by respondents to the project manager’s questionnaire and in earlier evaluation reports. One respondent however did see an overall the strategic advantages had been achieved for the organisation which needed to be capitalised on:

When I talk to people from other universities I believe that we have tried and to some extent succeeded in taking a more systemic and cohesive approach to support online learning than their organisations. We are the envy of other places when they see what we have achieved...We have to learn from the experience of the last 3-4 years...We are at a real advantage…

Implementation Issues

Five of the staff expressed concern with the initial access and technical problems. The login process and the servers were unreliable. The persistence of these problems affected the overall confidence of staff in the reliability of the DLS and left a “bad taste in the mouth”.

Its unreliability and “clunkiness” were a concern...We got a lot of grief from teaching staff and students who had moved into the DLS on our recommendation, when it let them down. This came at a high cost, with loss of faith in the early days.
Two staff pointed to deficiencies in the planning process as a possible factor. One commented that “…a lot of ‘bootstrapping’ (was) going on. By this I mean that it was like the technology was launched with little real understanding of the consequences”, while another referred to “the practice of trialling the system in real time with real classes.” Another called for more of a partnership approach, to “involve staff in the implementation plans”. Discrepancies in the planning process had been noted in earlier reports, Kenny (2000 and 2001b).

However, despite the early technical problems, there was a general feeling that the system is now reliable and fills a need in the organisation. Even the staff member who had been the most critical commented that “I have come to realise that it is a useful support mechanism, but it should never be mandated as a style of teaching.” Another staff member commented that

> It is clear now that the DLS has matured into a system that offers a level of functionality, convenience that has gone beyond what existed before and would not have come about with the previous faculty based systems.

It would seem that the system has developed into a reliable and useful one over time, but an improved planning and implementation process with more emphasis on staff development at the outset, could have minimised the problems encountered and avoided much of the “loss of faith”.

These observations reflected the literature concerning strategic planning in relation to the call for a more direct involvement of academic staff in the development of educational projects and strategic solutions. The application of strategic targets needs to recognise the significant time and effort required by staff to gain an understanding of technology and to apply it to develop quality educational outcomes. This has clear implications for management and resourcing of such development projects in future.

**Effects on teaching**

Five interviewees had used the DLS in their teaching role. All of these teachers used a combination of the online delivery with the face to face environment. The best examples indicated that the online and face to face activities complemented each other

> Initially we saw the use of the DLS as an adjunct to face to face teaching, now we consider it more holistically in our development. Using the DLS tools has extended the views of staff so that the DLS now is used to complement the face to face sessions. The face to face lectures are no longer simply a delivery of content…The lectures are as a result, much more interactive.

Three responded that the technology had changed their teaching in a positive way. They described how the ability to provide students with ready access to the resources had changed face to face lectures from the delivery of information to more interactive discussions.

> When I now have a class, I assume students have a level of knowledge of the materials. E.g. solutions. This has allowed face to face classes to be extended in terms of the amount of discussion as opposed to just going through the material.

One staff member reported a change in educational approach due to the experience, commenting that “I now also have a more constructivist view of learning than I had prior to using the online technology.”

However another lecturer, less confident with the technology, felt that there was “no real change” in his “teaching style”. Another was resistant because of a perception that the technology was “forcing us into a linear mode of education”. While it enabled the program to “reach more students” it had not enhanced “the relationships that develop between the co-learners, including the lecturer” which was previously seen as the basis of the success of the program in question.

All five of the teaching staff reported that they had used the DLS for one-way communication purposes, basically to deliver course materials, guides and make announcements. They expressed some level of disappointment with the asynchronous discussion, either with the tools themselves or
with the level of student engagement. They indicated a move away from the use of asynchronous discussion boards in the DLS.

Four staff reported that they had initially used the discussion boards for two-way communication. Two of these staff said that they no longer made use of the discussions at all. Two others had persisted, with one of these now exploring other options for more sophisticated interaction. Only one staff member reported using the online quiz functionality.

**Student response**

Six of the staff were able to comment on student reactions to the DLS. In general they reported an acceptance by students after some initial pain.

> I think that students have generally come around to using it. We get fewer complaints now. The staff seem more confident with it so they get better vibes from them which probably helps.

This link between student acceptance and staff confidence with the DLS was also reflected in the student feedback report, Kenny (2003c). Another indicated that the use of the DLS affected student attendance

> Some staff have complained that students are now not coming to their classes anymore. I have suggested that the class time has to be different… we have to convince them that the class will add value to the information on the DLS.

One respondent pointed to the need to manage student expectations by involving them in the change:

> Student responses to these changes were not good initially. There were several reasons for this. We were engaged in trial and error, so we were learning as we went. The student expectations are an important factor….The results are better if it is made clear to students from the first induction session. What they will be doing in the course and what is expected of them as learners. And it is better if this is consistent across the program. The most difficult time was in the transition from the more traditional to the new approaches.

Two staff raised questions about the use of printed materials as opposed to the provision of textual materials online. “The students still prefer printed material as they still buy it in printed form.”

The point was also made that students are not a homogeneous group. Different cohorts of students react differently so this has to be considered. For instance, differences were noted across the educational sectors:

> …different cohorts of students respond differently. For example with TAFE students, most are barely comfortable with online learning, while I doubt that any of our post-graduate coursework students are not strongly appreciative of the opportunity to use the DLS.

These last few points were also consistent with data in Kenny (2001b) that students undergo their own transition to using online technology in their learning and that this needs to be factored into the change process.

Three staff commented that their students expressed a preference for face-to-face sessions over online, however this preferential view was not mentioned where the staff reported that they had integrated the two modes of delivery. One respondent reported benefits working with students from overseas:

> Our Non English Speaking Background (NESB) students like it. The discussion board allows them to engage in literacy and avoid oracy. They are traditionally quiet in classes where English is used. The WebBoard allows them to digest the ideas and respond without losing face.

There is a clear implication for considering the appropriate use of technology holistically in the design of a course. The relationship between the design of a course and the circumstances it is designed to meet is important.
(In future) The exact model (we chose) depends on particular circumstances in each course and several different approaches are in use.

**Staff capability**

System data shows that about 90% of courses in the DLS use Blackboard. One respondent commented that the use of online course management systems such as BlackBoard is an indication that they are “really the only way that academics can be expected to manage their online courses economically and effectively”. This comment was tempered with a warning of “the need for effective educational design” issues to be addressed as a part of learning to use such tools.

One participant described an approach taken in her department, where the decision was made to use experts to build course sites in Blackboard for the staff and to load the content into these for them. Unfortunately, in taking this approach, the staff concerned did not gain the skills needed to manage their own learning areas.

…while most staff use the DLS…they have not really engaged with it…About 70% of staff rely on a technical assistant to upload and maintain their BlackBoard shell. They do not see the need nor are they required to do (so), so they don’t. It’s hard to go back and convince them now that they are used to having someone else do it for them.

A similar problem had been noticed in the SCR project within LTS.

While a high level of acceptance of the DLS was evident amongst the interviewees and they all saw themselves continuing to use it, two reported a degree of stagnation, due to lack of time to reflect, loss of support and other work demands, others were investigating ways to overcome the limitations of the DLS. They each had a good understanding of the technology and a vision about how the system might develop in the future:

The technology changes rapidly though and we need to be thinking about the next plateau up…The software will change as much in the next few years as it has in the last four…it will need an enterprise perspective or even an inter-enterprise perspective

Two staff, who had effectively integrated the technology with their learning, identified the need for on-going support for staff in the form of expertise to assist with the educational questions:

In our department, we have given people time release to work on developing courseware, but this is not always supported by people with knowledge about the teaching and learning issues. There is need for a support group who advertise that they are available to help staff to teach online and who we can contact if we need to.

Three staff called for a “community of practice” to share ideas and hear the experiences of others. The comments above indicate that, while time release is important, on its own it may not be enough. Access to people with expertise about teaching and learning online, or at least a chance to discuss ideas with interested colleagues may also be a factor in developing improved learning experiences using the technology.

The willingness to further explore new technologies was not evident in the statements by staff who had developed only minimal capability with the technology. Four staff pointed to the need for ongoing support to keep the development momentum going: It is clear that new technology will continue to develop and so the DLS will need to continually re-invent itself.

**Summary**

The indications are that the ongoing development and quality of the courses using online technology in the DLS is directly linked to the capability of staff to use the system tools competently and independently.

This points to a need to plan for the ongoing development of the system and an acknowledgement that staff capability is the basis of the effective use of such systems and the enabler of exploration of emerging new technologies for teaching and learning. Clearly staff need to gain confidence with
such software and learn to incorporate its use into their teaching in a meaningful way if they are to take responsibility for the ongoing development and improvement of their courses.

On the basis of this evidence, it is clear that the technology will continue to develop rapidly and the DLS will need to keep pace with the changes. Currently new software and systems are being explored at RMIT and staff are looking to see what else they can use in their teaching.

The evidence here clearly points to some key lessons from the implementation of the DLS. Learning these lessons could lead to improvements in the DLS and to similar project initiatives in future.

Firstly, while the strategic targets were very effective in encouraging uptake of the DLS, this feedback indicates that performance targets need to be applied carefully. Implementation plans and time lines need to be realistic and recognise the need to provide on-going support for staff development as they engage with the technology. This support includes the provision of realistic resources in terms of time to develop and trial new materials, access to training and expertise in the use of technology for teaching and learning.

The success of innovative projects of this nature relies on building the capability of the teachers and academics. The capability of staff is essential for the effective integration of the technology into the teaching and learning experience and the on-going development of courses and programs. It must therefore also be recognised that decisions to use technology to support teaching and learning in any particular case, and the extent of its use, should be largely an educational design decision, not simply be based on business related priorities.

The reliability of the system is crucial for staff confidence in and engagement with the technology. While it is unlikely that such a system can be introduced without problems, these need to be minimised through appropriate testing and trialling activities. The same applies to improvements to and maintenance of the system to minimise disruptions.

As key participants in the change, it must be accepted that student expectations and background need to be a prime consideration in plans to introduce new technology in any particular program.
Item 4- Paper: Promoting Quality Outcomes in Higher Education Using New Learning Technologies: Processes and Plans at RMIT


Introduction

The nature of online learning makes more public than ever the question of quality. The website of any organization is becoming the modern shop-front; so institutions have to understand the nature of this new medium in order to get the most value from it in a marketing sense. Universities are also using the web more and more to deliver educational content and services to clients on a worldwide basis. The challenge is to use the technology to produce quality educational outcomes. This raises two questions:

- What is a quality online educational experience?
- How is the development of quality educational experiences measured and encouraged?

At RMIT, is currently wrestling with both these questions. Producing quality educational experiences using online technology is a complex and costly activity. As the University moves down this path, there are many aspects of its operation that need to be considered to achieve the desired outcomes. The development and implementation of new learning technologies can prove to be an economic black-hole unless there is careful planning and evaluation of the implications occurring at all levels of the institution.

What happens in teaching has always been influenced by the context in which the classroom is situated. The production of quality online educational experiences involves consideration of many issues: educational design, interface design, copyright and intellectual property, content development, staff training, student induction, technical infrastructure, establishment of support mechanisms and the rationalization of administrative procedures. Many of these issues are out of the control or expertise of the teacher, and so will require a new way of working. Inglis, Ling and Joosten (1999, p. 143) observe that to bring this about “will involve major changes in staffing, procedures, infrastructure and most of all to the culture of the organisation”.

The New Learning Environment

An institution may have a range of motivations for adopting new technologies (NLT). NLT may be seen as a means of: maintaining its position by providing flexible courseware more responsive to student needs; introducing cost savings and efficiencies; and/or rationalising business processes and automating administrative tasks. Whatever the motivation, the implementation of new learning systems on an institutional level is complex.

From an institutional perspective in the current economic climate, there is an imperative to get a return on the investment (ROI). Ultimately, though, a university will be judged by the quality of the teaching and learning it offers its students. The RMIT experience, shows that to implement a successful new institutional learning technology project, requires careful institution-wide planning processes to be established and followed by those involved in the initiative, Inglis, Ling and Joosten (1999, p. 143) again:

This does not imply that the vision of the project and the planning of its implementation need to be a top-down process. On the contrary, there needs to be ownership, vision and enthusiasm at all levels of the organisation.
To improve the learning experiences offered, it is essential that there is an eye for improvement from the level of the individual subject teacher up through the organisation to the activities of senior managers.

Institutional Quality Improvement Processes

There has been a concerted effort in recent times to set up quality processes within many institutions. This has led to the development of student feedback systems which individual teachers and course teams may use to improve the next offering of the subject. Such a system is predicated upon the evaluation of an educational activity or project leading to improvements in subsequent attempts; this is congruent with the action inquiry process outlined in Phillips, McNaught, Rice and Tripp (2000). The learning from this process is too precious to be left untapped within any one subject or minor project. Unless the information is shared, the wider institution does not necessarily benefit as much from these projects. Much can be gained by facilitating the sharing of the new knowledge and experience across the institution. Laurillard (1997) contends:

The university must have a technical and pedagogical innovative environment for R&D projects providing opportunities to trial and experiment and to collect feedback on these via the quality assurance process. … Many such pilot experiments in universities have been conducted in isolation from the universities management process.

Unless the evaluation occurs in the context of the institutional processes at large, then the valuable learning opportunities inherent in these projects will be lost to the institution.

Bain (1999, p170) considered evaluation reports of several projects, and concluded that the context in which an innovation is occurring has to be considered.

…the benefits were short-lived and/or did not transfer. This finding offers a salutary caution to all educational innovators and underscores the need to view innovation within the institutional contexts in which it will thrive or die

Thus the institutional quality processes need to be such that the culture and procedures encourage the flow of information across subject, course, departmental and faculty boundaries. It is the contention of this paper, that where quality cycles do not enable this flow of information, the lessons learned do not easily go beyond the subject concerned. The quality educational experiences may remain isolated instances rather than a common occurrence, expertise is not shared, students do not benefit and the ROI is reduced.

Collective Responsibility for Quality

Many of the factors affecting the quality of subjects are indeed outside of the control of the teaching staff. The physical infrastructure, the technological infrastructure, management processes, administrative procedures and management strategies all impact on the ability of the teaching staff to produce quality courseware. Any long-term solution to improving quality has to ensure that these aspects are also included in continuous quality improvement cycles. From an institutional perspective, quality improvement involves the interlocking of many quality improvement cycles operating at each level and across the boundaries of the organisation.

A catch cry of the 1990s has been ‘Best Practice’. Inglis et al. (1999, p. 157) defines this as “a comprehensive, integrated and cooperative approach to the continuous improvement of all facets of an organisation’s operations.” It can be seen then that not only do processes have to be set up to encourage continuous improvement, but that these processes themselves have to be evaluated to ascertain their effectiveness in promoting quality. Quality does not arise from a top-down approach to management.
A Model for Promoting Institutional Quality Processes

Laurillard (1993) proposed the ‘conversational model’ of learning where a ‘conversation’ can be considered as a two-way flow of information. In essence, she contends that learning occurs when the student acts for a particular purpose and then receives feedback on that action. The student then assimilates and reflects upon the feedback in order to re-conceptualise and articulate a new understanding to the teacher. This is a classical action research cycle of goal-action-feedback-modified action integral to quality improvement processes. The critical part of the process is the reflection. Biggs (1999, p. 60) supports the importance of reflection as part of the learning cycle: “my own assumption is that helping teachers to improve their teaching is best done using a theory that helps teachers reflect on what they are doing”. Laurillard (1997) claimed that a similar model of learning can be applied at the institutional level.

The educational institution has to be able to be responsive to change ... able to reflect on the degree of convergence that is achieved in the learning conversation and construct an adapted environment. ... Its internal structure ought to be similar to the conversational framework for an individual if it is to learn from experience.

We can then consider the meaning of ‘learning’ as far as an institution is concerned. It means getting better at what it does, learning from experience. There is no doubt that the adoption of new learning technologies is, for most institutions and staff within them, a learning experience. Feedback obtained on a project or program is used to inform the next iteration or to inform new or related projects.

Establishing an Institutional Learning Conversation

As indicated earlier, it is not enough to have ‘learning conversations’ or ‘quality improvement cycles’ operating at distinct levels within an organisation. There must be overlap so that these conversations occur across boundaries. For institutional learning to the project team must have a conversation with the institution.

In fact, one can imagine an almost unlimited series of overlapping learning conversations (see Figure 1) going on within an organization driven by feedback and reporting procedures.

It is in this way that a culture of quality improvement has to pervade an organization in order to get the best results. Quality is achieved over time. An institution may have an ideal which it strives to reach, but it must take the view that numerous and continuous cycles are required to move towards the ideal. The ideal itself may never be achieved since it may alter as needs and technology change.

Figure 1: Overlapping quality improvement cycles
In the context of a project, to improve the teaching and learning in a subject, the teacher becomes not only a researcher of a discipline, but a researcher in how to teach the discipline, which is the fourth of the four scholarships proposed by Boyer (1990) (the others being application, integration, and research). A similar point was also made by Laurillard (1993). The benefits of the project team sharing its learning with other staff will lead to improved learning outcomes for a wider range of students and staff. With the restricted budgets at play in the economic environment in which today’s institutions operate, it is too costly for projects to be funded without any institutional benefit coming from them.

**Quality Subject and Courseware Production**

Quality assurance criteria should be seen as a means of gauging what has been achieved and what needs to be improved. Quality cannot be mandated. When we consider the complexity of introducing new learning technologies, an iterative approach to improving quality is very important. Taylor (2000) explains this in terms of nurturing cultural change.

> Quality is an important issue, and as progress is made, it will assume a more salient position in the scheme of things. But success in persuading staff to engage with new technology will depend upon engendering and nurturing cultural change in the faculties, with emphasis on their need to re-think their pedagogical approach and curriculum design to take account of the new technology, not on their capacity to generate product.

Taylor (2000: 3)

To promote quality in teaching and learning is a complex task. In the classroom, it has to do with the teaching practices, student capabilities, resources, design of the subject and the types of assessment undertaken. Many staff may need professional development in some of these areas to go along with the training and professional development associated with the use of new learning technologies themselves. Taylor (2000) states:

> Sometime faculties will have to go through what might look like a sub-optimal phase of development, but only by doing so will they be able to move forward... This is particularly relevant in an environment where implicit teaching knowledge and expertise will need to be articulated before a multimedia approach to the subject can be considered or designed.

Taylor (2000: 8)

At RMIT, the strategy is to use the new technology as a means of encouraging a re-thinking of teaching and learning practices, not simply transferring established practice to an online environment. In this case, the technology becomes a medium to promote professional growth. Teachers may therefore feel uneasy on two accounts; they are learning new skills while operating within an unfamiliar environment.

There is also a range of other considerations necessary to produce quality courseware in the online environment: copyright and intellectual property issues; design and usability issues; navigation issues; accessibility issues. Without institutional support, many teachers will feel such a task is overwhelming. It is clear that institutional support, professional development for staff and a staged process of development will be the only realistic ways to develop quality subjects. It is the function of management to set the scene for this renewal to occur by developing policies and providing the resources and support to teaching staff. The outcomes of the educational programs can then be monitored to evaluate the effectiveness of these policies.

**The RMIT Experience**

In 1998, RMIT commissioned a team to investigate how the information technology policies and the Teaching and Learning Strategy of the University could be aligned. This group produced a report ‘The Education, Training and Information Technology Alignment Report’ which became known as the ITAP Report, Czech et al. (1998). A team was set up to manage the development and
implementation of an institutional system using IT to enhance and support the administrative and educational functions of the University. The ITAP Team, now called Learning Technology Services (LTS), developed the ‘RMIT Distributed Learning System’ (DLS) as a web-based set of tools to support teaching and learning activities.

Prior to the DLS, there was a lot of activity across RMIT to produce online learning experiences. Individual staff had developed and used web-based learning materials; on diverse software platforms. The DLS was the first attempt at an institutional wide learning system. The benefits of this approach to the institution and the individuals were obvious: providing central support, training, greater security, better linking with administrative systems, quality assurance processes, a consistent interface etc.

Initially, it was unclear how this corporate initiative would be viewed by the RMIT community, but it soon became apparent that there was a large number staff waiting to begin the process of putting learning material online.

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
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</tr>
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<td>225</td>
</tr>
<tr>
<td>Semester one 2000</td>
<td>683</td>
</tr>
</tbody>
</table>

Table 1: Growth of number of subjects registered in the RMIT DLS

Much of the pioneering work was done by enthusiasts, but the majority of the staff did not have the time, skills or knowledge to develop online courseware without central support. Once the DLS was set up in semester one 1999, the number of individual subjects within the DLS grew rapidly from the initial Benchmark system, as indicated in Table 1.

The experience of the Benchmark in semester one 1999 (McNaught et al. 1999) made it clear that a more systematic approach was needed. Each faculty was asked to develop ‘Course and Subject Renewal Plans’ in accordance with a set of guidelines produced by the ITAP team, and this plan was to be used to identify subjects for renewal according to faculty priorities. This was seen as a means of directing the resources strategically. Along with this, the DLS developed a DLS Planning Tool. This tool was produced in May 1999 and was released two months before the start of semester two 1999. It was to assist staff to identify consider the many issues which require consideration, when developing a subject for online delivery. Such issues included:

- clearly defining the educational purpose,
- the content development support required,
- the level of interactivity being considered,
- the expertise available to the development team,
- the professional development and training required by staff,
- the student induction and access issues,
- the intellectual property issues, and
- resources available.

The Planning Tool was to be used by key faculty personnel to work with the leaders of the subjects. Only about six of the subject coordinators (out of 225) actually returned a completed form. Many staff did not even hear about the form and there were some complaints about the level of detail it required. After one such complaint, the form was modified to a one page application form (compulsory) and a detailed planning guide (optional) for semester one 2000. There is no evidence of any subject team making use of the optional planning guide.

Following an evaluation report of the DLS in semester two 1999, (Kenny, 2000), the issue of quality and planning to go online has become a major focus for the DLS during 2000. In May
2000, all subjects using the DLS were reviewed against university quality assurance guidelines and evaluative feedback was provided on all subjects.

**Drivers for Institutional Change at RMIT**

There has been substantial investment by RMIT to promote quality flexible learning outcomes. The investment is quite considerable, with approximately 5% of each faculty budget being set aside, along with central money, to fund the course and subject renewal process. Also, an on going major upgrading of the RMIT network, and student and staff computer facilities has occurred over the last two years. A list of the major institutional drivers is given in Table 2 with some commentary on the effects of each. Many of these drivers are yet to bear fruit. Our contention is that although there has been considerable effort to get institutional involvement in the initiative, because the underlying quality improvement feedback and reporting loops are not yet in place, much of the strategy is seen to be top-down, with insufficient information reaching the staff or students.

<table>
<thead>
<tr>
<th><strong>Institutional Driver</strong></th>
<th><strong>Comment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The RMIT Teaching and Learning Strategy</td>
<td>This has been a key strategy for driving change in the university over the last five years.</td>
</tr>
<tr>
<td>The institutional target of 60% of all subjects with some flexible delivery components by the end of 2000.</td>
<td>This target has generated a lot of interest and activity. Led to rapid growth of number of subjects within the DLS. The target itself takes no account of the iterative development required to produce quality outcomes.</td>
</tr>
<tr>
<td>The ITAP report had 113 recommendations about linking IT developments with teaching and learning needs.</td>
<td>The ITAP report is driving much of the change associated with the DLS and the Academic Management System (AMS, see below)</td>
</tr>
<tr>
<td>Creation of Directors of Teaching Quality (DoTQs) and Directors of Information Technology (DoITs) posts in each faculty as resources to direct and influence policies.</td>
<td>Key people in the adoption and promotion of the institutional strategy. Could play a greater role in developing workable quality assurance loops across the institution and shaping them to work within the context of their own faculties.</td>
</tr>
<tr>
<td>Development of an Academic Management System (AMS) for mid-2001.</td>
<td>Major initiative to develop a computerised system to streamline and standardise many of the university administrative procedures</td>
</tr>
<tr>
<td>A Business Process Re-engineering (BPR) review of the university administrative systems</td>
<td>1999 project to review the administrative processes of the university, look for efficiencies and to prepare for the implementation of the AMS.</td>
</tr>
<tr>
<td>Establishment of the Distributed Learning System (DLS)</td>
<td>DLS operates using a secured central server system on the RMIT network. Support, professional development and training offered to RMIT staff and students.</td>
</tr>
<tr>
<td>Faculties asked to develop • IT Strategy Plans for the</td>
<td>Have the potential to promote meaningful change, but little evaluation and reporting</td>
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strategic re-development of IT infrastructure.
- Course and Subject renewal guidelines for the strategic re-development of subjects and courses.

occurs. Feedback and accountability loops do not function well, so there is little direct evidence of the effectiveness of each strategy and how it might be improved. It is hard to get an institutional picture, or it takes too long for problems to be identified.

Selection and training of Learning Technology Mentors (LTMs) within each department to work with staff.

120+ staff trained to work with staff in their own departments, to facilitate communication between the staff and the DLS and to mentor them as they renew their subjects The process is not necessarily supported by all faculty and departmental processes.

Staff workplans

Staff are required to produce a workplan to set out expectations linked with their professional development for the year. Need to more closely link the workplans with involvement in strategic renewal projects and to promote evaluation and reflection.

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Table 2: Institutional drivers for change within RMIT

Figure 2 the RMIT operating model as proposed here. The heavy boxes represent the boundaries of the organization across which information must flow in both directions. The large black arrows represent information flowing across these boundaries. Many more boundaries could be added (e.g. departments, support services, etc.) but have not been added for simplicity. While this model is set-up for the context of RMIT University, it is also generic enough to be adapted to other institutions.

The arrows which are dotted represent the information flows which are either not in operation as yet, or which operate on an ad hoc or isolated basis. The diagram shows several gaps in the current institutional processes at RMIT and future attention needs to be devoted to establishing these communication flows and promoting the culture in which they will operate.

Planning and Project Management

The Course and Subject Renewal Strategic Planning Process was developed, in mid-1999. The process had its problems as any new process will: it was not clearly understood by development teams, the development timelines were too short, the resources needed were not clearly identified and there was no mechanism put in place to adapt and improve the process despite the two evaluation reports (McNaught et al., 1999; Kenny, 2000). For quality improvement to occur, this evaluation information must be used to improve operations. As a consequence, a large number of subjects were proposed by faculties without any strategic direction in their choice or any real planning and support mechanisms being identified for them.

The research indicates that a successful project should appoint a project manager to oversee its development and implementation (Alexander et al. 1998)

In the model of figure 2, it is proposed that subjects or courses for development are identified strategically by the faculty processes. It is also wise to institute a feasibility process to explore the scope and likely benefits and costs associated with any significant project proposal before it is begun. Each becomes a development project in its own right and is resourced accordingly and progresses according to a recommended project planning process. Each project needs to be set up with a project team, develop a timeline allowing for design, development, testing and trialling
cycle. The subject goes into its delivery phase during which evaluation data is collected which forms the basis of the project reporting.

Feasibility analysis for project:
Scope and ROI

Faculty approves resources

Faculty Renewal Strategy Developed in line with institutional strategy

Priority courses for renewal identified.

Faculty Level

No

Yes

Project planning and development cycle

Delivery and Evaluation of project outcomes

Project Report to Faculty
- outcomes and plans for next iteration

Faculty Report on its renewal strategy: Aggregate reports from all its renewal project activities.
- Faculty Priorities, Plans and ROI

Course/subject Team Level

Institutional Level

Renewal Strategy refined

Institution Report: Aggregate faculty reports and LTS
Institution Priorities and ROI

Institution Report on its renewal strategy: Aggregate reports from all its renewal project activities.
- Faculty Priorities, Plans and ROI
Evaluation and reflection are critical to articulating the learning and improving quality. Therefore the processes need to enable this information to pass between the various groups. The reporting procedures are a means of achieving this information flow.

For example, a subject team receives feedback on the operation of the subject which needs to be analysed and reported on to improve the subject for the next iteration. Some of this feedback information is also be required by the faculty (or department). Not all the information may be relevant, but a means for the faculty to capture the relevant information and aggregate it with that from other projects, analyse and report on it, will enable the faculty to gauge the effectiveness of its Course and Subject Renewal Plan and influence the next iteration of the Plan. It is suggested that the DoIT and DoTQ would be important in this process. Similarly, the institution as a whole needs some of the information so that an evaluation of the institutional strategic approach can be made. Hence the reports of each faculty need to be aggregated.

Culturally, it involves quite a degree of change for most staff to adopt this approach to development. Depending on the complexity of each project, it most likely will require a development team with a range of expertise. While there are examples of individual teachers and subject teams producing excellent work, most academic and teaching staff at RMIT are not used to working so closely with non-teaching staff such as graphical designers, IT support staff and so on. The fact that staff in the process will need to explicitly reflect on and evaluate their teaching practice will lead to better quality teaching. The reporting mechanisms are important so that the documentation of the learning occurs and that it is shared with colleagues.

**Quality Assurance and Systems Supporting Online Teaching**

A quality improvement process relies on having evaluation information on which to base decisions for the next cycle. In many cases, the timelines and demands set out for the DLS project were far too tight, so that planning and specification for the next version was often done before the previous version was properly evaluated. For instance, at the system infrastructure level, there was insufficient time allocated to properly develop and test the delivery systems. Delays in gaining approval for purchasing servers further reduced the time available, which led to other delays in implementing the processes to set up and test the software developments. The time scales are critical in initiatives such as these. In both semesters, the DLS operational systems were not released for staff use until after the semester had begun. The subsequent bugs and technical problems which occurred should have been discovered in a testing phase rather than a live delivery phase. Much of this information is contained in an evaluation report, Kenny (2000).

The consequences of the lack of coordinated planning has been shown up during a recent quality review of the subjects registered in the DLS. As mentioned earlier, there was an institutional target set to achieve “60% of subjects with a flexible delivery component” by the year 2000. This became misinterpreted across RMIT as meaning “60% of subjects with an online component”. Experience has shown that this target does not account for the complex reality of producing quality learning systems and subjects. It seems that goals set too high can be just as costly as those set too low.

The message is to establish clear lines of responsibility with planning and evaluation and reporting cycles in place. The managing body at each level can then report on progress to the wider RMIT community and thereby influence policy development. In order for problems to be minimised in future, there has to be consultation on the development of a process, which when adopted, has to be backed up with adequate resourcing and high quality support resources and professional development activities. Of course the process itself will be improved and refined during subsequent quality improvement cycles also.
Conclusion

We can envisage the university as operating as a series of interlocking quality improvement cycles. Learning can potentially occur at each of these interlocking interfaces. The key to ensuring it does is to set up a culture of quality assurance which allows an action, reflection, re-action process to happen at all levels within an institution and use the lessons learned to influence future policy and practice.


Introduction

Programs and courses are under continual improvement in all institutions, even if there is no formal documentation of the process. The existing climate of shrinking budgets in which most institutions operate means that all processes operating have to be examined and their benefits captured to ensure that any potential benefits to the institution are delivered.

The RMIT Teaching and Learning Strategy (1998-2000) set the development of more flexible and student centred learning as a key to the future survival of the university. A series of initiatives have been born to implement this strategy. RMIT decided that the development of a new online learning and management system was a key component of implementing the Teaching and Learning Strategy. As a result, about 50 million dollars has been allocated to develop and maintain the Distributed Learning System (DLS) and the Academic Management System (AMS).

The DLS has been in operation since Semester One 1999 and its use has grown rapidly. (See Table 1 below). The DLS consists of a suite of web-based course development tools operating behind a secure portal which enables students to access their learning resources and other university services over the local internal network or over the internet.

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<td>Semester one 2001</td>
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Table 1: Growth of number of courses registered in the RMIT DLS (source, DLS system data)

The AMS is still under development and is due for its first release in October 2001. It aims to integrate all university processes to enable staff and students to access RMIT services via the web, anywhere, anytime. These developments are moving a long way towards increasing access and flexibility for students.

However, the use of the technology to deliver courses to students has raised a number of economic, pedagogical and staff development issues.

At RMIT, the strategy is to use the new technology as a means of encouraging a re-thinking of teaching and learning practices, not simply transferring established practice to an online environment. In this case, the technology becomes a medium to promote professional growth.

Kenny & McNaught (2000, p.658)

The costs of the implementation have led RMIT management to look for return on the investment, however, the skill levels of staff, and the resources available, to design and develop quality
materials for the online environment has lagged the managerial requests. There is an on-going tension about how to address the issues of the need for quality products and the professional growth required to learn how provide meaningful learning experiences using the DLS.

**Quality Problems with Targets**

The RMIT Teaching and Learning Strategy (1998-2000) advocated that RMIT must adopt more student centred and flexible approaches to learning to survive in a more competitive education market. Targets were set as a part of the RMIT Teaching and Learning Strategy (1998-2000) to achieve 60% of courses ‘with some flexible component’ by the end of 2000. A key for achieving this flexibility was the adoption of online technologies. The new technologies provide the impetus to re-consider how teaching and learning are organized within RMIT; they are a catalyst for the renewal of programs and courses as well as student administrative systems to make them more responsive to student needs.

The rapid growth in the use of the DLS, illustrated in table one, does not give the full story. Many departments concentrated on meeting the 60% targets by having courses created on the DLS. A formal review of the courses on the DLS was commissioned in semester one 2000, to ascertain the progress towards offering more flexible courseware online and to gauge the return on investment. The quality review (McNaught, et al., 2000) showed some concerning results. About 50% of courses on the DLS were ‘empty shells’ with little or no course material or activity. Most of the rest were grossly under developed. Among the recommendations from the review was the establishment of clear QA processes, to be applied all to courses using the DLS:

> The ongoing need for toolset training to be linked to educational design training was noted. The need for professional development related to these new emerging QA processes is also clear.

Mc Naught et al. (2000)

The result was for management to call for more evidence of a return on the investment. Faculties were asked to identify strategic courseware that could be developed more rapidly. Unfortunately the underlying planning processes and resourcing was not in put in place to facilitate it, so this process has encountered problems also.

**The Issue of Quality**

Quality Assurance is an institutional issue and most institutions now have processes in place. Bates (2000) links quality and cost effectiveness with the use of project management processes

> For high quality, cost effective results, a project management approach is recommended, based on funding tied to clearly articulated project objectives, team work, defined budgets and production schedules.”

Bates (2000, p.2)

He described (pages 68-75) a project management process which is based around developing an initial project proposal. In developing the proposal, the project is thoroughly defined, the expectations of all parties is clarified and ultimately the proposal is signed-off by the head of department and the dean. A university wide board then decides on the projects to receive funding based on a set of criteria.

Experience indicates, Kenny (2000a), that careful institution-wide planning processes are required. Inglis, Ling and Joosten (1999) maintain these should be negotiated between all those involved in the initiative, operate at all levels of the organisation

> This does not imply that the vision of the project and the planning of its implementation need to be a top-down process. On the contrary, there needs to be ownership, vision and enthusiasm at all levels of the organisation.

Inglis, Ling and Joosten (1999, p. 143)
However, unless the evaluation occurs in the context of the institutional processes at large, then the valuable learning opportunities inherent in these projects will be lost to the institution. Laurillard (1997) contends:

The university must have a technical and pedagogical innovative environment for R&D projects providing opportunities to trial and experiment and to collect feedback on these via the quality assurance process. … Many such pilot experiments in universities have been conducted in isolation from the universities management process.

Bain (1999) considered evaluation reports of several projects, and concluded that the context in which an innovation is occurring has to be considered.

…the benefits were short-lived and/or did not transfer. This finding offers a salutary caution to all educational innovators and underscores the need to view innovation within the institutional contexts in which it will thrive or die

Bain (1999, p.170)

A Cultural Shift- A new way of working

Bates (2000) compares a university to a “Post-Fordist” organisation, particularly as developing quality programs involves teams largely self-governing experts loosely held together by a common goal or purpose.

Teaching with technology requires a high skill level and this necessitates training not just in technological matters but also in educational practice. Training needs to be embedded in the course development process and the project management model can assist this.”

Bates (2000, p.3)

The complexity involved in producing quality online courseware necessitates that the process be an iterative one. It will usually require the formation of development teams with a range of skills. These include project management skills, educational design expertise for the web and possibly technical production skills.

This is a new way of working for many academics, who, as content experts, are used to working and developing course material either alone or with other academics. In the online context they will be required to collaborate as a part of a multi-disciplinary team to produce quality courseware. This is particularly the case when a program level re-development is being undertaken.

Much of the initial renewal activity on the DLS during 1998 and 2000 has occurred with little understanding of the nature of the new learning environment or the complexity of the development process. The time and support required for staff to adapt their teaching styles to the use of the DLS and be able to develop educationally sound approaches has been under-estimated and under resourced.

When we consider the complexity of program renewal, this focus on improving quality through the professional growth of staff is very important. Taylor (2000) explains this in terms of nurturing cultural change.

Quality is an important issue, and as progress is made, it will assume a more salient position in the scheme of things. But success in persuading staff to engage with new technology will depend upon engendering and nurturing cultural change in the faculties, with emphasis on their need to re-think their pedagogical approach and curriculum design to take account of the new technology, not on their capacity to generate product.

Program Renewal

The term ‘Program Renewal’ has been coined at RMIT to describe the process of re-shaping and re-organising the learning experiences of students to better reflect the requirements of the modern work environment. Teaching staff are being asked to examine the traditional approaches and content to ensure that the Graduate Capabilities (Bowden et al., 2000) and life-long learning principles are developed and assessed as central components of students’ experiences in all
programs. The Graduate Capabilities include many generic skills which studies have shown are required for make learning more relevant to the requirements of the modern workplace.

Kenny and McNaught (2000) point to the complexity of the task

To promote quality in teaching and learning is a complex task. In the classroom, it has to do with the teaching practices, student capabilities, resources, design of the subject and the types of assessment undertaken. Many staff may need professional development in some of these areas to go along with the training and professional development associated with the use of new learning technologies themselves. … Teachers may therefore feel uneasy on two accounts; they are learning new skills while operating within an unfamiliar environment.

Kenny & McNaught (2000, p. 658)

There is a considerable amount of professional growth and learning required to produce quality courses and programs in any medium, but the technological medium presents new challenges.

**A model for a new process**

It is clear that the development of quality courseware is a complex process. According to Shenhar and Dvir(1996), the more complex projects require higher levels of communication through multiple channels, many professionals and academics on the project and a moderately flexible management style expecting many changes. Management style becomes progressively more flexible as the complexity of the project increases. In terms of the project which they studied all of the projects had a regular system of meetings for problem solving and information sharing…In general the atmosphere in these meetings was one of open communication and continuous discussions. Projects had to employ a much more flexible attitude and they had to make extensive trade-offs. We described this style as moderately flexible.

Shenhar and Dvir (1996, p. 617)

**Critical success factors**

The development of innovative new courses therefore relies on the capability of staff to use the system in creative ways. Learning to use the technology is therefore a major change and innovation project in itself. Lester (1998) identifies five critical factors for successful projects.

1. Senior Management commitment
2. Organisational structure and processes that support the venture
3. Attractive new product concepts that support the venture
4. Venture teams with appropriate staffing and resources, able to communicate effectively with management and markets
5. Project management able to focus on reducing uncertainties as early as possible.

Other researchers quoted in Shenhar and Dvir (1996) investigated critical success factors for the management of projects, identifying a universal set including: project mission, project planning, project control, top management support and customer involvement. From the study of educational technology projects, Alexander et al. (1998) identified a similar set of success factors for educational projects in tertiary institutions. Success here being defined as leading to improved learning outcomes.

**Balancing Scholarship and Management**

For Bates (2000), the main advantages of the project management approach is the efficient allocation and use of scarce resources. Each year staff time is allocated to the approved projects. However, there is a clear tension between the classic project management approach, and the traditional way in which professional staff at a university work. Traditionally, teachers are experts used to quite a degree of autonomy in their work.
The biggest problem with this approach is that it is often alien to academic environments, where teachers and instructors are used to working as autonomous individuals, especially with regard to their teaching.

Bates (2000, p. 72)

In an attempt to overcome this problem, which is largely a cultural one, Bates (2000) advocated … a much looser project management approach that specifies responsibilities and completion dates but does not attempt to quantify every activity on a micro level. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life. However at the end of the day, there still has to be a course developed and deadlines met.”

Bates (2000, p.73)

This compares favourably with the project management model proposed by Shenhar and Dvir(1996) which suggests more open management systems and communication processes and addresses some of the concerns put forward by Phelps et al. (2000) about their experience of working on academic development projects.

Promoting Scholarship

Complex projects such as program and course renewal are well suited to an ‘action learning’ approach (Zuber-Skerritt, 2000). ‘Action learning’ is scholarship in action. Integral to the process is reflection on learning, sharing the learning with others and applying the learning to improve the next iteration. Bates (2000, chapter 3) refers to the “Lone Ranger Model” of development of technology based materials. This is the traditional approach of providing seeding grants to fund individuals as early adopters. Among the disadvantages of this model he cites the difficulty in budgeting and planning for such an approach and “dissemination of knowledge gained from the experience is often poor or haphazard.”

Laurillard (1993) proposed the ‘conversational model’ of learning. In essence, she contends that learning occurs when the student acts for a particular purpose and then receives feedback on that action. Laurillard (1997) claims that a similar model of learning can be applied at the institutional level to create a ‘learning organisation’.

Kenny and McNaught (2000) supported this and see the quality processes of an institution as one means of establishing the ‘conversation’.

Thus the institutional quality processes need to be such that the culture and procedures encourage the flow of information across subject, course, departmental and faculty boundaries. It is the contention of this paper, that where quality cycles do not enable this flow of information, the lessons learned do not easily go beyond the subject concerned. The quality educational experiences may remain isolated instances rather than a common occurrence, expertise is not shared, students do not benefit and the ROI is reduced

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Kenny & McNaught (2000, p. 657)

In a learning organisation, therefore, there needs to be a conversation or ‘learning’ across the institutional boundaries. There must be information flows so that these conversations occur across boundaries. For institutional learning to occur, the course renewal teams must have a conversation, or share information, with other groups in the institution. The project management model employed will need to recognize this and incorporate it into the resourcing, planning, monitoring and communication processes for the project. However there will need to be a ‘conversation’ with other Renewal Program teams across the university also, a sharing of information and learning.

A culture of scholarship requires an institutional adoption of both the philosophy of reflective practice and the processes to support it. A ‘learning organisation’ needs to develop an effective means to capture and make known the learning occurring in the range of projects which are underway and to maximize the staff capacity to carry-on further development. The quality assurance (QA) process is an ideal vehicle for this as the development of quality programs and
courses is a cyclical process. The QA process involves cycles of reflecting, planning, implementing, evaluating and reflecting.

For an organisation to benefit, staff have to be actively encouraged and supported to carry out action learning as an integral part of their work. This has implications for how projects will be set-up, resourced and evaluated. Quality has to be continually maintained, so it is essential that the capability of staff is developed along with the learning resources, so that continual improvements can be made.

The critical part of the process is the reflection. Biggs (1999, p. 60) supports the importance of reflection as part of the learning cycle:

my own assumption is that helping teachers to improve their teaching is best done using a theory that helps teachers reflect on what they are doing.

Most project management literature derives from the study of industrial projects, and does not necessarily directly map across to the environment of educational development projects a tertiary institution. Sheasely (1999) studied a technological process to develop a new product, and he draws on an example from the chemical industry. He discusses the distinction between developing new technology and developing new products.

Developing new technology is fundamentally different from developing new products. In the former case technology is the end result, in the latter it is the raw material.

Sheasley (1999, p.49)

What he means is that the ‘product development’ uses the ‘technology’ which has been developed. Technology development is essentially research, whereas product development is the application of that research.

Boyer (1990) advocated that academic work has four aspects: discovery (research), integration, application and teaching. In translating the example given by Sheasley (1999) to a tertiary education sector, we see that the ‘product development’ does not merely involve the adoption and application of a new technology, it also involves the change and professional growth on the part of the staff who have to use the technology as a part of their professional practice. The new product (a renewed course for instance) requires the staff to use technology in new and innovative ways. The implementation of the technology stimulates innovation.

Sheasley (1999) proposes that such innovations (discovery) are best managed using a process called ‘cycle time management’.

Cycle time management is a process oriented approach to work activities in which time is the primary basis or driver upon which the overall process is designed and optimized.

Sheasley (1999, p.51)

In the context of the university sector there is a natural ‘cycle time’ at play, for example, the academic year. Each year or semester involves a new iteration of a course, a new batch of students and so presents a natural rhythm for evaluation and revision. The periods allocated for preparation, examinations, correction, etc are all usually pre-determined by the organisation and each has its own particular demands. It makes sense from a management point of view to acknowledge the constraints under which most academic staff work within any project management process. Any project development cycle should fit into the natural rhythms of the organisation.

The Sheasley (1999) management strategy for such discovery is based on ‘expectations’, which focus on learning and an expectation of capture of this learning.

Each review should consist a reiteration of the previous outlook for learning, a presentation of what was done and what was learned and a new plan for the research in the upcoming phase, with the ultimate goal for performance advances always in view.

Sheasley (1999, p.54)
This process above fits in very well with the proposition of the quality assurance process advocated in many institutions today.

**A Model Planning Process for Tertiary Institutions**

In conclusion, the forgoing discussion suggests a planning process has to address both the demands for effectiveness and scholarship. Such a process would take advantage of the efficiencies of project management techniques, yet promote a course development process more suited to academic reality. The model presented here has been derived by drawing on current research and experience. It aims to enable tertiary institutions to produce quality outcomes in educational projects and maximize the effectiveness of new technology.

The planning process advocated involves the incorporation of key project management processes with the realities of life in tertiary institutions. To achieve quality, the organisation has to put in place processes to enable staff to plan, reflect, share and document their learning. This is where the project planning aspects can really begin to add value and commitment to the process.

The project management plan would have to ensure that there is sufficient resourcing provided for professional development activities and that this occurs as a part of the faculty departmental planning processes. Such activities as team meetings, materials development and testing require considerable resources and time, as does professional development to address the key pedagogical questions. These issues need to be considered very early on in the process as there is a considerable ‘lead time’ involved in most institutions, with planning occurring on an annual basis. The professional independence of the content experts needs to be maintained with their responsibility for the content development, but within a context of a commitment to on-going reflection and improvement of the educational outcomes.

**Key Characteristics of the model process**

The complexities of producing quality educational outcomes have been discussed and the centrality of the capability and professionalism of the staff to achieve this is recognised. The model aims to combine the benefits of project management to ensure the conditions are set-up to enable quality educational outcomes and value scholarship and ownership within the project teams and the individual staff members. For these outcomes to occur, the process needs to be embedded within the institutional processes and must include the following key elements:

- Direct links with the institutional and faculty strategies
- Project leader (manager) is appointed
- A full project proposal is developed, costed and signed –off
- On approval, a Project Team is put in place and they develop a full plan in line with the proposal.
- Time lines and planning account for the cyclical periods or natural rhythms of the institution.
- Staff workplans and reward systems reflect their commitment to the project.
- The Plan resources and promotes scholarship through reflective practice by the adoption of ‘action learning’ processes.
- The plan embeds the professional development and support
- The communication and reporting processes facilitate sharing of the learning between project teams and across institutional boundaries.
- Has a direct link with the quality assurance processes through peer review, user trialling, student feedback, etc.
Item 6. Paper: Managing Innovation in Educational Institutions


Introduction

This paper considers the planning issues arising from the implementation of the system wide Distributed Learning System (DLS) at RMIT and its subsequent developments. It is concerned with identifying the implications for project management and planning processes within educational institutions.

The current economic environment has required many tertiary educational organisations to explore new and innovative ways to survive and deliver quality services, (Kenny & McNaught, 2000). There have been many mergers of smaller educational institutions. RMIT has become a dual sector university, incorporating TAFE and Higher education. Ramsden (1998) claimed that universities now service a mass audience and rely on research and entrepreneurial capabilities more and more for funding. Lines (2000) noted rapid growth in the number of students attending universities resulting from system wide structural changes. Many organizations have shifted to a more corporate model of management with central strategic planning processes and priorities, budgetary controls and increased accountability mechanisms.

A common innovation which Lines (2000) observed in the seven universities which she studied, was a strategic push for more flexible learning options to cater for the new, more diverse student population, often involving the introduction of new learning technology systems.

Ramsden (1998) pointed to a potential clash between the demands of the modern organisation for more accountability and the independence culture of academics and teachers. The implications of these tensions for project management in educational organisations are explored in this paper. Finally a model is provided to enable managers to categorise projects and identify the levels of change so that appropriate project management processes can be developed.

Background

The implementation of the system wide Distributed Learning System (DLS) at RMIT began in semester one 1999 and was a major strategic initiative of the University. The number of courses in the DLS grew rapidly from 45 in semester one, 1999 to 1053 in semester one 2001 and continues to grow. A recent report puts the current number of students registered within the DLS at 48 000 of the approximately 50 000 students at RMIT.

The experience at RMIT in the development of a technology system to support improvements in teaching and learning has proven to be a complex process. Many technical problems were encountered in developing and building the DLS. These included: the identification, evaluation and acquisition of software and hardware; the integration of the software; the rationalization of various administrative systems; the manipulation of data from a variety of sources across the organisation; the development of a secure portal; and the upgrading of network capacity and computer access for staff and students.

A suite of software tools were integrated as a part of the DLS and made available to staff. Targets set for each faculty, as a part of the RMIT Teaching and Learning Strategy (1998-2000), required faculties to push for a rapid uptake of the DLS by teaching staff. Many of these tools (e.g. Blackboard which is currently used in about 85% of courses on the DLS) enabled staff to be able to publish learning materials to the DLS with a minimum of about two hours training.
It was soon realized, however, that staff also needed support beyond this basic one-off training. Professional support was needed to assist staff to re-develop and re-organise their learning materials into the online environment. The development time required for this began to put pressure on staff workloads Kenny (2001), Kenny (2000) and (McNaught et al. 1999). This required a much closer link with the organisational planning processes than was the case (Kenny & McNaught 2000).

The preparation of meaningful learning experiences required changes in teaching practice and a rethink of how to best deliver the materials using the technology, Kenny & McNaught (2000), Inglis et al. (1999). The development of associated multi-media resources for inclusion in online courses required the formation of multi-skilled development teams to work collaboratively with academics. The degree of collaboration with educational design and production staff, training and adoption of new teaching approaches had direct implications for staff workloads and resource planning.

A formal review of the courses on the DLS conducted towards the end of semester one 2000 indicated about 50% of courses on the DLS at that time, contained little meaningful course material or activity. It was evident that the lead times, staff development issues and resource implications for the production of quality online courseware had been underestimated. In many cases, the staff involved in the development projects received insufficient time allocation and were often expected to do the development work in addition to their other responsibilities.

In response, a new planning process, called the ‘Strategic Courseware Renewal’ (SCR) was implemented centrally to enable the ‘rapid prototyping’ of courseware deemed strategic by each faculty. The SCR project plan provided educational design and technical support resources and involved a tight thirteen week production schedule. A key assumption of this strategy was that the faculties had developed parallel strategic plans and that staff had sufficient skills to enable these projects to happen with minimal staff involvement. However this was clearly not the case.

From a project management perspective, the SCR Project had a number of flaws. Firstly, it was not sufficiently integrated with the faculty planning processes, where the resourcing decisions were made. There was insufficient lead time to enable adequate ‘scoping’ of projects to ensure resourcing was identified and provided. Project management responsibilities were unclearly defined. Tight timelines of thirteen weeks were set to rapidly produce product in a number of programs, without any consideration of the particular needs of each renewal project team. The schedule left little room for the re-thinking of the learning. There was little attention given to the development of the skills of the staff to be able to maintain the course after the initial development.

The introduction of the DLS at RMIT also clearly demonstrated that the development of quality online courseware involves change management issues as well as planning concerns. Kenny and McNaught (2000) considered that the project planning processes for such project have to be integrated with the organisational planning processes. Taylor (2000) referred to the cultural and staff development issues:

But success in persuading staff to engage with new technology will depend upon engendering and nurturing cultural change in the faculties, with emphasis on their need to re-think their pedagogical approach and curriculum design to take account of the new technology, not on their capacity to generate product.

Taylor (2000: 3)

Alexander et al. (1998) identified the role of organisational management in the success of projects. Bain (1999, p170) concluded that the context in which an innovation occurs has to be considered. Otherwise the valuable learning opportunities inherent in these projects will be lost to the institution. Laurillard (1997) contended that innovative projects cannot be done effectively outside the organisational management process. Lester (1998) listed a number of similar success factors for projects in industry. Kenny & McNaught (2000) pointed to ‘internal boundaries’ between sub-
sections of an organisation which can hinder the flow of important information unless an organisational perspective is taken.

**Project Management Processes**

‘The Project Management Institute’ (PMI), based in the United States, was founded in 1969 and claims over 70,000 members worldwide. The PMI establishes project management standards, provides seminars, educational programs and professional certification. The PMI produces the ‘Project Management Body of Knowledge’ (PMBOK, 2000) which is a guide to the practices and procedures used by project managers. The PMBOK on page 4 defines a project as “a temporary endeavour undertaken to create a unique product or service.”

According to the PMBOK, organisations use projects as ‘a means by which strategy is implemented.’ Professional project managers make judgements and draw upon the body of knowledge and accepted practices to apply to each situation. The PMBOK claims that project management practices can be applied to “most projects most of the time.” Traditionally, there has not been much distinction between the characteristics of different projects.

Shenhar and Dvir (1996) surveyed key personnel from 153 defence projects and used their data to develop a typology which classified projects according to the level of uncertainty associated with the technology and the scope or extent of the project. The ‘uncertainty’ involved in these projects was largely due to the newness of the technology employed.

> Perhaps one of the basic deficiencies in project management theory is the little distinction that has been made between the project type and its strategic as well as managerial problems.

Shenhar & Dvir (1996, p. 608)

They also studied the management processes used in the projects and concluded that they became progressively more ‘open’ as the levels of uncertainty in the projects increased. For example, they concluded that the management approach NASA might adopt to build the space shuttle would be fundamentally different to the approach adopted by a building company on a typical construction project.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>Low technological uncertainty- involves the use of established technology.</td>
<td>Common building projects</td>
</tr>
<tr>
<td>Type B</td>
<td>Medium technological uncertainty- Involves adapting familiar technologies or some new feature</td>
<td>Common industrial projects</td>
</tr>
<tr>
<td>Type C</td>
<td>High Technological uncertainty- involves the use of new technology, largely untried and maybe the integration of several new technologies.</td>
<td>Defence development projects</td>
</tr>
<tr>
<td>Type D</td>
<td>Super high technological uncertainty-technologies are non existent and have to be developed.</td>
<td>Apollo moon landing project.</td>
</tr>
</tbody>
</table>

Table 1: Descriptions of Project Uncertainty Scale. Based on work from Shenhar and Dvir (1996, pp.610-612)

To illustrate the typology, a number of well-known projects were classified (See Figure 1).

For example, the ‘Star Wars’ project, rated a high level of uncertainty as it involved totally new and untried technologies. However, the Channel Tunnel, while a large project, involved the use of more established technology.

Shenhar and Dvir (1996) also drew a distinction between radical innovation (Type C& D) and incremental innovation (Type A& B). Table Two gives a description of the terms used to categorise the scope of the system and some more examples to illustrate.
<table>
<thead>
<tr>
<th>Increasing System Scope</th>
<th>Incremental innovation</th>
<th>Radical innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Array</td>
<td>Modernisation of New York’s subway system</td>
<td>Strategic Defence Initiative. (Star Wars)</td>
</tr>
<tr>
<td>2-System</td>
<td>The channel tunnel</td>
<td>Development of patriot missile</td>
</tr>
<tr>
<td>1-Assembly</td>
<td>Development of a new car</td>
<td>Development of first VCR.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type A</th>
<th>Type B</th>
<th>Type C</th>
<th>Type D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low tech</td>
<td>Medium tech</td>
<td>High tech</td>
<td>Super high tech</td>
</tr>
</tbody>
</table>

Figure 1: Typology of Project Management. Adapted from Shenhar and Dvir (1996, p.610)

Table 2: Descriptions of Project Scope Scale. Adapted from Shenhar and Dvir (1996, pp.610-612)

Shenhar and Dvir (1996) found that the more complex projects contained higher levels of communication through multiple channels. Project teams contained a high percentage of professionals and academics. The teams operated with more flexible management styles and the expectation of many changes. The management style used was progressively more flexible as the complexity of the project increased.

Sheasley (1999) studied management processes used in projects concerned with the development of new products. He linked the success of innovative projects to the organisational culture:

> The importance of an organisation’s culture is often underestimated … A drive for continuous learning and improvement, along with practices for communicating and assimilating those learnings must prevail. New product development is highly cross-functional, so that teamwork and empowerment must be the reality and not just mottoes.

Sheasley (1999, p.51).

He concluded that the most suitable management processes for innovative environments focus on review and evaluation, identification of learning and continuous improvement through the modification of plans.

**A clash of cultures**

Crabo-Ljungman (1997) described a project management process adopted by a Swedish electronics company to develop new products which she claims has led to a considerable reduction in development time to market and an increase in through-put of the number of projects. It too, involved the formation of multi-disciplinary teams. The project management process involved five phases: market requirement specification, feasibility study and project preparation phase, development and testing phase and finally a market introduction phase.
She pointed to considerable resistance by the engineers who had previously operated largely independently within projects. She claimed that the process “promoted better resource management, but its implementation required a ‘cultural revolution’.”

In the education sector, Phelps et al. (2000) recounted their experiences as project managers leading teams of academic staff on curriculum development projects and commented:

> The introduction of project management methodology into the academic environment creates cultural and procedural dissonance.  

Phelps et al. (2000, p.206)

Bates (2000) compared a university to a “Post-Fordist” organisation. This term is used to describe an organisation, where teams of largely self-governing experts are loosely held together by a common goal or purpose.

According to Bates (2000) the main advantage of project management processes in an educational institution is for the efficient allocation and use of scarce resources. He also pointed to a clear tension between the classic project management approach and the traditional way in which professional staff at a university work. In an attempt to overcome this problem, he advocated a looser approach to project management process:

> … a much looser project management approach that specifies responsibilities and completion dates but does not attempt to quantify every activity on a micro level. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life. However at the end of the day, there still has to be a course developed and deadlines met.  

Bates (2000, p.73)

Questioning the application of project management processes to curriculum development in an educational institution, Phelps et al. (2000) point to the limitations of classical project management processes in relation to the culture of an academic institution.

> Academics traditionally are responsible for managing their own timelines…Project managers are not in a position to re-prioritise the work…of academic staff, nor to pull them away from other work commitments.  

Phelps et al. (2000, p. 208)

The cultural aspect of the independence of academics and the nature of their work, in which they have a range of teaching and other responsibilities, makes traditional project management practices problematic for educational development projects in which they may be involved. Phelps et al (2000) proposed the concept of the ‘Learning Organisation’, as described by Laurillard (1997) and Senge (1990) as a more suitable organisational environment in which educational projects should occur. They contended that project management processes need to more closely align with the prevailing ethos in such an organisation, which “embraces the concepts of action learning and reflective ‘praxis’.”

The project management approach advocated by Bates (2000) and Phelps et al. (2000) is consistent with the management models mentioned in Shenhar and Dvir (1996) and Sheasley (1999) for innovative projects. It indicates that educational projects to improve teaching and learning in the university setting, particularly those to do with using new technology, have many characteristics in common with innovative projects in industry.

**Change Equals Uncertainty**

Shenhar and Dvir (1996) identified the level of uncertainty involved in a project as one of the key determinants of the management styles used. In an organisational context, the sources of uncertainty are more diverse than simply the technology.

De Wit and Meyer (1999) clearly linked revolutionary change with high levels of uncertainty. They described revolutionary change in an organization as
arduous and encounters significant resistance...In general, the more significant the change is, the more intense the shock will be.

De Wit and Meyer (1999, p.141)

They explored the nature of change in terms of its Magnitude and Pace (See Table 3). The Magnitude of change has two components: the Scope, which refers to the extent of the change (that is how much of the organisation will need to change) and the Amplitude, which refers to the degree of change (that is, how radical it is).

The Pace of the change has two components also: the Tempo, which refers the urgency of a change and the Timing, which refers to how immediate the change will need to be. These characteristics of change can be used to estimate the “Degree of Uncertainty” associated with change in an organisation.

<table>
<thead>
<tr>
<th>Change</th>
<th>Magnitude</th>
<th>Pace</th>
<th>Degree of Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of change</td>
<td>Scope</td>
<td>Amplitude</td>
<td>Tempo</td>
</tr>
<tr>
<td>Radical/Strategic</td>
<td>Broad</td>
<td>High</td>
<td>Rapid/Urgent</td>
</tr>
<tr>
<td>Radical/Concrete</td>
<td>Low</td>
<td>High</td>
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<td>Low</td>
<td>Steady</td>
</tr>
<tr>
<td>Incremental Concrete</td>
<td>Low</td>
<td>Low</td>
<td>Steady</td>
</tr>
</tbody>
</table>

Table 3: Estimating the level of uncertainty associated with change.

As projects within an organisation are about implementing strategy, the implementation of a radical new strategy or a new structure is likely to bring with it a complex change process and thus produce considerable uncertainty. The more radical and extensive a strategy is for an organisation, the more uncertainty is associated with it.

**Project Management and Change**

The project manager is accountable for bringing a project to completion in accordance with the project brief: on time, within budget and in accordance with the specifications.

However, Baccarini (1999) noted that “many projects have failed because they did not meet customer expectations, even though they were well executed”. In other words, simply determining the success of a project on how well the project processes operated is not sufficient in an organisational environment. Baccarini (1999) contended that in an organisation, many of the dimensions of a project are beyond the control of the project team. The project goal and purpose are often determined outside of the project team by senior management. On this basis, an organisation has to judge the overall success of a project not just on the short term ‘deliverables’ which it achieves (i.e. the immediate service or product which is established) but also on the longer-term effects on the strategic outcomes the project is meant to serve.

The cultural aspects of the organisation also come into play here as well as the nature of the project itself. The clash between a traditional project management approach and the ways that academics work was alluded to earlier. This clash results from the application of pre-determined deadlines and schedules to what is essentially an innovative or developmental process. Verwey & Comninos (2002) listed a range of “fuzzy” projects within an organisation to which this same thinking may be applied. They use the term “fuzzy” to describe the intangible characteristics of many projects. Such things as business process improvements, customer service improvements, organisational restructuring, etc. These changes are characterized by a need to address “changes in people’s actions, organisational culture and stakeholder perceptions.”

Academics working on a project to develop courses or learning experiences using new technology are essentially participating in project with a fuzzy component. While there will often be a product...
developed, its implementation and adoption may well involve change in practice. This is where a large part of the uncertainty associated with the project will arise.

The action research process of the reflective practitioner as described by Schön (1987), Elliot (1991) and Zuber-Skerritt, (2000) closely resembles the iterative and collaborative team processes as described by Sheasley (1999) and Lester (1998). In the educational setting, participation in a change project may require each individual practitioner to closely re-evaluate his or her own educational approach. This introduces high levels of uncertainty and requires time for professional growth and reflection.

The purpose and value of project management in projects such as this is not to micro-schedule every activity, but to ensure that the resources, time and support required are provided and that the accountability processes are in place to monitor progress.

**Accountability**

In more corporate organisations accountability mechanisms are put in place to prioritise and justify the allocation of limited resources. This aspect is particularly pertinent in the existing economic climate for universities. The problem is how can the level of accountability required by management, to monitor progress and make decisions about whether to continue to fund a project be reconciled with the freedom needed for reflective practice, discovery and/or innovation to occur?

Both Sheasley (1999) and Lester (1998) addressed this tension between the creative and professional freedom required for innovation and the needs of the management of an organisation to justify the allocation of resources and for evidence of progress. Sheasley (1999) proposed that innovative (discovery) is best managed using a process called ‘cycle time management’.

> Cycle time management is a process oriented approach to work activities in which time is the primary basis or driver upon which the overall process is designed and optimized.
> 
> Sheasley (1999, p.51.)

In essence this means that at the end of each development phase the project team reports on their progress to management. The reporting process concentrates on four basic aspects of the project.

- What they set-out to do.
- What was achieved.
- What was been learned.
- What is planned for the next phase of development.

This process de-emphasises the need to achieve pre-set goals. It acknowledges the genuine unpredictability of research or professional growth and the inability to schedule discovery or innovation. It also highlights the importance of capturing the learning in such projects. What such projects need is a supportive climate to be created so they can flourish.

On the basis of what they hear, senior management then decide if the benefits to the organisation merit that the project continue to receive funding. The goals in such projects have to go beyond the mere achievement of pre-determined goals. By their nature, the outcomes of such research or innovation projects are uncertain. Flexibility of process is essential.

De Wit and Meyer (1999) argued for the degree of radical change introduced to an organisation to be controlled. They alluded to situations in an organization where the number of projects seemed to proliferate. Lester (1998), Bates (2000) and Verwey and Comninos (2002) advocated a process be established to manage a ‘portfolio’ of projects. This would involve a senior committee to receive proposals and decide on the projects to be resourced based on organisational priorities. Such a process may prevent an uncontrolled proliferation of projects.
A Typology for Organisational Activities

The typology proposed by Shenhar & Dvir (1996) offered a tool to classify projects. In this section, the typology is modified to fit an organisational context. The typology was developed from the study of 153 independent projects. For the purposes of this discussion, the modifications are made for a generic organisation. The model may need some modification for any particular case. Four specific modifications have been made to accommodate an organisational environment.

Firstly, Shenhar & Dvir (1996) associated ‘uncertainty’ with the technology employed in a project. The sources of change within an organisation are broader than simply use of new technology. For example, an organisational restructure may cause considerable uncertainty but not involve any new technology. A change in strategic direction for the organisation may also cause a high degree of uncertainty.

Secondly, DeWit and Meyer (1999) identified the top two levels of an organisation as the originators of strategic change. It is important to include these in an organisational version of the typology. Hence the ‘scope’ axis of the typology has been expanded to include four levels of the organisation rather than three.

Thirdly, projects within an organisation are not necessarily independent. They are often related to some strategic or policy decision. The implementation of a key strategy may have a ‘cascade effect’ which results in a series of related projects being set up throughout the organisation. The typology can be used to identify these specific projects.

Fourthly, as Shenhar & Dvir (1996) studied independent projects, there was no mention of feedback. In an organisational context, a series of projects created as a result of the implementation of a strategy, will have a direct bearing on the success of the strategy. The projects at the more operational levels of the organisation will provide valuable information for the organisation as to the success of the strategy. Hence there must be developed an effective means of getting both formative and summative feedback on the implementation of the strategy. Successful
implementation of a strategy therefore relies on the appropriate organisational culture and management processes being put in place.

The typology of Figure Two is proposed as a tool to aid management to consider the organisational impact of the implementation of any particular strategy or policy and to identify the individual projects associated with the strategy and the nature of the projects. The typology in itself though is not enough, and must be considered as a part of an organisational process.

Figure 2 is divided into four quadrants labelled Category 1 to Category 4. Each of these four categories identifies activities with certain characteristics.

The typology can be used when considering the implementation of a strategy, to identify the likely impact on an organisation. It can also be used to consider the range of related activities.

The characteristics of the different categories are explained more fully in Table 4 along with some illustrative examples. The typology is designed to link to a set of guidelines for the successful management of each broad category of activity. The term activity is used because the typology may also be used to categorise other on-going activities of an organization which may not fall under the definition of projects, such as key operational imperatives.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Descriptions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category One</strong></td>
<td>Broad radical change or innovation.</td>
<td>• Major organisational re-structure.</td>
</tr>
<tr>
<td></td>
<td>Strategic Projects with high to very high levels of uncertainty and wide organisational impact.</td>
<td>• Implementation of the DLS at RMIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implementation of a new strategic direction or policy for the organisation with significant implications for practice.</td>
</tr>
<tr>
<td><strong>Category Two</strong></td>
<td>Localised radical change or innovation.</td>
<td>• Preliminary pilot study related to a category one project.</td>
</tr>
<tr>
<td></td>
<td>Projects with high to very high levels of uncertainty but low organisational impact.</td>
<td>• Development of a new program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radical change or innovation project initiated at the work unit level</td>
</tr>
<tr>
<td><strong>Category Three</strong></td>
<td>Broad incremental change or continuous improvement.</td>
<td>• Upgrade of desk-top computers within the organisation.</td>
</tr>
<tr>
<td></td>
<td>Projects with low levels of uncertainty but wide organisational impact.</td>
<td>• Routine improvements to a course or program.</td>
</tr>
<tr>
<td><strong>Category Four</strong></td>
<td>Localised incremental change or continuous improvement.</td>
<td>• Routine improvements to an existing subject or course.</td>
</tr>
<tr>
<td></td>
<td>Projects with low levels of uncertainty and low organisational impact.</td>
<td></td>
</tr>
</tbody>
</table>

Table Four: An explanation of the characteristics for each category of organisational activity.

The definition of what constitutes a project is imprecise. While category one and two activities are very likely to fall under the definition of ‘projects’, particularly during the development and
implementation phases. As they become more established, they will, at some stage, be handed over to operations.

Category three is likely to contain both projects and on-going operational activities. Category Four is more likely to involve continuous improvement to existing processes or products and therefore to contain activities more operational in nature than project based.

Further, the concept of ‘progressive elaboration’ or ‘iterative development’ of a product or service further blurs the boundary between projects and the continuous improvement as part of an operations quality assurance process. There is no point in becoming too concerned with this. The ambiguities really only exist near the margins. In most cases an activity will obviously be a project and it will need appropriate management processes and resourcing to be put in place.

**Radical Change-Category One and Two Projects**

By their nature, these projects involve innovation, discovery and/or radical change. The outcomes of the project are unclear at the beginning or they involve high levels of uncertainty due to change. The progress will become clearer through the process of discovery or iterative development. Category One projects will likely consist of numerous sub-projects (category two) or other related projects. This may require the implementation to be managed by piloting or staging the implementation. Pilots provide a means of reducing the uncertainties associated with implementing a major strategic change.

Key success factors for radical change or innovation projects include:

1. Senior management support or sponsorship.
2. A project team which is multi-skilled, engaged and committed.
3. Many ideas will need to be explored and open communication processes and sharing of ideas encouraged.
4. The management processes provide the right environment for the project team to do its work. The project team needs to be largely self-managing.
5. The project aims are based on the broad strategic goals, the project team develops and carries out the detailed activities to achieve the goals.
6. Micro scheduling and planning every activity is inappropriate. The project team needs flexibility to adapt to changing circumstances and new developments while keeping the broad strategic goals in mind.
7. Accountability processes must emphasise progress and learning. Periodic reporting should occur at the completion of each development cycle. The reporting should be based around the questions
   - What was the goal?
   - What was achieved?
   - What has been learned?
   - What is planned for the next phase?
8. The senior management team makes the decision to continue or abandon the project based on the perceived benefits or progress towards the goals.
9. Success has to be defined in a broad sense, the project team is expected to develop innovative and meaningful solutions, or at the least valuable lessons and experience which can be applied throughout the organisation.
10. Success of any particular project is determined by how well the project contributes to the achievement of the strategic goals of the organisation (effectiveness), not just how well the project itself went (efficiency).
Conclusions

Projects are about implementing strategy. Within an organisation, implementation of a new strategy can introduce very complex change process and produce high levels of uncertainty. The more radical or innovative a strategy is, the more uncertainty is associated with it. Projects, which involve high degrees of uncertainty or change, need to be structured and managed differently from those which involve more routine changes.

The outcomes of such projects are usually unclear and ill-defined at the outset, often becoming clearer through iterative development. A key purpose of such projects is to learn, to explore, to add substance and meaning to the broad outline of the organisation's strategy. Project plans therefore need to be flexible, to allow for changes of direction and exploration of new ideas and incorporation of new developments. They rely on the commitment and ownership of the team members. Some examples of such projects are: new product development, research, development of new programs and courses, incorporation of new learning technologies into existing courses and programs, organisational restructuring, pilot studies, etc.

An underlying culture of continuous improvement, as a basis for an organisation to be adaptable is recognized. Such a culture will also enable the organisation to more effectively adapt to radical changes which management may see as necessary to implement. Any real adoption of a commitment to innovation leading to improved strategic outcomes for an organisation, has to be embedded within the organisational culture.

The prevailing academic culture means that there may be a tension between the academic approach to work and the traditional project management approach. The approach identified for managing innovative projects, however, parallels very well the more reflective approach of academics and teachers and is much more in tune with the way in which they develop.

The effective management of projects involving high levels of innovation, change or uncertainty requires open management and communication processes. The project team is likely to contain a high percentage of professionals or academics who are traditionally operate independently. Rigid project management approaches tend not to be effective with such groups. Effective project management process in such projects is based around a culture of learning and iterative development in which the project team operates largely autonomously. The project team is self-governing and is held together by common goals and ownership of the project. The project is linked into the organisational processes through a project management process geared towards providing adequate resources and a reporting process, at the completion of each cycle. The accountability emphasises what has been learned and what is planned.

Organisations, which develop a culture of openness, risk-taking and learning, are more able to be innovative and adaptive to change than those that do not. It is the responsibility of the senior management to create an environment for innovation to happen. The organisational processes put in place link the support and commitment of the senior management to the accountability mechanisms. Processes such as promotional systems and reward mechanisms point to what is valued within an organisation. Communication and feedback are the life-blood of an innovation. The lessons learned through the implementation of a project should be aggregated and disseminated to inform the next iteration of the project and the strategic direction of the organisation.
Item 7-Paper - Effective Project Management for Strategic Innovation and Change in an Organizational Context


**Introduction**

Project management is the disciplined application of certain knowledge, techniques, tools and skills to create a unique product or service. The project manager can choose from a range of recommended processes to manage any particular project. Traditionally, the project management process does not distinguish between different types of projects. The choice of which particular processes will be employed in any situation is left to the judgment of the individual project manager. A range of accepted practices is documented in *A Guide to the Project Management Body of Knowledge, PMBOK® Guide* (2000).

The individual practitioner makes judgments about when and how to intervene in a situation, often drawing on an accepted range of practices. The key is for the individual practitioner to be able to choose and articulate why a particular practice has been employed.

Project management has emerged as a profession in its own right, with accepted practices, professional bodies, and codes of conduct. The Australian Institute of Project Management (AIPM) has defined competency standards for project management, in conjunction with industry representatives and the Australian National Training Authority (ANTA).

The Project Management Institute (PMI®) is based in the United States and was founded in 1969. PMI has almost 100,000 members worldwide. It is a leading non-profit professional association for project managers. PMI establishes project management standards, provides seminars and educational programs, and professional certification. It publishes the *PMBOK® Guide* (2000) along with other PMI standards.

The *PMBOK® Guide* (p. 4) describes a project as “a means by which strategy is implemented.” Project management is therefore seen as a process applied to manage the implementation of strategy.

**The Nature of Projects**

The *PMBOK® Guide* (2000, p. 3) states that the basic project management processes can “generally” be applied to “most projects most of the time.” Recent thinking has identified fundamental differences between some project types. This raises the question, “What project management processes are the most appropriate to apply in particular in situations?”

Shenhar and Dvir (1996) surveyed key personnel who were involved in 153 projects and then categorized their responses. From the responses they developed a “typology” to classify the projects according to the “levels of technological uncertainty” and the “scope” or extent of the systems for which they were designed (see Figure 1).

They used the typology to classify other well-known projects. For example, the U.S. Strategic Defense or “Star Wars” project is categorized as Type D3, because it involved totally new and untried technologies. In scope it was categorized as an Array, as it was to be a defense system for the whole of the United States. The level of innovation involved in such a project is considered extremely high, as much of the technology was/is still in development even as the project progressed.
Incremental innovation

<table>
<thead>
<tr>
<th>3-Array</th>
<th>Radical innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modernisation of New York’s subway system</td>
<td>The Channel Tunnel</td>
</tr>
<tr>
<td>The Channel Tunnel</td>
<td>Strategic Defence Initiative. (Star wars)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2-System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building project Development of a new car Development of patriot missile</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of first VCR.</td>
</tr>
</tbody>
</table>

**Table 1: Descriptions of Project Uncertainty Scale. Based on work from Shenhar and Dvir (1996)**

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>Low technological uncertainty- Involve the use of established technology.</td>
<td>Common building projects</td>
</tr>
<tr>
<td>Type B</td>
<td>Medium technological uncertainty- Involve the adoption of familiar technologies or some new feature</td>
<td>Common industrial projects</td>
</tr>
<tr>
<td>Type C</td>
<td>High Technological uncertainty- Involve the use of new technology, largely untried and maybe the integration of several new technologies.</td>
<td>Defence development projects</td>
</tr>
<tr>
<td>Type D</td>
<td>Super high technological uncertainty-Technologies may not yet exist and have to be developed.</td>
<td>Apollo moon landing project</td>
</tr>
</tbody>
</table>

By comparison, the Channel Tunnel (Type B3) involved the use of more established technology, so it had less uncertainty associated with it. A more detailed explanation of the project types and the scope is available in Tables 1 and 2.

**Table 2: Descriptions of Project Scope Scale. Adapted from Shenhar and Dvir (1996)**

<table>
<thead>
<tr>
<th>1. Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building a single component to stand alone or to be a part of a larger system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. System</th>
</tr>
</thead>
<tbody>
<tr>
<td>A complex collection of interactive elements and sub-systems jointly performing independent functions to meet a specific operational need or mission.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Array</th>
</tr>
</thead>
<tbody>
<tr>
<td>A large, widely dispersed collection of systems</td>
</tr>
</tbody>
</table>

In their typology, Shenhar and Dvir (1996) also draw a distinction between radical and incremental innovation: Type A and B projects as against Type C and D. They identified that different management processes were used for the different classes of project.

They concluded that the more complex projects with higher levels of uncertainty tended to set up multiple channels of communication, and had a high percentage of professionals and academicians on the project team. They operated with a flexible management style, with the expectation of many
changes. The management style used was progressively more flexible as the complexity of the project increased.

Management and Organizational Implications

While Shenhar and Dvir (1996) studied unrelated projects, other researchers have considered the issue of managing innovative projects in an organizational context. Sheasley (1999) proposed that the best management strategy for an innovative project is one based on “expectations.” These expectations being: a focus on continual review and evaluation, identification of the learning and improvement through the modification of plans.

“Each review should consist of a reiteration of the previous outlook for learning, a presentation of what was done and what was learned and a new plan for the research in the upcoming phase, with the ultimate goal for performance advances always in view” (Sheasley, 1999, p. 54).

Shenhar and Dvir (1996) referred to research that investigated critical success factors, identifying a universal set including: project mission, project planning, project control, top management support, and customer involvement. Alexander, McKenzie, and Geissinger (1998) identified a similar set of success factors for projects in the education sector.

Lester (1998) considered the characteristics of projects involving new product development, which he found to be team-based activities, where multi-skilled “Venture Teams” were formed to generate and develop new ideas and products. He identified critical factors for success in such projects in five areas:

1. Senior management commitment acting through a culture that rewards innovative and entrepreneurial individuals.

2. Organizational structure and processes that support cross-functional teams and provide guidelines for their operation. “It is better to err by letting the Venture Teams have a wider latitude. Is the organisation growing a high-performance team or ripping it up by the roots every day to see if they have begun to sprout? Management must let the teams struggle and learn” (Lester, 1998, p. 37).

3. Encouraging new product ideas to be generated.

4. Providing venture teams with appropriate staffing, skills, resources, and training to able to work and communicate effectively. Leadership of the team is a critical factor. Team members to spend at least 50% of time on team activities.

5. A tactical planning process for innovative projects that he claims leads to “shorter time lines and earlier identification of pitfalls.” This is a continuous process of learning, keeping team members and management informed and adjusting plans as required.

Unlike projects based on known facts and realities, new product development is loaded with unknowns and assumptions that must be validated … The emphasis is on addressing unknowns and validating assumptions as early as possible.


Because of the nature of discovery, Sheasley (1999) says it “has largely remained outside the domain of conventional project management.”

Breakthroughs in technology require time: discoveries cannot be scheduled. However resources and programs can and must be managed


Sheasley also proposes that, once under way, innovative (discovery) is best managed using a process called “cycle time management,” which involves periodic time-based reviews of the learning. The review process ensures accountability as the project team outline to the organization
what has been done, what has been learned, and presents a new plan for the upcoming phase of
development.

Both Sheasley (1999) and Lester (1998) propose a means to reconcile the tension between the
creative and professional freedom required for innovation and the needs of the management of an
organization to justify the allocation of resources and for evidence of progress. Bates (2000) and
Phelps et al. (2000) report similar tensions in the education sector between project management
and the nature of academic work. Each suggests a move away from traditional activity-based
project management approaches.

… a much looser project management approach that specifies responsibilities and
completion dates but does not attempt to quantify every activity on a micro level. The
project manager and the academic have a good deal of freedom to move resources around
and adjust schedules to meet the reality of academic life. However, at the end of the day,
there still has to be a course developed and deadlines met

Bates (2000, p. 73)

Bates (2000) claims the problems encountered with managing projects in the educational sector are
linked to the prevailing culture of academic work. Sheasley (1999) and Lester (1998) also linked
the success of innovative approaches in an organization to the culture in which the development is
occurring.

The importance of an organisation’s culture is often underestimated, …. A drive for
continuous learning and improvement, along with practices for communicating and
assimilating those learnings must prevail. New product development is highly cross-
functional, so that teamwork and empowerment must be the reality and not just mottoes

Sheasley (1999, p. 51)

So for innovation to occur, the culture, structure and processes of an organization need to be
supportive of multi-skilled teams, which operate largely autonomously, yet their activities are
linked to the organizational priorities and outcomes. However, developing a culture to support
innovation is a difficult task—beyond the scope of the project team.

Crabo-Ljungman (1997) describes a project management process called “multifunction project
management,” adopted by a Swedish electronics company to support and manage the development
of new products. She claims the new process led to a considerable reduction in development time
to market and an increase in the number of projects. It involved the formation of multidisciplinary
teams and a clearly understood and defined process that was to be followed. This process became
the mandatory process for all projects and it involved five phases: market requirement
specification, feasibility study, project preparation, development and testing phase, and market
introduction.

Crabo-Ljungman (1997) points to considerable resistance to this approach, especially by the
engineers who had previously operated largely independently within projects. She claimed that the
process “promoted better resource management, but its implementation required a cultural
revolution.”

Judging the success of an innovative project is beyond the scope of this paper, but it is clear that
success needs to be broadly defined. An innovative project should be judged by a range of
outcomes including lessons learned, avenues and possibilities opened up, increases in knowledge
and capability of the project team members, and progress toward the goal. It should include spin-
offs from the goal rather than simple achievement of the goal.

The most effective project management processes are those that facilitate as much as possible the
operation of the project team, whose goal is to “innovate” and to “learn.” Learning, in this sense, is
essential for an organization to become a “Learning Organization” (Senge, 1990). It can mean a
number of things: growth in capability of the team members, new knowledge for the organization,
ideas for new products, etc. It should be a fluid and dynamic discovery process operating within appropriate organizational processes and a supportive culture.

Strategic Change as a Source of Uncertainty in Organizations

De Wit and Meyer (1999) identify two types of strategic change—evolutionary and revolutionary. The proponents of each approach take quite different views of how to implement change. The proponents of revolutionary or radical change point to the inherent inertia in organizations and propose that rapidly executed radical change is needed to overcome this inertia and achieve the desired strategic outcomes, particularly in times of crisis.

On the other hand the proponents of evolutionary or continuous change argue that it is more effective in the long term as it requires staff to have a mind-set of willingness to accept change—to be always focused on improvement. They argue that, unless this mind-set is in place, revolutionary change will only achieve short-term results. Such an attitude to change is bound with the prevailing culture of an organization.

According to De Wit and Meyer (1999) strategists in organizations committed to steady or incremental change should:

… strive to create flexible structures and systems to encourage an open and tolerant corporate culture, and to provide sufficient job and career security for employees to accept other forms of ambiguity and uncertainty

They go on to point out that “when well managed major organisations make significant changes in strategy” the processes used are “typically fragmented, evolutionary and largely intuitive.” (p. 120–121). In their view, the real strategy evolves and the formal planning process is just “one building block in a continuous stream of events.” They maintain that this is actually the norm for the development of strategy, a process that they call “logical incrementalism.”

In this process, executives will broadly outline the strategic directions for an organization, but delay committing to detail until as late as possible. This delay recognizes the complex nature of reality. It acknowledges that the development of organizational strategies is influenced by many events, both internal and external to an organization. Many of these events cannot be predicted, controlled, or measured, so flexibility is needed to deal with them as they arise and to modify plans accordingly.

Implementing strategic change in an organization is a fluid process that has to take account of the uncertainties due to change. Verwey and Comninos (2002) recommend a process called “Business Focused Project Management” (BFPM) to deal with uncertainty and constant change through “progressive elaboration” of a project.

In BFPM, each functional group in an organization interprets a strategy and develops a business plan, out of which comes a portfolio of projects to resource and evaluate. It is proposed as a process to effectively manage “fuzzy” business projects. They use the term “fuzzy” to describe the intangible characteristics of many projects—such things as business process improvements, customer service improvements, organizational restructuring, etc. These changes are characterized by a need to address “changes in people’s actions, organizational culture and stakeholder perceptions.”

As with the model of De Wit and Meyer (1999), there is a logical thread linking strategy to the creation of projects. The project’s success has to be considered in the context of the achievement of the strategic goals of the organization, not just a narrow project focus. Acknowledging this point is important for understanding the role of project management in an organizational context.

According to De Wit and Meyer (1999, p. 141), from the revolutionary change perspective “Organizational change is arduous and encounters significant resistance,” and has to be forced
through. “In general, the more significant the change is, the more intense the shock will be.” However, “people cannot be indefinitely confronted with high levels of uncertainty and ambiguity.” “Clearly changes at the various levels are linked and organisational change requires a holistic view of the entire range” (p.148).

Change is therefore clearly associated with uncertainty. They present a framework for understanding change, originally proposed by Mintzberg and Westley (1992). (See Table 3)

<table>
<thead>
<tr>
<th>Nature of Change</th>
<th>Changes in organisation (State)</th>
<th>Changes in Strategy (Direction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More conceptual</td>
<td>Culture</td>
<td>Vision</td>
</tr>
<tr>
<td></td>
<td>Structure</td>
<td>Positions</td>
</tr>
<tr>
<td></td>
<td>Systems</td>
<td>Programs</td>
</tr>
<tr>
<td></td>
<td>People</td>
<td>Facilities</td>
</tr>
<tr>
<td>More concrete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: After De Wit and Meyer (1999, p. 147)

<table>
<thead>
<tr>
<th>Change</th>
<th>Magnitude</th>
<th>Pace</th>
<th>Degree of Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of change</td>
<td>Scope</td>
<td>Tempo</td>
<td>Timing</td>
</tr>
<tr>
<td>Radical/Strategic</td>
<td>Broad</td>
<td>Rapid/Urgent</td>
<td>Immediate</td>
</tr>
<tr>
<td>Radical/Concrete</td>
<td>Low</td>
<td>Rapid/Urgent</td>
<td>Immediate</td>
</tr>
<tr>
<td>Incremental/Strategic</td>
<td>Broad</td>
<td>Steady</td>
<td>Gradual</td>
</tr>
<tr>
<td>Incremental Concrete</td>
<td>Low</td>
<td>Steady</td>
<td>Gradual</td>
</tr>
</tbody>
</table>

Table 4: Estimating the level of uncertainty associated with change.

In the model, at the highest levels of an organization, change tends to be more conceptual becoming more concrete as we move down through the levels of the organization. That is, as the change cascades down through the organization it becomes progressively more concrete and operational. The distinction is made between organizational change, which is concerned with changing the state of the organization, and strategic change, which is concerned with changing the direction of the organization. The nature of change is different at the different levels of the organization—“only changes that affect the top two levels constitute strategic change” (p. 148).

De Wit and Meyer (1999) explored the nature of change in terms of its magnitude and pace. (See Table 4.) The magnitude of a change has two components: the scope refers to the extent of the change (i.e., how much of the organization will need to change) and the amplitude refers to the degree of change (i.e. how radical it is).

The pace of the change has two components also: the tempo refers the urgency of a change and the timing refers to how immediate the change will need to be. These characteristics of change can be used to estimate the “degree of uncertainty” associated with change in an organization.

Projects are about implementing strategy. Within an organization, the implementation of a new strategy or a new structure can involve a very complex change process, and change in an organization produces uncertainty. The more radical a strategy is, the more uncertainty is associated with it.

Senge (1990) considers an organization to be a system. A learning organization is one with a culture of continual self-examination and improvement, but such an organization will only exist if the individual practitioners within it also operate in this way. An organization in which such a culture is established will be more able to adapt to the demands of the modern environment. Fear and resistance to change will be minimized. The culture of an organization is therefore critical to the success of strategic change.
Projects concerned with innovation and those involving radical strategic change to project require very similar organizational cultures and processes to operate effectively. The projects undergo iterative development. Open communication and senior management support are essential.

**Case Study**

The case study that follows illustrates many of the ideas discussed so far. The project under consideration is *The Development and Implementation of the Distributed Learning System (DLS) at RMIT University*. The project was established as a key component of the implementation of the RMIT Teaching and Learning Strategy. It was a complex project with implications for the whole organization. There were two aspects to the project: firstly, the development of the technical system and secondly, the implementation of the system within the organization.

Sheasley (1999) drew the distinction between developing new technology and developing new products.

> Developing new technology is fundamentally different from developing new products. In the former case technology is the end result, in the latter it is the raw material.


In applying this view to context of the RMIT case study, the “new technology” is the DLS itself and the “product” is the courses developed using the technology. These aspects were fundamentally different as pointed out by Sheasley (1999).

The development of the system involved standard project management processes, but the development of the courses to use the system was “fuzzy”. The teachers and academics were required to change their professional practice, at the very least. Much more innovative courses could be developed as their knowledge of the potential of the system grew and support mechanisms were created. This introduced significant change management issue and much uncertainty for teaching staff. Eventually, there was a clash between the accountability requirements of the organization and the intangible growth in confidence and competence of staff to use the DLS. The success of the system had to be judged by how well it contributed to the strategic direction of the organization.

**Case Study—The Development and Implementation of the Distributed Learning System (DLS) at RMIT University**

This case study illustrates the complexity of implementing major strategic change in an organization and the role played by project management processes in the endeavour.

**Background**

RMIT University is located in Melbourne, Australia. It has approximately 50,000 students and 5,000 academic and administrative staff. Reductions in government support for tertiary education has forced staff cutbacks and drives for efficiency in recent years. These have put great stress on universities in Australia to become more commercial and entrepreneurial.

Universities today have to be more “customer focused.” They have to cater better for the needs of a more diverse range of students. The growth in the communication capabilities of the Internet, have led to increased choice. With many institutions offering courses totally or partially online, the choice of where and how students can study has expanded enormously.

The RMIT University Teaching and Learning Strategy (1998–2000) led to the creation of a portfolio of projects considered critical to the long-term survival of RMIT. This case study outlines one of these projects, the development of a web-based learning system, called the Distributed Learning System (DLS), designed to deliver more flexible learning solutions.

The technological system of the DLS was designed to use “state-of-the-art” learning management systems to enable web-based delivery of learning for both on-campus and off-campus students.
The project involved two very distinct but related phases: the development and implementation phases.

**Development Phase**

In the development phase, a suite of commercial software tools was chosen after an evaluation of what was available at the time. Standard project management processes were employed to manage the development of the DLS.

The development was very complicated. Firstly, hardware requirements had to be determined, and the equipment had to be purchased and configured. Secondly, the suite of tools had to be integrated with each other. Thirdly, a portal and an associated security system had to be developed to protect the intellectual property and administrative data of the university. Fourthly, the DLS had to be integrated with the existing organizational databases and administrative systems. These organizational systems were not centralized and so there was considerable variation in processes and procedures from department to department.

A decision was made to pilot the DLS and a small multi-disciplinary project team was assembled. The team contained a range of expertise: technical expertise to develop the system, management expertise to consider its organizational implications, and educational expertise to consider the educational implications. Even so, the pilot uncovered a number of unforeseen problems. These have been progressively tackled in later iterations as the system was rolled out across the university.

**Implementation Phase**

The initial development presented a number of problems on a technical level. However, the system has gradually improved from the “Benchmark,” to a point where it was running very smoothly by the third iteration. Reliability targets for the system of 99.7% were being met.

The influence of the system on the quality and flexibility of the courses offered by RMIT University was another question. A review of courses on the system was conducted in mid 1999. The review found that, while the quantity of the courses using the DLS met the performance targets, the quality of many of the courses was poor. Most of the courses created on the DLS simply involved the uploading existing lecture material to the DLS. There had been little educational rethinking. Executive management responded to this by calling for implementing more thorough QA processes, establishing tight deadlines for development of the educational products.

In reality, this approach still did not address the issues around the changes in practice of the teaching staff who were learning to use the DLS. The online learning environment is fundamentally different to a normal face-to-face learning environment. The assumption of management was that quality products would result if teachers could simply transfer existing practice to the new environment.

The implementation of the DLS introduced high levels of uncertainty for teachers and students. Firstly, it required teachers and academics to learn to use the new software, a significant training issue in itself.

Secondly, the new software had important change implications for the professional practice of the teaching staff. It required them to reassess many of their basic beliefs about education and it did not address some basic mistrust about the underlying purpose of the strategy as a cost-cutting exercise:
• Many staff feared that the move to online education was designed to cut their numbers.
• Many students feared that their face-to-face classes would be reduced.
• Students were asked to learn in different ways.
• Course administrators had to acquire new skills and processes.
• Faculties had to consider the new opportunities and markets that the DLS opened up.
• Quality assurance and copyright became critical for material published on the Web, so new organizational procedures had to be developed and staff needed to become aware of them.

Summary
The new strategic direction involved the implementation of new technology and considerable change. In this case, the implementation of the DLS became a significant change project in itself.

The success of the DLS could not be considered just in terms of the delivery of the technological system. Any meaningful evaluation of the project must consider its affects on a wide range of corporate activities: staff and students work practices, increased staff capabilities, the increases in flexibility of course offerings and the opening up of new opportunities for RMIT and ultimately student satisfaction. The learning from the evaluation activities needs to be used to enhance and improve the system in an ongoing way.

After three and a half years, the technological system and its maintenance has become a part of ongoing operations, but change management goes on. Changing people’s practice is proving to be far slower to implement. Large sections of the teaching staff still have only a rudimentary understanding of the online learning environment. The level of understanding of how to develop high-quality online learning experiences is very limited. The production of multimedia learning objects has high costs and requires specific expertise.

Change is a slow process of professional growth requiring much self-examination, mentoring support and patience. Much of this was not foreseen or known when the strategy was first developed. There has been a lot of learning along the way.

Implementation of Strategic Projects in an Organization
To manage organizational strategic change projects effectively, a means to identify their characteristics is needed. The typology developed by Shenhar and Dvir (1996) came from a study of 153 independent projects. It distinguishes projects based on the scope of the system they were designed to service and the level of technological uncertainty associated with each. They concluded that projects that involve high degrees of technological uncertainty were found to be structured and managed differently from those that involved more routine activities.

The typology can form the basis of a planning tool because it can be used to link the implementation of a strategy to the number and type of projects that will be required throughout the organization. In an organizational context, projects are often interrelated through a strategy and there are implementation and cultural issues that have to be considered. Therefore, the typology must first be modified to make it more relevant to an organizational situation.

Figure 2 is an adaptation the typology of Shenhar and Dvir (1996) to apply to projects in an organizational environment. It is called the “Organizational Change Impact Planner.” A key feature of the planner is how it enables different activities related to a strategy in an organization to be
categorized and linked. Each category of activity has certain characteristics that will require different management processes. It will also aid in identifying the resources and feedback mechanisms. There are four key differences to the original typology.

<table>
<thead>
<tr>
<th>System Scope-</th>
<th>Incremental (Evolutionary) Change</th>
<th>Radical (Revolutionary) Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Top Organisational Level</td>
<td>Three</td>
<td>One</td>
</tr>
<tr>
<td>3-Second Organisational Level</td>
<td>Four</td>
<td>Two</td>
</tr>
<tr>
<td>2-Third Organisational Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Fourth Organisational Level (Individual or workgroup)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A</td>
<td>Low level of Uncertainty</td>
<td>Type B</td>
</tr>
<tr>
<td>Type C</td>
<td>High level of Uncertainty</td>
<td>Type A</td>
</tr>
</tbody>
</table>

Figure 2. Organisational Change Impact Planner

Firstly, De Wit and Meyer (1999) identified the top two levels of an organization as the originators of strategic change. An organizational version of the typology must include these top levels. Hence, the scope axis of the typology has been expanded to four organizational levels rather than three. It must be emphasized that this represents a generic organization only and would need to be adapted to any particular organization.

Secondly, in the organizational context, the ultimate source of uncertainty is change. Change within an organization may involve technology, but is often broader. It may involve the implementation of technology and changes in how people go about their work. The case study at RMIT illustrates this. The implementation of the new learning system introduced high levels of uncertainty as staff roles and work practices changed.

Thirdly, a “cascade effect” can occur, in which the implementation of a strategy at a high level of the organization creates a number of related subprojects at lower levels, depending on the structure of the organization in question. Obviously some means of controlling this potential explosion of projects is needed.

Verwey and Comninos (2002) suggest that a portfolio of projects related to a strategy should be created and managed by a sponsor from upper management with the help of a committee. Any ideas for projects would then go through a proposal phase. The committee would determine which ones will be resourced and make “go or no-go” decisions for the projects. De Wit and Meyer (1999) and Bates (2000) make similar recommendations.

Fourthly, if a portfolio of related activities is created as a result of the implementation of a strategy, then these activities will have a direct bearing on the success of the strategy. The projects at the concrete levels of the organization will provide valuable information for the organization as to the success of the strategy. This information is critical for the “progressive elaboration” of the strategy.
There must be an effective means of getting feedback on the implementation of the strategy to the team managing the high-level implementation.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category One</td>
<td>Broad radical change or innovation.</td>
<td>• Strategic Projects with high to very high levels of uncertainty and wide organisational impact.</td>
</tr>
<tr>
<td>Category Two</td>
<td>Localised radical change or innovation.</td>
<td>• Projects with high to very high levels of uncertainty but low organisational impact.</td>
</tr>
<tr>
<td>Category Three</td>
<td>Broad incremental change or continuous improvement.</td>
<td>• Projects with low levels of uncertainty but wide organisational impact.</td>
</tr>
<tr>
<td>Category Four</td>
<td>Localised incremental change or continuous improvement.</td>
<td>• Projects or activities with low levels of uncertainty and low organisational impact.</td>
</tr>
</tbody>
</table>

Table 5. An Explanation of the Characteristics for Each Category of Organisational Activity of Figure 2.

On one level, the planner can help senior managers of an organization to categorize the number and variety of projects under way within their project portfolios. The planner can also be used as a tool by senior management to consider the effects of the implementation of any particular strategy or policy. In conjunction with Table 4, it provides a framework to identify the likely impact of the implementation of a strategy or policy upon an organization. In this case, these tools must be used as a part of a process. The “Organizational Change Impact Planning” (OCIP) process is outlined in more detail in Figure 3. It connects the strategic change projects to the organizational processes.

Organizational Change Impact Planner

Figure 2 is divided into four quadrants, each representing a different category of activity. The characteristics of the different categories are explained more fully in Table 5 along with some illustrative examples.

These tools enable senior managers to identify the nature of the projects in a portfolio related to a particular strategy. Senior managers can quantify the degree of uncertainty associated with a strategic change. The effective implementation of a strategy is closely related to setting up an appropriate cultural environment and processes that match with the nature of the activity particularly when the change involves high levels of uncertainty or innovation.

A set of project management guidelines follows, which links the nature of the change project to the key success factors. The project management model presented here aims to ensure the conditions are set up to enable successful outcomes by identifying the levels of uncertainty as indicated by the
amount of innovation and change involved but still address the accountability issues at play in an organization.

**Guidelines for Project Success**

Project efficiency measures how well a project achieves its objectives. Project effectiveness measures how well the project contributes to the strategic goals of an organization. Project success therefore has two components: project efficiency and project effectiveness.

**Radical Change—Category 1 and 2 Projects**

By their nature, these projects involve innovation, discovery and/or radical change. The outcomes of the project are unclear at the beginning. The project will become clearer through the process of “progressive elaboration” or “iterative development.” Category 1 projects will likely consist of numerous subprojects (category 2) or other related projects because of the cascade effect. This may require the implementation to be managed by piloting or staging the implementation. Pilots provide a means of reducing the uncertainties associated with implementing a strategic change.

**Key success factors for radical change or innovative projects include:**

1. Senior management support or sponsorship.
2. A project team that is multi-skilled, engaged, and committed.
3. Many ideas will need to be explored and open communication processes and sharing of ideas encouraged.
4. The management processes provide the right environment for the project team to do its work. The project team needs to be largely self-managing.
5. The project aims are based on the broad strategic goals, the project team develops and carries out the detailed activities to achieve the goals.
6. Micro scheduling and planning every activity is inappropriate. The project team needs flexibility to adapt to changing circumstances and new developments while keeping the broad strategic goals in mind.
7. Accountability processes must emphasize progress and learning. Periodic reporting should occur at the completion of each development cycle. The reporting should be based around three questions
   - What has been achieved?
   - What has been learned?
   - What is planned for the next phase?
8. The senior management team makes the decision to continue or abandon the project based on the perceived benefits or progress toward the goals.
9. Success has to be defined in a broad sense, the project team is expected to develop innovative and meaningful solutions, or at the least valuable lessons and experience that can be applied throughout the organization.
10. Success of any particular project is determined by how well the project contributes to the achievement of the strategic goals of the organization (effectiveness), not just how well the project went (efficiency).
Figure 3. Process Flow Chart for the Organizational Change Impact Planning (OCIP) Process.

**Incremental Change Activities**

Categories 3 and 4 refer to activities or projects that involve incremental change or improvement of existing products or services. They do not involve high levels of change and uncertainty and have few if any implications for how staff carry out their duties.
Category 3—These are strategic in nature and have implications across the organization. The scope of the activity is large enough, and sufficient people and stakeholders are involved to require a high degree of planning and coordination. Improvements to ongoing organization-wide operational activities or programs may also fall into this category. Standard project management processes will work well. Again the success needs to be judged on its effects on the achievement of the strategic goals.

Category 4—This involves continuous improvement activities by a small workgroups or individuals. There is no requirement for formal project management approaches, but individual or group action planning would be useful. Processes to document learning are advisable.

These activities may be considered as a part of the normal duties or may result from the organizational quality assurance process. Encouraging such activities promotes a culture of continuous improvement and adaptability within an organization.

**Conclusions**

In an organizational environment, projects are a means of implementing strategy. Project goals should link directly to the strategic goals. The nature of projects varies with the type of goals it is trying to achieve. Project management processes need to be chosen so that they match the nature of the project. The degree of uncertainty with a particular project is associated with the amount of change it will cause. The amount of change can be determined by considering two aspects: the magnitude of the change and the pace of the change.

Strategic projects can involve two types of change: revolutionary (radical) change or evolutionary (incremental) change. The effective operation of radical change projects requires that the project is conducted multidisciplinary self-managed teams, operating with open communication structures to share ideas and solve problems as they arise. They may comprise a high proportion of independent professionals and or academics and will go through numerous iterative cycles of development.

The outcomes of such projects are usually unclear and ill defined at the outset. A key purpose of such projects is to learn, to explore, and to add substance and meaning to the broad outline of the organizations strategy. Project plans therefore need to be flexible to allow for changes of direction and exploration of new ideas and incorporation of new developments. They rely on the commitment and ownership of the team members. Examples of such projects are new product development, research, organizational restructuring, pilot studies, etc.

Judging the success of projects in an organization cannot be limited to the efficiency of the project management processes employed, it must also take account of the effectiveness of the project in contributing to the strategic goals of the organization. In radical change projects measures of success might well include, in addition to progress toward the project goals: the growth incapability of the project team, the organization learning, the contribution to the strategic development and the spin-offs from the project.

Senior management has the responsibility to be accountable for the allocation of the resources of the organization. However, radical change projects are not suited to micromanagement and narrow reporting criteria. Accountability needs to be met through reporting procedures that fit with the nature of such projects. These procedures are based on inputs and outputs at key stages in the project lifecycle. The strategic goals and resourcing of the projects are the inputs from management. The outputs from the team are reports addressing three key questions: What has been achieved during this cycle? What has been learned during this cycle? What is planned for the next cycle? Based on this information, senior management decides if the project is still viable.

Organizational projects occur within the prevailing cultural environment. The culture of an organization has a great bearing on its ability to successfully implement radical change. It is the role of senior management to establish and foster the culture, organizational processes, and
structures that promote innovation and learning. The organizational processes, promotional systems, and reward mechanisms are key mechanisms for doing this. In a Learning Organization, the culture and institutional processes serve the purpose of maximizing learning opportunities and promoting personal and professional growth. A culture of risk-taking and entrepreneurship is fostered. The communication processes enable the free flow of information and learning is shared with the organization as a whole. The value of organization processes is not to micromanage and control, but to provide the conditions and resources to enable project effectiveness.
Item 8. Paper: A research based model for managing strategic educational change and innovation projects.

http://surveys.canterbury.ac.nz/herdsa03/pdfsref/Y1102.pdf

Introduction

Strategic planning is a process of setting directions and priorities to meet perceived needs or challenges for an organisation. The implementation of a strategy often results in the identification of change and innovative projects. A key to the success of strategic planning is the establishment of what Senge (1990) described as a “shared vision” across the organisation. However, Lines (2000) warned of the dangers of the corporate planning process in the university sector and how the attempt to get a “unity of purpose” can become a means of control:

The creation of a unity of purpose relies on a cascade of plans to codify the university’s strategy and translate it into objectives with targets and dates…the strategy document is required to act as both a communication medium and a control device.

Lines (2000)

Lines (2000) went on to paraphrased Mintzberg (1989) that “the extensive use of predetermined goals and objectives” has lead “to organisations that are over managed and underled”. The term “cascade of plans” implies a one-way process from the top down.

De Wit and Meyer (1999) linked strategic change in an organisation to uncertainty. Kenny (2002) identified the degree of uncertainty and the scope of strategic projects as key elements of the impact they have on an organisation. Rogers (1995) claimed that innovation brings with it uncertainty. Projects resulting from the implementation of a radical strategic direction in an organisation may well involve change and innovation, but certainly will involve high levels of uncertainty. This paper considers what processes an organisation can put in place to effectively engage its individual practitioners in innovative educational change.

Managing strategic change in educational organisations

De Wit & Meyer (1999) identify two types of strategic change, ‘evolutionary’ and ‘revolutionary’. They pointed out that “when well managed major organisations make significant changes in strategy” the processes used are “typically fragmented, evolutionary and largely intuitive.” (p.120-121).

In their view, the strategy evolves and the formal planning process is just “one building block in a continuous stream of events”. They maintain the normal process for the development of strategy is a process which they call “logical incrementalism” by which the executives of an organisation will broadly outline the strategic directions, but delay committing to detail until as late as possible, recognising the complexity of reality.

Rogers (1995) defined the term ‘innovation’ in terms of how it is perceived by individuals or workgroups in an organisation:

An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption… If the idea seems new to the individual, it is an innovation.

Rogers (1995, p.11)

From this definition it is clear that the decision to ‘adopt an innovation’ is made not only at the top management levels. Clearly strategic change will only happen if a ‘shared vision’ is agreed through
a combination of top down and bottom up processes. Rogers (1995) described the process of adopting an innovation as one of “social construction”.

When a new idea is first implemented in an organisation, it has little meaning to the organization’s members… Through a process of the people in an organisation talking about the innovation they gradually gain a common understanding of it. Thus the meaning of the innovation is constructed over time through a social process of human interaction.

Rogers (1995, p.399)

This process to establish shared meaning is a far cry from the “cascade of plans” described by Lines (2000). It relates well with the “learning conversations” proposed by Laurillard (1997). Effective change therefore requires ‘buy-in’ of the individuals in an organisation.

Rogers (1995) identified a five-stage process individuals go through as they adopt an innovation: gaining knowledge, persuasion, making a decision, implementation and confirmation. This process allows individuals to “reduce uncertainty” about the innovation.

The staff need time to understand and adjust to an innovation. He also pointed out that if the decision to adopt an innovation was made by the organisation, rather than the individual, the adoption process was more complicated. He viewed the “organisation as a system in which the innovation decision occurs” (p.371), and warned that if the implementation of an innovation is too rapid, it often leads to “disastrous results”.

Rogers (1995) also noted that adopting an innovation changes the organisation itself. He maintained that the process of implementation should aim for “dynamic equilibrium” (p.424). This refers to change at a rate that allows the system to adjust also. Implementing strategic change in an organisation is therefore a fluid process that has to take account of the uncertainties due to change. Verwey and Comninos (2002) recommended a similar approach. They were concerned with how to effectively manage “fuzzy” business projects. They used the term “fuzzy” to describe the intangible characteristics of many projects such as business process improvements, customer service improvements, organisational restructuring, etc. These are characterized by a need to address “changes in people’s actions, organisational culture and stakeholder perceptions.”

De Wit and Meyer (1999) claimed that a logical loop must exist linking strategy to the activities in an organisation and constant feedback to inform strategic planning. The projects set up therefore have to be considered in the context of the achievement of the strategic goals of the organisation, not just a narrow project focus.

According to Rogers (1995, p.392), the innovation process in an organisation has five stages. These stages can be divided into two sub-processes: an initiation sub-process and an implementation sub-process:

**Initiation**
- Agenda setting
- Matching

**Implementation**
- Redefining /re-structuring
- Clarifying,
- Routinising…
Initiation

This sub-process amounts to the setting of strategic directions and priorities. It is the responsibility of a senior management group. It consists of two phases:

- Agenda setting is a continuous process of reading the landscape and setting strategic directions and priorities. The priorities may take “several years” to arise from perceived needs for the organisation, gaps in performance, etc.

- Matching is the process by which the organisations attempts to identify solutions to match the needs and to test their feasibility. It involves a reality testing of the proposed ideas. There needs to have been some investigation into and evaluation of potential solutions, with a view to a decision to reject or adopt them.

Implementation

Once the implementation has stage has been reached senior management has decided to implement a strategic change within the organisation. The process of its implementation across the organisation has begun. Rogers (1995) noted the importance of a champion for the innovation from within the higher levels of an organisation. Others writers have also noted this as a key success factor (Alexander et al. 1998; Sheasley 1999; Lester 1998).

- Redefining/restructuring. During this phase of the adoption process, Rogers (1995) identified that the innovation and the organisation adjust to accommodate each other and that there is only a small window of opportunity for this to happen. A particular innovative solution can rapidly become set once the decision to adopt it has been made by an organisation.

- Clarifying. As the innovation is put into more widespread use, its meaning becomes clearer to the members of the organisation. Rogers (1995) identified the attitude of the individuals to an innovation is very influenced by their peers:

  ..most people depend mainly on a subjective evaluation of an innovation…from other individuals like themselves…So diffusion is a very social process.

Rogers (1995, p.18)

Surry (1997) agreed with this observation.

- Routinising. This occurs when the innovation becomes a part of the normal operational activities of the organisation.

Educational innovations

Rogers (1995) work considered innovation decision making as a generalised process. It stemmed from studies of a range of cases and situations. Much of the work refers to the implementation of technological innovations. When considering educational innovations, the process needs to be more carefully crafted to the specifics of the situation. In particular, since educational change will impact upon teaching staff and academics, the nature of how these individuals adopt an innovation becomes critical.

Bates (2000) and Phelps et al. (2001) identified specific cultural issues associated with managing educational projects. Bates (2000) noted that academic and teaching staff have traditionally operated as independent professionals in relation to their teaching. Four key points emerge which need to be addressed in managing radical educational change:

1. The issue of how professional educators and academics interact with their peers, adapt to change and grow professionally is central to the success of strategic educational change and innovation projects.
2. The independent nature work of the professional educators and academics implies that they will have a great influence on the ultimate outcomes of an educational innovation.

3. The implementation phase must allow time for staff to interpret, understand, contextualise and adopt the change. In terms of an innovation with significant implications for changing teaching practice, this is likely to involve considerable time and support.

4. The broad educational agenda or strategy might be set in the initiation sub-process, but the real meaning of an educational innovation, can only emerge during the implementation sub-process, as the practitioners interpret the change or innovation.

**Professional growth**

The development of professional expertise has been explored by many writers. The importance of ‘reflection on practice’ professional growth is a common thread. Schön (1987, page 6-7) referred to the “indeterminate zones of practice” which require of the professional practitioner more than the simple “application of theories and techniques.” He considered the “artistry” associated with the way particularly competent professionals perform their work. Senge (1990, page 168) also observed similar ‘intuitive’ behaviour in expert managers and Benner (1984) in her study of nursing offered a similar view of the acquisition of expertise.

An educational innovation is likely to require that new understandings and skills be incorporated into teaching practice. Carr and Kemmis (1986, page 40) suggested that teacher change comes about when the teachers themselves consciously examine their own activities and critically reflect upon their own practice, the situational constraints in which they work, the consequences of their actions. They claimed that in these circumstances, teachers adopted a ‘project perspective’ and approach their work more strategically; seeing it as a ‘research project’.

Taylor (2000) pointed to the developmental nature of adopting new technologies in teaching. Kenny and McNaught (2000) discussed how the implementation of an innovation presented an opportunity to re-examine teaching practice.

Zuber-Skerritt (2000) described the processes of ‘action learning’ and ‘action research’ as very suitable for addressing complex workplace issues. Both processes involve drawing on practice as the source of learning. Any underlying theoretical models are articulated during the process and examined in the light of experience. Both processes involve groups working to understand particular problems through critical reflection and to apply their learning to future action. A practitioner may have to adjust his/her own mental models in the light of evidence. The distinction between ‘action learning’ and ‘action research’ are that former is more suited to individuals working for their own professional growth, while the latter involves more formal accountability processes and the requirement to collect data and publish the findings.

Elliott (1991) sees action research as integral to teaching being viewed as a professional activity and not simply as a ‘craft’ (i.e. a series of techniques applied to learning situations). He saw reflection as necessary to develop their expertise. He reported, however, that the time needed for reflection is often considered optional:

> It appears that… the vision of teaching as a unified reflective practice awaits changes in the organisational prioritizing of teacher time before it can be realised on a large scale…

Elliott (1991, p. 66)

Action research and action learning processes provide opportunities for the “social construction” necessary to adopt an innovation, while at the same time addressing the requirements for changing educational practice. For this reason, they should be at the heart of any process to implement educational change or innovation.
Accountability and innovation

Clearly organisational management processes have to recognise the value of reflective activity to bring about real change. McGill and Beaty (2001) reported that action learning is applicable to projects which are linked to organisational needs. The importance of the involvement of management in supporting such action learning projects was again emphasised.

For organisational support, there is a need for a champion in the organisation to make action learning happen. This is particularly important where resources of time, finance and project initiatives are required. McGill and Beaty (2001, p. 82)

The link here to the organisation management processes is clearly made. Action learning groups need to be resourced and cannot effectively occur outside of the organisational planning processes. Kenny (2001) agreed that the projects need to be incorporated as part of the organisational planning processes and that accountability measures need to be set-up in a form that does not stifle the learning process.

Kenny (2002) proposed that the full extent of an educational innovation cannot be specified up front because it will emerge from the implementation process itself. The initiating idea, concept or tool produces a compounding effect in that it becomes the trigger for change and learning on the part of the professional educators involved. McGill and Beaty (2001) saw that reflection is the key, but reflection on experience does not happen naturally. Experience does not necessarily translate into learning or increased expertise.

Shenhar and Dvir (1996), Sheasley (1999) and Lester (1998) described similar processes for innovation projects in industrial settings. Key success factors they identified in such projects included: senior management support, creation of self managed teams, open communication processes, iterative development cycles, and sharing of ideas to reduce uncertainties. Lester (1998) also recommended that members of the project team need to be involved for at least 50% of their time on project activities.

Sheasley (1999) and Lester (1998) both identified potential conflict in organisations around the accountability processes. The mechanisms used to account for the resources allocated to a project may clash with the degree of freedom needed by teams involved in innovative projects. To address this tension, Sheasley (1999) advocated a process called “cycle-time management”, whereby the project teams reported at the end of each development cycle. In addition, Kenny (2002) suggested broadening the expected outcomes of innovative projects to include such things as: the growth in staff capabilities, the generation of new ideas or directions and the achievement of unexpected benefits.

Rogers (1995, p.16) also noted that the more an innovation requires individuals to change the more complex is its nature and therefore its implementation. These innovations require highly flexible processes:

Some innovations are so radical and create such a high degree of uncertainty, that they must be adopted through an innovation process that is relatively unstructured and almost completely non-routine. Rogers (1995, p.397)

Project management is the accepted means of managing projects and ensuring accountability. The question is then, what are the most appropriate project management processes for projects with high levels of uncertainty? Bates (2000) saw project management not as a micro-planning tool, but more as a means of ensuring the required resources are identified and provided. This is the link into the organisational planning processes mechanisms. Kenny (2002) claimed that what is valued in an organisation is reflected in its processes, particularly those concerned with resource allocation, promotion and reward and the accountability processes.
A Model for managing innovative educational change

The foregoing discussion can lead us to the identification of the key characteristics of a project model to support the effective adoption of innovative educational change. While this paper has concentrated on innovations initiated within the context of an organisational strategic planning process (top-down), the same principles would be applicable for those initiated locally (bottom-up). The experience at RMIT indicates that for strategic innovations, a central curriculum group can play a valuable role in supporting innovation projects by the provision of specialist support, see Kenny (2000). Kenny (2002) also reported on key success factors for radical educational change projects; these are summarised and adapted here:

- Clear support of senior management (Sponsorship).
- Provision of adequate resources, including adequate time and staff with specialist skills as a part of the project team
- Establishment of self-managed project teams with open communication processes
- Accountability processes emphasising: documentation of learning, iterative development, periodic reporting after each cycle and dissemination to the organisation.

At the organisational level, a governing body is set-up to manage a portfolio of projects associated with implementing strategy (see Figure 1). The role of this body is to set priorities and to identify projects designed to implement the strategic goals of the organisation against appropriate criteria. This body approves and provides the resources required by the project teams and sets-up accountability processes. This group has the function of:

- Deciding which projects are to be resourced based on organisational priorities
- Identifying the project sponsor.
- Appointing a project leader suitable projects
- Approving the project scope
- Allocating funding and resources.
- Collating the reports of all the projects across the portfolio
- Making recommendations on the effectiveness of the strategy.

![Organisational governing body](image)

Figure 1: Organisational process to manage a portfolio of projects

Each project is set-up and resourced as a self-managed project team. The action research process forms the basis of the operation of the project team. Ongoing cycles of planning, doing and reflecting then follow with reports periodically at the end of each development cycle.

Figure 2 expands the action research projects to indicate how action learning is embedded within the overall project. Individual practitioners in each project engage in their own adoption process for the innovation. Each is involved in a process of professional growth through action learning.
Time for collaboration and sharing of experience allows each member of the team to engage in regular “learning conversations” with their peers. The emphasis is not solely on achievement of goals, but on also learning. The associated project management process is designed to facilitate the process and it has certain key steps:

![Diagram of Project Management Process]

Figure 2. A model for adoption of strategic (innovative) educational projects

**Planning Phase**
- Project team is formed.
- Goals of the project are clarified and which include to the strategic goals of organisation.
- Set up communication processes, including regular meetings.
- Analysis of staff development needs.
- Identify other resource needs.
- Develop timeline to include key events (e.g. formal reporting cycles, meetings etc.) but enable flexibility.
- Develop the budget.
- Obtain sign-of and approval.

**Design and development phase**
- Each individual practitioner on the team develops his/her own action learning plan to investigate some aspect of the project of interest and relevance.
- Staff development is provided in accordance with the needs.
- Regular sharing and reflection activities are scheduled to identify and maximise the learning.
- Each individual feeds his/her own learning of the project.
- Formative evaluation of the progress of the project occurs during this phase.

**Evaluation phase**
- At the end of each development cycle, the project team reports, addressing the questions:
  - What were the goals of the project?
  - What was achieved?
What has been learned?
- A summative evaluation is conducted at the end of the project.

The organisational governing body uses the formal reporting from each project to gauge the progress of the strategic initiative as a whole and to inform the strategy itself. Adjustments to the strategic goals are then fed back to the project teams. This group also makes decisions about whether to continue supporting, reduce support or cease supporting the projects.

Conclusions
Implementing radical strategic change or educational innovation projects introduce high levels of uncertainty to an organisation. An educational innovation project has implications for professional practice, such as the need to re-appraise approaches to teaching. In these cases, it is not just a question of adopting an innovation, the particular characteristics of how teaching professionals work need to be built into the management process. Action research and action learning processes involve teachers in reflective activities with peers which is central to meaningful change and should therefore form the basis of the managing such projects.

Linking to broader organisational management processes will ensure the resources and supports are provided. The organisational processes must function to support and value learning as a key outcome and provide the environment for this to occur.

This model recommends that for more innovative projects, the accountability mechanisms need to provide the freedom for the staff to innovate but also ensure that the learning is documented and shared with those outside of the project team. The final outcome of an educational innovation will emerge as the teachers come to understand it and apply their new knowledge.

Introduction

This paper considers a process of evaluation in organisations which links strategy to the projects which are established to implement it. After a general discussion of the nature of strategic planning, various models of evaluation are discussed. The nature of radical change in an organisation is considered and an organisational model is developed for managing strategic change.

The Strategic Planning Process

Strategic planning is a means of providing direction and coherence for an organisation. De Wit & Meyer (1999) identified two types of strategic change, ‘evolutionary’ and ‘revolutionary’. They also identified the top two levels of an organisation as the originators of strategic change. In their view, a strategy evolves and the formal planning process is just “one building block in a continuous stream of events”. They maintain the normal process for the development of strategy is a process which they call “logical incrementalism.” The executives will broadly outline the strategic directions for an organisation, but delay committing to detail until as late as possible, recognising the complex nature of reality.

They acknowledged that the development of organisational strategies is influenced by many events, both internal and external to an organisation. Many of these events cannot be predicted, controlled or measured, so flexibility is needed to deal with them as they arise and to modify plans accordingly.

Mintzberg (1994) expressed doubts that the strategic planning process is suitable for managing radical strategic change. He claimed that, in practice, strategic planning actually works against radical change as its main function is to confirm already agreed upon goals, or to control outcomes. He argued (p.175-7) that the formal planning process in effect institutionalised incremental change, “change at the margin” rather than quantum or radical change. In his view the formal planning process is essentially designed to bring about order, it acts as a conservative process at odds with radical change.

Mintzberg (1994, p.240) wrote that “strategy typically gets changed because something fundamental has changed in the environment…” He considered (p.287) a process of “strategy formation” (as opposed to “strategy formulation”) which he described as a “process of learning” necessitating continual reassessment of the strategy during implementation to “respond quickly to unanticipated changes”. As a strategy forms, unpredictable forces are at play, which, by definition, cannot be planned for. The planning processes then “pursue the strategy

However, Mintzberg (1994, page 168) did not argue that organisations should abandon formal planning processes. “We simply have to recognize the cost of the trade-offs necessary to achieve the right balance. And we must also be sensitive to the fact that planning itself is not neutral.”

Mintzberg (1994, p.275) saw any move to separate the formation of strategy from its implementation as a “…fundamental problem (because it) concerns the separation of thinking from acting.” He maintained (p.287) that the “implementors have to become formulators. In its purest state…this a ‘grass-roots model’ of strategy formation.” He proposed a model of strategy formation with the staff of an organisation acting as “co-strategists”, who in effect help to form the organisational strategy through a continuous process of action and reflecting.

Mintzberg (1994, page 256) saw the practitioners as “effective strategists” helping to inform radical strategic direction for an organisation, not as passive implementors of pre-determined actions. In this view, practice is seen as the testing ground for a strategy. It follows that feedback must therefore flow from the implementation to help inform the strategy “…while thinking must certainly precede action, it must also follow action.” (p.293).
Mintzberg, along with De Wit and Meyer, present a view of the formation of strategy in an organisation as an organic and dynamic process in which thinking (reflection) is linked to action. In this sense, the development and implementation of radical strategy is linked directly to the projects that are created to implement it. The strategy is informed by the outcomes of these projects and the experiences of the practitioners involved.

De Wit and Meyer (1999) claimed that an attitude to change is closely linked with the culture of the organisation. Senge (1990) called for a “shared vision” as a key component of fundamental change. However, Schön (1987) described how the “espoused theory” of an organisation can differ from the “theory in action”. Kenny (2002) claimed the processes of an organisation are a clear indicator of what is valued. How resources are allocated, what priorities are set, how staff are recognised and rewarded are concrete examples of what is valued and may be different to what is stated in formal vision and mission statements and policy documents.

According to the project management institute, projects are a means of implementing strategic decisions, so there is a clear link between projects and the implementation of a strategy. Sheasley (1999) studied management processes used in projects concerned with the development of new products. He linked the success of innovative projects to the organisational culture:

> The importance of an organisation’s culture is often underestimated...A drive for continuous learning and improvement, along with practices for communicating and assimilating those learnings must prevail. New product development is highly cross-functional, so that teamwork and empowerment must be the reality and not just mottoes.

Sheasley (1999, p.51)

Alexander et al. (1998) identified the role of organisational management in the success of projects. Bain (1999) (1999, p170) concluded that the context in which an innovation occurs has to be considered. Otherwise the valuable learning opportunities inherent in these projects will be lost to the institution. Laurillard (1997) contended that innovative projects cannot be done effectively outside the organisational management process.

### Evaluation of Projects

Baccarini (1999) discussed how to measure the success of projects. He considered two aspects: project success and product success. The first measures how well the project was managed while the second considers how effective were the outcomes of the beyond the life of the project. Kenny (2003b) used the terms “project efficiency” and “project effectiveness”.

> Project efficiency measures how well a project achieves its objectives. Project effectiveness measures how well the project contributes to the strategic goals of an organization. Project success therefore has two components: project efficiency and project effectiveness.

Kenny (2003b, p. 50)

Baccarini (1999) claimed that conventional project management limited the measure of project success to efficiency criteria, that is, whether the project was completed on time, within budget and in accordance to the specifications. He maintained that, in traditional project management thinking, once a project was completed and handed over, whether or it met the needs of the customers, or achieved the desired purpose, was not the a concern of the project team. However, he went on to argue that this was not sufficient grounds on which to evaluate a project as “many projects have failed because they did not meet customer expectations, even though they were well executed”.

Clearly, in an organisational context, both aspects need to be considered. When we consider what Kenny (2002) and Kenny (2003b) called the “cascade effect” there is a need for a broader view of success for projects. In fact, De Wit and Meyer (1999) and Baccarini (1999) claimed that there needs to be a logical thread linking strategy to the creation of projects in an organisation.
Baccarini (1999) proposed a process of setting objectives to be used as the basis for defining a project. It involved four levels of goals linking a strategy to a particular project (See Table 2). There is a hierarchy in this model, moving down from the top, the ‘Project Purpose’ is determined from the ‘Project Goal’ by asking the question: “How will this goal be achieved?” and so on. Thus each level gives the rationale for the one below it. Similarly, traversing up through the hierarchy,
the links are made by asking “Why?” questions. The question “Why did we choose these project inputs?” should follow from the desired project outputs.

Baccarini (1999) stated that the management of the organisation sets the Project Goal and Project Purpose, in accordance with the strategic requirements. These are therefore determined outside of the project team. The project team has the responsibility of linking the ‘Project Outputs’ to the strategic direction set by the organisation.

Sadeh, Dvir & Shenhar (2000) developed twenty “success measures” displayed in Table 3, to query key personnel and stakeholders involved in 93 different defence projects. These measures were used to gauge the success of a project based on the benefits which flowed from its implementation to the client organisation and the end user. They used a seven point scale (where 1 represents complete failure and 7 represents total success). Respondents gave a rating for each measure and for the ‘overall success’.

A close look at these two models reveals a degree of similarity. Table 2 provides a hierarchy from broad strategic goals flowing down to the outcomes of projects.

<table>
<thead>
<tr>
<th>Success Dimension</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>C1 Organisational Measures of Project effectiveness</td>
<td>Project Goal</td>
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<td>Project Purpose</td>
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<tr>
<td>C2 Project Based Measures of Project efficiency</td>
<td>Project success</td>
</tr>
</tbody>
</table>

Table 4: Success factors for strategic projects, based on Baccarini (1999) and Sadeh et al. (2000)

The “success dimensions” in Table 3 actually flow the other way, from the project outcomes through to the broader benefits for the organisation and its customers. They are essentially similar
hierarchies but inverted. Table 4 represents a combination of these two models. This provides an articulation of criteria linked to the goals which may be used to judge the success of strategic projects in an organisational context. The criteria have been modified to suit an organisational context. It may well be that the specific criteria are changed for any particular situation, but they are presented to illustrate the broader context for evaluation of projects.

The table is divided into three levels. C1 represents measures of project effectiveness, C2 provides measures of project efficiency and C3 gives an overall measure of project success.

**Nature of Projects Involving Innovative and Radical Change**

The success criteria in Table 4 refer to the “summative” evaluation of projects. That is, they have been developed to evaluate a project which has been completed. However, when considering the evaluation of projects with very high levels of uncertainty it is likely that evaluation information is needed as the project progresses, to reduce uncertainties.

In the strategy “formation” process as described by Mintzberg (1994) and the “logical incrementalism” of De Wit and Meyer (1999), it is not appropriate to postpone judgement of the success of until after a project has been completed. The information and learning that is generated as the project progresses is vital for an organisation to develop and fine-tune its strategy. De Wit & Meyer (1999, p.120-121) pointed out that “when well managed major organisations make significant changes in strategy” the processes used are “typically fragmented, evolutionary and largely intuitive.”

Projects, as the means of implementing strategy are therefore a key element in the progressive elaboration of a strategy. They are a mechanism by which an organisation can gather practice based evidence needed to reduce uncertainty. The implementation of a project related to a radical strategic change will put staff involved in the project into the role of “co-strategists”, as their learning is a source of vital information for the organisation.

Rogers (1995, p.371) identified two key stages when an organisation adopts an innovation: Initiation phase and an Implementation phase. The initiation phase involves exploratory activities leading to a decision by the organisation to adopt or not adopt a particular solution. This phase corresponds with the strategy formation process outlined by Mintzberg (1994).

Rogers (1995) and Mintzberg (1994) both identified a “process of learning” as underpinning the implementation of change and linked this to level of uncertainty associated with it. Rogers (1995) described a five-stage process which individuals go through as they decide to adopt or reject an innovation, the purpose of which is to “reduce uncertainty” about the innovation.

> When a new idea is first implemented in an organisation, it has little meaning to the organisation’s members...Through a process of the people in an organisation talking about the innovation they gradually gain a common understanding of it. Thus the meaning of the innovation is constructed over time through a social process of human interaction.

- Rogers (1995, p.399)

Rogers (1995) linked the degree of uncertainty associated with implementing an innovation to the “amount of knowledge” it required of the staff to adopt it. The level of uncertainty increased with the degree of change expected of the individuals.

> The more radical an innovation, indexed by the amount of knowledge that organisational members must acquire in order to adopt, the more uncertainty it creates and the more difficult its implementation.

- Rogers (1995, page 397)

Uncertainty is clearly associated with innovative projects, and the reduction of uncertainty is a key aspect of any adoption process. Lester (1998) advocated a tactical planning process for innovative projects which led to “shorter time lines and earlier identification of pitfalls”. He described it as a
continuous process of learning, keeping team members and management informed and adjusting plans as required.

Unlike projects based on known facts and realities, new product development is loaded with unknowns and assumptions that must be validated...The emphasis is on addressing unknowns and validating assumptions as early as possible.

(Lester 1998, p. 40)

This points to the need for an emphasis on more “formative” evaluation processes for projects involving high levels of uncertainty. Ehrmann (2002) argued that transformative change needs “tranformative assessment” practices.

The combination of a cyclical formative evaluation process during a project, in conjunction with the application of appropriate summative evaluation criteria on the completion of the project, will give a much clearer picture of its success and its benefits to an organisation.

In a note of caution, Lester (1998, p.37) warned that it would be “counter productive” to burden the project team with too many formal evaluative activities.

It is better to err by letting the Venture Teams have a wider latitude. Is the organisation growing a high-performance team or ripping it up by the roots every day to see if they have begun to sprout? Management must let the teams struggle and learn.

(Lester 1998, p.37)

Rogers (1995), Shenhar and Dvir (1996) and Lester (1998) all indicated that groups working on radical change or innovation needed open communication processes to reduce uncertainties. In situations with very high levels of uncertainty, the project team need to be able to respond quickly to unexpected developments without the need to wade through formal channels of authority. This might explain what Mintzberg (1994, p.200) meant when he argued that radical change may have to occur “outside of the formal procedures of planning as well as the formal channels of authority.”

Organisational Accountability

The fact remains however, that in an organisational context, project teams and management have to be accountable for the allocation of resources. The challenge is to find the balance between the freedom needed by a team working on an innovative project and the need to justify its existence.

Sheasley (1999) proposed a process called “cycle time management”, where the formal reporting is scheduled at the end of each cycle of development. Otherwise the project team is largely self-governing. Based on this, Kenny (2002) recommended that the formative evaluation of these projects should be based around scheduled evaluation events at which the project team address four key questions:

1. What was the goal?
2. What was achieved?
3. What has been learned?
4. What is planned for the next cycle?

The information gathered will enable management to make decisions concerning emerging benefits of a particular project and to decide whether or not it remains viable. Management will also be able to use the information about the progress of the project to capture the growing knowledge about the innovation and feed this back into the further development of the strategic direction of the organisation.

The self-managed action research based team process recommended for radical strategic projects by Kenny (2003a) synthesises the recommendations from the literature concerned with managing innovative projects and professional change processes.
Learning is a central goal and the action learning cycles of plan, act, do and reflect enable the individual practitioners to undertake the “social construction” of meaning. It recognises the characteristics of professional growth and builds these into the project process. The model facilitates the collection of informal feedback and the ability of the project team to rapidly respond to unpredicted developments.

In summary, a combination of formative evaluation (both formal and informal) combined with summative evaluation is most appropriate for projects involving high levels of uncertainty. Continuous informal formative evaluation, with formal reporting scheduled at the end of each cycle of development, will reduce uncertainties and will give an organisation access to realistic and meaningful data upon which to base strategic decisions. In combination with summative evaluation at the end of a project it will enable a realistic evaluation of project efficiency and project effectiveness.

Conclusions

All levels of an organisation may be involved in the implementation of a key strategy. The success of the strategy will be directly related to the success of these projects. Feedback mechanisms to capture and share the learning from these projects are needed. Projects directly related to a strategic priority of an organisation will generate valuable learning for the organisation.

In judging the success of a project, we have to consider not only if it was completed on time and in budget (project efficiency), but also if it was able to produce the desired outcomes for the organisation once it was implemented (project effectiveness).

While summative evaluation may be suitable for projects with low levels of uncertainty, formative evaluation strategies are needed to reduce uncertainties in highly innovative or radical change projects. The formative evaluation activities need to be designed to have minimal disruption to the operation of the project team but still provide management with valuable information to inform the strategic direction and provide sufficient evidence to justify the allocation of resources.
**Item 10: Paper: RMIT ICT DLS Competency Framework - A basis for effective staff development.**

The idea for the following paper arose from my work on the PD program discussed above and through discussions with my colleague Janene Young. The PD program had been developed in response to the identified need for more PD support for staff using the DLS and the cessation of the Learning Technology Mentor program (LTM).

While trying to situate the PD into the organisational framework, Janene and I noticed that there was no comprehensive organisational picture or coordination of professional development for staff for the myriad of computer systems in use at RMIT. This emphasised the earlier calls for a better link into the organisational processes such as work-planning and reward systems.

Kenny, J, Quealy, J and Young, J 2002. RMIT ICT DLS Competency Framework - A basis for effective staff development. *UltiBase Online Journal, Nov 2002*. RMIT Faculty of Education Language and Community Services, RMIT University, Australia.

http://ultibase.rmit.edu.au/Articles/nov02/kenny1.htm

**Introduction**

There has been a major thrust to use technology to support teaching and learning at RMIT. The RMIT Teaching and Learning Strategies (1998-2000 and 2000-2002) have driven the push for more student centred and flexible learning options. The DLS technology platform and its associated supports have been a key part of this drive. In the last five years the list of software packages set-up as enterprise systems at RMIT includes a corporate network using Novell Directory Services (NDS), a newly developed corporate web-publishing system, an Academic Management System (AMS), an organisational email system, GroupWise, and the organisational human resources system (SAP). Clearly RMIT staff and students are expected to use technology as a part of their normal working life.

This raises the question of what skills do staff and students need to function effectively within the RMIT environment? This paper is concerned with the identifying the Information and Communication Technology (ICT) skills and knowledge required of teaching staff to effectively use the DLS. [back](#)

**Strategic Impacts of Technology**

The RMIT distributed Learning System (DLS) has been in operation since semester one, 1999. During this time it has undergone several iterations to improve its functionality and reliability. The result is the creation of a generally robust and user friendly system as is evidence by high availability performance rate of the system (99.7%+) and the rapid growth in its use across RMIT (see Table One).

The introduction of the DLS to support the development of more flexible learning options has brought a number of implementation issues for staff. As a first step, there is the obvious need for training in the use of the tools. This need has been accommodated by LTS offering a two-hour training session for staff called "DLS Tools Training". This training is conducted on an ad hoc basis as staff apply for assistance. Attendance is not formally linked to any work planning or staff development process, so most staff have been undertaking the training in their own time or on their own initiative. There is currently no follow-up or systematic support network to enable these skills to be maintained and extended.
<table>
<thead>
<tr>
<th>Version of the DLS</th>
<th>Number of registered courses</th>
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<tbody>
<tr>
<td>Benchmark-semester one 1999</td>
<td>45</td>
</tr>
<tr>
<td>Semester two 1999</td>
<td>225</td>
</tr>
<tr>
<td>Semester one 2000</td>
<td>683</td>
</tr>
<tr>
<td>Semester one 2001</td>
<td>1053</td>
</tr>
<tr>
<td>Semester one 2002</td>
<td>1500</td>
</tr>
</tbody>
</table>

Table One: Number of registered DLS courses. (Source DLS system data)

Many staff have participated in this training, which enables them to login to the Learning Hub and navigate BlackBoard. The focus of this training has been on the mechanical aspects of using the technology at a fairly basic level.

Teaching staff are permitted to request development courses (or DLS shells) to be set-up. These courses are not available to students and are provided for staff to develop their online course materials. Up until now, the creation of these development courses has not been linked to any requirement for training. While the DLS is reasonably user-friendly and many ICT literate staff are able to quickly acquire the technical skills to use the system with minimal help, others find setting up these development courses without basic ICT skills problematic. Many other staff have not attended formal DLS training. Often those that have attended the training session find that they cannot maintain their skills due to lack of time or support and do little, if any, development work. The result is that these staff later present for further training to relearn the skills they have lost. This paper presents a model that aims to improve the effectiveness of the training program and also to present it within the context of the important pedagogical concerns that new users of the system must address.

**What is Online Learning?**

The term "online learning" can mean a range of things. In the experience of RMIT, it can range in meaning from basic use of the technology to support face-to-face teaching by the provision of access to lecture materials. It can mean mixed mode teaching, where the use of the technology is integrated with the teaching and learning activities. It can also mean learning experiences which are fully online teaching. Each of these forms requires different levels of understanding of the online learning environment and educational re-design.

The ‘Tools Training’ previously described does not involve discussion of pedagogical issues or offer further support to use the technology in an educationally sound way. The effects of this focus on the technology were revealed in a review of the DLS in 2000, which found that many of the courses residing in the DLS were ‘empty shells’ or were essentially an attempt to transfer face-to-face teaching resources into an online environment. Most staff were experiencing online learning for the first time and very few had experienced being an online student. In a report of feedback from 620 students who used the DLS (Kenny, 2001), students expressed their frustrations with staff that did not make good use of the online environment. Their satisfaction with their online learning was closely linked to good educational design, timely feedback of on their progress and the flexibility offered by the online courses.
Implications for Staff Development

Using the DLS technology to support teaching requires teaching staff to re-think the design of courses and to explore new approaches (Kenny & McNaught, 2000). Merely translating what is done in the face-to-face environment will not work. Using the DLS technology in teaching requires staff to expand their teaching repertoire (Brace-Govan and Clulow, 2000). This involves professional growth and professional growth takes time and support. (Taylor, 2000) (Bates, 2000).

Many writers have explored the acquisition of professional expertise. (Elliott, 1991) (Schön, 1987) (Carr and Kemmis, 1986). The common theme is one of ‘reflecting on practice’ so that the professional can progressively refine his/her understanding. Professional development of teaching staff occurs best in a supported collegial environment, where ideas can be explored and discussed with colleagues. ‘Action learning’ is a process used to support professional learning from practice in a collegial way. (Zuber-Skerritt, 2000) (Mc Gill and Beaty, 2001)

Whilst advocating the one-on-one work of the educational designer with individual academics as they develop their course, Ferman and Page (2000) note that professional development of the staff member is one of the key outcomes of the educational design process, and note that action research is an important aspect of their approach to course development. In the DLS competency framework, the professional development shifts from workshop delivery at the lower levels, to action learning, online collaboration and mentoring processes at the higher levels. Processes employed at the higher levels are more suited to the development of the higher learning outcomes required and more suited to development of professional teachers and complex workplace issues or innovative approaches. (Zuber-Skerritt, 2000) (Senge, 1990)

Torrisi-Steele & Davis (2000) noted the central importance of reflective practice to innovation. In reviewing the process in place at Griffith University, they commented on the importance of working with academic staff to develop online learning materials so that they can acquire knowledge about what is possible. They identify three stages of staff development: an entry stage, an adaptation stage and a transformation stage. At the entry stage, teachers become aware of the possibilities, but as yet have not changed their practice. As they enter the adaptation stage, they begin to integrate the technology with their practice. At RMIT we have noted similar stages in the development of staff as they move into the online environment.

Burford and Cooper (2000), Ellis and Phelps (2000) and Sims (2000) acknowledge the team approach to development of materials where the staff ‘own the material’. Their understanding of the potential of the technology develops as the materials are developed. Ferman and Page (2000) advocate an action learning approach which embeds a multi-faceted model of professional development including ‘one to one partnerships’, workshops, short courses, peer teaching, etc. Within the context of completing a project, they see professional development as a key element of educational design, not separate from it.

A number of writers extol the value of the instructional designer working closely with staff to develop good quality educational outcomes. Di Corpo (2001) identifies the collaborative support offered by the instructional designer to enable the teacher to focus on improving the learning rather than on the technology. Torrissi-Steele and Davis (2000) also noted a ‘punitive effect’ for staff involved in an innovative project, because of the increased workload and overall lack of confidence with the new environment. This aspect can only be avoided if appropriate planning and resource allocation occurs at the outset of a proposed project.
Time for staff to meet and to reflect needs to be planned. Experience at RMIT indicates that timetabling issues can have a drastic effect on the availability of staff for meetings within action learning teams. The organisational planning processes have to allow for adequate time and resources to be given to enable staff to acquire the appropriate knowledge and skills. This requires that senior management champion such an approach for it to be successful. Developing a quality online learning course cannot be expected to happen within the normal continuous improvement process of the University. It cannot be expected to occur without dedicated time and resources, (Kenny, 2001). For this reason, an organisational perspective is critical for successful implementation (Bain, 1999; Laurillard, 1997; Alexander et al. 1998; Inglis et al, 1999). The organisational processes such as work planning and promotion, and reward systems are also required to support and promote the acquisition of appropriate knowledge and skills related to online learning (Laurillard, 1996). Senge, (1990) advocates personal learning as a key discipline of a learning organisation and Boyer (1990) suggests that research on teaching is an act of scholarship which needs to be regarded more highly in the University sector.

Lines (2000) studied the strategic implementation of new learning technologies in five Australian universities and identified a divide between the strategic intentions of their teaching and learning strategies and the implementation of those strategies in practice. Much of this divide is due, to a change in the focus of staff development under a corporate management model of organisation. In this model the major role of a staff development unit is ensuring that staff have the skills and knowledge to adopt organisational policy. This she sees as often working against the view of staff development as growth of the individual. For staff to develop commitment to a strategy requires far more than management decree. Reflection is paramount to developing shared understanding through the ensuing dialogue. Lines (2000) went on to suggest self-managed teams as the means to achieve ownership and commitment, but resourcing this cannot be done effectively outside of the management processes of the university. Only the combination of management processes working in conjunction with staff development can provide the means to achieve the vision for an organisation, even as that vision is shaped and evolves through practice.

The DLS Competency Framework

The DLS Competency Framework has been developed out of the experience of the implementation of the DLS since 1999 and the recognised need for essential ICT skills as a prerequisite for full participation on the workplace. The skills required to effectively use the DLS technology have been identified and categorised into six levels of competence. The framework goes beyond the training in the use of the DLS tools and includes, in the higher levels, the required levels of knowledge and skills associated with developing and facilitating an online course.

The professional development models therefore change as a teacher progresses through the framework. See Table Two for an outline of the framework. The complete framework is displayed in Appendix One.

The six levels of competency identified (ICT Induction through to level 5) become progressively more complex. Consequently, the professional development model suggested changes from a reliance on face-to-face sessions and self-paced training resources at the lower levels, to more independent learning, mentoring and action learning as staff progress through to the higher levels, from transmissive to more reflective activities.

The Framework allows the skills level of staff to be ascertained at the outset of a project or professional development activity. Comparisons could be made on completion of a project to determine the growth in staff capability with reference to the framework. This enables a coherent
staff development plan to be devised for individual staff around the required ICT skills, thus linking in with the organisational work planning process in place at RMIT. This model also has the potential to be applied across RMIT. It can be linked to career progression and formal accreditation of learning, to provide incentive and support for staff taking on new roles within the University.

<table>
<thead>
<tr>
<th>Competency Level</th>
<th>Description</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Induction</td>
<td>ICT Induction and essential skills</td>
<td>All staff at RMIT</td>
</tr>
<tr>
<td>1</td>
<td>Functional DLS skills</td>
<td>All teaching staff at RMIT</td>
</tr>
<tr>
<td>2</td>
<td>Facilitating and managing a course in the DLS</td>
<td>involved in delivery of a course via the DLS, including sessional staff</td>
</tr>
<tr>
<td>3</td>
<td>Developing a course in the DLS</td>
<td>Teachers involved in development</td>
</tr>
<tr>
<td>4</td>
<td>Designing for flexible delivery using the DLS</td>
<td>e.g. through Program Renewal and Strategic Course Renewal activities.</td>
</tr>
<tr>
<td>5</td>
<td>Facilitating and evaluating online course delivery for improvement</td>
<td>Staff facilitating a course using online learning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Course Leaders Educational Designers Learning Technology Mentors (LTM)</td>
</tr>
</tbody>
</table>

Table Two: An outline of the DLS Competency Framework

Herrington and Oliver (2001) present a list of competencies for online teaching which led to the development of a Graduate Certificate in Online Teaching and Learning. The recognition of generic skills for online teaching is important. However, there are also specific competencies required to function within the technical environment of any particular institution. The RMIT DLS Competency Framework intends to identify the competencies required for teaching and learning and contextualise these for the RMIT environment. back

Strategic Implications

The DLS Competency Framework also provides clear guidelines to address the requirements of external funding agencies. The Victorian Government strategies ‘Skilling Victoria for the Information Age’ (2000) and ‘Connecting Victoria’ (1999) both recognise the importance of ICT skills and the need for individuals to attain these skills in order to effectively contribute in this information age.

For example, the ICT Literacy and Fluency Grant provides funding from the Office of Employment, Training and Tertiary Education (OTTE) to RMIT for the delivery of ICT professional development and recognition of prior learning (RPL) for TAFE teaching staff.

A condition of the Grant is that TAFE staff are required to gain specific ICT units of competency. The 2002 TAFE Performance Agreement with OTTE, states that "80% of TAFE staff will be ICT competent by 2004. Another example, which has also resulted from the ICT Literacy and Fluency Grant, is the "Notebook" initiative. This provides RMIT TAFE with an allocated number of laptop computers to be made available for TAFE teachers. Teachers who receive a laptop must undertake ICT professional development appropriate to progressing their present level of ICT skills.
To map the growth in capability of TAFE staff, OTTE has developed three ICT professional development units and is currently pursuing accreditation. During the accreditation process, the title and/or the resident qualification may alter, but the outcomes will remain unchanged.

The three units are: Operations and Concepts - Information and Communications Technology (ICT); Applications for Teaching - Information and Communications Technology (ICT); Resource Development for Teaching Purposes - Information and Communications Technology (ICT). They evolved due to the recognised need for TAFE teachers to attain a specified minimum level of ICT skills. The DLS Competency Framework will map directly to the competencies in the three units, thereby establishing links to accredited courses from related professional development activities.

**Staff Development and the Competency Framework**

The identification of strategic projects involving teams of staff lends itself very well to this process. One key aim of strategic projects should be to build staff capability. Capability building occurs as staff learn to use the technology and re-evaluate their teaching whilst working on a project of some importance and direct relevance to them, (Ellis and Phelps, 2000).

The time and effort required for staff to reflect and explore as they change their teaching practice is significant. This is best done in conjunction with colleagues, in a supportive and collaborative environment as provided by action learning or one on one mentoring (Torrissi-Steele and Davis, 2000) and (Ellis and Phelps, 2000).

Underlying the DLS Competency Framework is the belief that staff who work on the development of material relevant to their needs and those of their students are likely to be more motivated and interested. Ferman and Page (2000) noted this link between relevance to needs and quality. Teaching staff experience the online environment and gain an understanding of how it impacts the teaching and learning process. The proposed framework allows for the professional development needs of staff to be built into the project plan.

Consideration of online learning design prompts a return to the basic educational questions that should be considered as to how the technology may be applied to improve and enhance the learning activities. Projects such as these are effectively ‘innovation projects’. Teachers are discovering how to teach effectively using the new medium. To bring about change in practice such as this requires reflection and support. (Torrissi-Steele and Davis, 2000). Note that revisiting the basic educational questions, is likely also to benefit face-to-face delivery.

There is an expectation at RMIT that staff and students will be able to use new technologies in their everyday work. In the framework, the ICT Induction Level identifies a core of set of basic ICT skills, for staff at RMIT to function effectively (See Appendix One). The levels of the Framework can be linked to specific teaching roles.

There is an assumption that staff participating in the DLS training have the ICT Induction level or would acquire it elsewhere.

Linking ICT Induction Level and DLS Levels 1 and 2 as necessary functional skills for all RMIT teaching staff implies that it belongs within the formal induction training program for the University, but also there is a need to ensure that existing staff can upgrade their skills if necessary.
The linking of the Framework with staff roles within RMIT also implies that it can be used to assist with career planning. This link will enable department heads and program leaders to identify staff development needs and plan for effective professional development.

**Quality Assurance Issues**

Course materials within a DLS course are largely controlled by the staff who operate the website. The use of the Web to deliver course materials implies that teaching staff are involved in a publishing process. This potentially exposes the University to litigation if copyright breaches are made. Hence, the quality assurance requirements to be met before a course ‘goes live’ online are more stringent than for face-to-face environments.

Staff need to be aware of the processes in place to protect themselves and the Institution from action. These issues are also built into the DLS Competency Framework. Ultimately however, the responsibility for the maintenance of the course material, the course structure and the mode of delivery belongs with the teaching staff.

Quality assurance processes are built into the competency model so that staff are fully aware of the responsibilities in the online publishing environment. For strategic projects, peer review processes, usability testing, copyright awareness activities, etc., can be built into the project plan along with the reflective time to ensure real learning occurs.

**Summary**

The authors propose that the ICT DLS Competency Framework can be used effectively in a number of ways which will enable staff to acquire the required ICT skills and knowledge as flexibly as possible. This will result in improved support and capability outcomes by:

- Mapping the skills of DLS support staff against the Framework, which will enable:
  - Identification of their professional development needs, leading to the development of a base of skilled staff to conduct and support staff development activities.
  - Provision of high quality flexible training and professional development resources
  - Support for online learning and networking
  - Delivery of well planned face-to-face sessions
- Facilitating negotiations with strategic project teams, departmental teams, program and/or course teams to provide a planned professional development program as part of a project plan or normal work planning activity.
- Being able to use the Framework to monitor the growth in staff capability over time.
  - Maintain appropriate records of staff participation and achievement
  - Develop RPL guidelines for staff
  - Links to formal accreditation for staff achievement
- More effectively linking into the Human Resource (HR) staff development process through work planning.
- Expanding the last point, using the same model, similar frameworks could be developed for other roles within the University such as program leader, academic administrator, etc. Particular career pathways can be envisaged, built around such an expanded Framework.

LTS will evaluate the effectiveness of the Competency Framework in a controlled trial during semester two 2002 and report on the outcomes at a later date
RMIT Staff ICT Competencies - DLS Professional Development Framework

The purpose of the following is to identify the appropriate skills and knowledge required by RMIT teaching staff to effectively use the DLS and develop and facilitate online learning at RMIT. It must be highlighted that users need to be ICT literate, that is, have completed the ICT Induction Skills level before participating in professional development using the DLS for online learning. Users may become ICT literate using a variety of delivery models available at RMIT.

Outcome of ICT Induction:

Effective ICT knowledge and skills to enable users to access key RMIT online services.

<table>
<thead>
<tr>
<th>Competency Level</th>
<th>Identified Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Induction and essential skills</td>
<td>1. Basic knowledge of computer hardware</td>
<td>F2F-Workshops</td>
<td>• DLS registration and establishing a DLS development site</td>
</tr>
<tr>
<td>It is envisaged that all staff at RMIT would undertake this level of ICT professional development.</td>
<td>2. Basic knowledge of software applications e.g. MSOffice</td>
<td>Self paced online learning resources</td>
<td>• Learnscope</td>
</tr>
<tr>
<td></td>
<td>3. Functional use of email e.g. GroupWise</td>
<td></td>
<td>• TAFE Notebooks</td>
</tr>
<tr>
<td></td>
<td>4. Functional use of Internet browsers e.g. Internet Explorer</td>
<td></td>
<td>• Using RMIT website, AMS etc.</td>
</tr>
<tr>
<td></td>
<td>a. Navigate and appropriately use of RMIT website</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Navigate and appropriately use of RMIT SAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Navigate and appropriately use of RMIT AMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Locate and login to DLS</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6. Personalise Learning Hub</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Access SmartForce</td>
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<td></td>
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</tbody>
</table>
### Outcome of Level 1: Capability to access and manage content in a Blackboard course website.

<table>
<thead>
<tr>
<th>Competency Level</th>
<th>Identified Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 Functional DLS Skills</td>
<td>1. Overview of DLS tools a. Level of training in other tools 1. Using Blackboard a. Login to blackboard site b. Create announcements c. Site management d. Incorporation of external links e. Completing Staff Information, including adding a photo f. Uploading documents: MS word, MS PowerPoint, PDF, HTML, etc. g. Create groups. h. Sending an email from Blackboard 2. Where to next? How can I get more assistance?</td>
<td>i. F2F-Workshops ii. Self paced online learning resources</td>
<td>• SCR  • Learnscope  • TAFE Notebooks</td>
</tr>
</tbody>
</table>

### Outcome of Level 2 Capability to appropriately use DLS communication tools.

<table>
<thead>
<tr>
<th>ICT Competency Level</th>
<th>Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2 Facilitating and managing a course in the DLS</td>
<td>1. Participate in an online discussion. a. Reply to a message b. Start a new thread c. Add an attachment to a message d. Discussion of how to use/manage 2. Participate in a synchronous chat session a. Discussion of how to use/manage 3. Strategies for keeping student communication manageable. 4. Creating online tests and surveys a. Test pools b. Exporting a pool c. Importance of feedback d. Use of gradebook 5. Discussion of advantages and disadvantages of online testing.</td>
<td>• Workshop  • Supported online learning resources.  • Online collaboration with colleagues.</td>
<td>• Work planning and Career progression  • SCR  • PQA  • Program Renewal  • Learnscope  • TAFE Notebooks  • Faculty Projects  • Recognition towards formal qualification. E.g. RPL for formal course eg. TALON (Cert IV in Flexible Delivery; Grad Dip IE&amp;T</td>
</tr>
</tbody>
</table>
### Outcome of Levels 4: Ability to develop a course in the DLS according to appropriate RMIT teaching and learning processes for online learning.

<table>
<thead>
<tr>
<th>ICT Competency Level</th>
<th>Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 3</strong></td>
<td></td>
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</tbody>
</table>
| Developing a course in the DLS. | 1. Develop a course guide: Objectives, Learning activities and assessment.  
   a. Identify educational needs and processes.  
   b. Make appropriate choices of technology.  
   c. Develop an online course structure  
   d. Quality Assurance Issues  
   2. Developing learning resources for online use  
   a. Copyright and IP issues  
   b. Upload more advanced files: graphics, audio, etc.  
   c. Identifying existing digital resources: Library, websites, CD-ROM, etc…  
   d. Issues and supports for creation of digital resources  
   3. Peer review of online course. | • F2F-Workshops  
• Supported online learning resources.  
• Action Learning projects.  
• Peer review  
• Participation in online collaboration and networking. | • Work planning and Career progression  
• SCR  
• PQA  
• Program Renewal  
• Learnscope  
• TAFE Notebooks  
• Faculty Projects  
• Recognition towards formal qualification. E.g. RPL for formal course eg. TALON (Cert IV in Flexible Delivery; Grad Dip IE&T) |

### Outcome of Levels 4: Ability to use BlackBoard to construct an educationally sound, online course that can be flexibly delivered.

<table>
<thead>
<tr>
<th>ICT Competency Level</th>
<th>Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Designing for flexible delivery using the DLS. | 1. Designing for Student Centred  
   • Integrating online with face to face activities  
  3. Use of Blackboard administration and student management tools.  
  4. Usability testing and peer review of the online course. | • F2F-Workshops  
• Supported online learning resources.  
• Action Learning projects.  
• Peer review  
• Participation in online collaboration and networking. | • Work planning and Career progression  
• SCR  
• PQA  
• Program Renewal  
• Learnscope  
• TAFE Notebooks  
• Faculty Projects  
• Recognition towards formal qualification. E.g. RPL for formal course eg. TALON (Cert IV in Flexible Delivery; Grad Dip IE&T) |
<table>
<thead>
<tr>
<th>ICT Competency Level</th>
<th>Competencies</th>
<th>Appropriate PD Model</th>
<th>Links to RMIT processes and strategies</th>
</tr>
</thead>
</table>
| Level 5 – Facilitating and evaluating online course delivery | 1. Participation in a collaborative network of staff involved in online teaching activities through the RMIT Teaching and Learning Website. | • F2F-Workshops  
• Supported online learning resources.  
• Action Learning projects.  
• Peer review  
• Participation in online collaboration and networking. | • Work planning and Career progression  
• SCR  
• PQA  
• Program Renewal  
• Learnscope  
• TAFE Notebooks  
• Faculty Projects  
• Recognition towards formal qualification. E.g. RPL for formal course eg. TALON (Cert IV in Flexible Delivery; Grad Dip IE&T)  
• Reflective Practice |
|                        | 2. Reflective and collaborative discussion on issues arising such as: |                          |                                      |
|                        | • Appropriate and effective facilitation of online course delivery |                          |                                      |
|                        | • Evaluate course content and delivery i.e. student feedback  
  o E-moderation; appropriate media used for teaching and learning; technical constraints; etc.  
  o Student evaluation responses |                          |                                      |
|                        | • c. Continuous course improvement  
  o Articulate improvements to be made for next iteration. |                          |                                      |
|                        | 3. Critically analyse professional literature concerned with this or a related area. |                          |                                      |
**Item 11. The Professional Development Outcomes**

The importance of the learning by the individual for the success of an innovation or radical change has been emphasised in the literature and within the research of this study. Opportunities and support for staff to learn is crucial to the success of radical change activities.

This final section of the Portfolio explains the development of the professional development program “Teaching and Learning Using the DLS” and the organisational model for professional development which were derived from it. These were developed as a part of the study to address the support needs of staff who were involved in using the Distributed Learning System (DLS) at RMIT.

**11.1 PD Program: ‘Teaching and Learning Using the DLS’**

The program was developed over three years as an action research project linked to this study. It has resulted in the online program called ICT PD- Teaching and Learning Using the DLS.

The full program can be viewed online by using the guest account details below to login to the RMIT learning hub (DLS) and selecting the New Blackboard site for the course:

Guest account login details

2. Login in using the flowing details:
   - User Name = train01
   - Password = train01
3. Select the New Blackboard site called ICT PD- Teaching and Learning Using the DLS.

**Aims**

The aims of the program are

1. To build staff capability in using the DLS for teaching and learning
2. To increase staff capability to a plan, design and develop educationally sound learning experiences for students which integrate the use of ICT.
3. To make staff aware of a range of issues related to the effective use of the DLS for teaching and learning.
4. To equip staff to be able to maintain and further develop their course
5. To create a network of staff who can assist each other with on-going advice and support.

**Accreditation**

At its current state of development, those who complete the assessment requirements will gain certificate of completion for the RMIT registered short course 21335VIC. In addition, arrangements have been made whereby staff may apply for up to two units credit in the Graduate Certificate of Industrial Education and Training on completion of the assessment requirements of the program.

**Learning approach**

The philosophy of the program is based around staff undertaking a work-based learning project. Initially, they are introduced to the DLS and its main features. Staff then:
• Identify an educational activity or course into which they want to incorporate ICT.

• Undertake self-directed training activities and learning activities designed to give them experience and confidence using the technology

• Develop an action learning project to develop the activity which becomes the main vehicle for their learning.

A range of flexible delivery models can be negotiated to suit the needs of any particular group or individual. It can be conducted as a stand alone course or incorporated into an educational development project. Because the course is online, it is possible to deliver aspects of it remotely.

There are plans to develop a third part to the program which would focus on the development of a unit to allow staff to enter an action learning cycle as they use the course with students leading into improving what they have done.

It is clear from the experience and feedback of conducting and developing this program, that it the materials are effective and well received. The main problem is the competing time demands on the participants, who find it difficult to complete the activities required.

11.2 ICT PD Framework

The RMIT PD Framework, presented below, is still under development. Its main aim was to assist in finding a means of incorporating the ICT PD and training for the use of the DLS into a broader context for the university so that the activities could be more effectively coordinated and planned

Unfortunately, the work to progress the development of this framework was stalled during the organisational restructure. The restructure led to the resignation of James Quealy, the manager of LTS and co-author of the proposal in mid 2003.

The remainder of 2003 was spent in negotiations for the formation of a new group for which the ICT Framework was a low priority. Only in recent times (December 2003-February 2004) have I been able to progress the discussion of these issues.

The framework was structured in a particular way related to the underlying thinking. At the top level, the framework deals with induction of staff. It provides for an overview of all of the six ICT systems which staff will encounter. Below this level, the table is divided vertically into the six strands which represent the various ICT training programs offered for the enterprise systems at RMIT, which use ICT and which staff are expected to master to some degree: the Distributed Learning System (DLS), Library, the Academic Management System (AMS), The RMIT website language (Terra-text), the enterprise email system (Groupwise) and the employee management Systems (SAP/ESS).

The framework was structured horizontally below the induction level to indicate up to 5 levels each of which maps increasing complexity in skills and capabilities for each of the strands of the ICT. The aim was to be able to link specific levels and strands with particular job roles to identify training needs and enable more effective planning.

Some thought was given to the higher levels (4 and 5) where capabilities such as leadership, team building, etc would also apply and how these might link into the overall map.

While the development of the framework was largely stalled as a project, as explained above, the underlying thinking was used to good effect in another project to establish a PD framework for the university. This work is summarized in a discussion paper presented in Portfolio B.
Item 11.3 Introduction to the ICT PD framework for RMIT (Draft)

Each stream below represents a key area of ICT skills for staff at RMIT.

Six levels of competence are used to locate the levels of skill and knowledge in a graduated way. This will enable modularisation of the training and professional development activities.

The levels begin with an overall induction level aimed at identifying the skills and knowledge all staff at RMIT need to access and use the computer systems.

There follows five streams linked to RMIT computer systems: DLS, Library, AMS, SIM, NDS, each stream has skills and knowledge identified at five levels. The levels move to progressively higher order skills.

The framework can then be linked to various job functions within the university based on the identified skills and knowledge associated with any particular role. The streams and levels to support a teaching role will be quite different from those to support an administrative role. The range of skills needed by a program leader will be different from those needed by lecturer or teacher within the program.

This framework will aid in the identification and monitoring of the growth in capability of RMIT staff over time.

<table>
<thead>
<tr>
<th>RECRUITMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICT Induction – Generic/Basic ICT Skills for RMIT Staff</strong></td>
</tr>
<tr>
<td>1. Basic knowledge of computer hardware</td>
</tr>
<tr>
<td>2. Login to RMIT network</td>
</tr>
<tr>
<td>3. Basic Windows operations &amp; file management</td>
</tr>
<tr>
<td>4. Basic knowledge of software applications eg. MS Word; Excel,.</td>
</tr>
<tr>
<td>5. Functional use of email eg. GroupWise</td>
</tr>
<tr>
<td>6. Functional use of Internet browsers eg Internet Explorer.</td>
</tr>
<tr>
<td>a. Navigate and appropriately use RMIT website</td>
</tr>
<tr>
<td>i. Locate and login to ESS</td>
</tr>
<tr>
<td>ii. Locate and login to AMS</td>
</tr>
<tr>
<td>iii. Locate and login to DLS</td>
</tr>
<tr>
<td>iv. Access SmartForce</td>
</tr>
</tbody>
</table>

<p>| Responsibility to deliver: |
| Library |
| Or |
| ITS |
| Or |
| LTS |
| Or |
| Teaching and Learning |</p>
<table>
<thead>
<tr>
<th>Level</th>
<th>DLS</th>
<th>Library</th>
<th>AMS</th>
<th>Terra text (SiM)</th>
<th>NDS</th>
<th>SAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Functional DLS Skills</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Personalised Learning Hub</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2.</td>
<td>Overview of DLS Tools</td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Access SmartForce</td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td>Establish a development site in Blackboard with at least the following features:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Post an announcement welcoming students to the course.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Add your details, including a photo cropped to an appropriate size to the Staff Information area.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Use of digital imaging equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Create at least one folder in the course documents area. Adding documents. Adding a course Banner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Add links to least two external websites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Functional AMS Skills</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Content to be advised</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>History of AMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Access to AMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Security in AMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Navigate through AMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Use Effective dated Rows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Maintain Names and Address information</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7.</td>
<td>View and understand Service indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Record ATSI data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Record Emergency Contact details</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Run a search match query and view the results</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Use the inquiry panels to find basic student information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Produce a basic report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Use the online library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Functional Groupwise Skills</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Log in and out of GroupWise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Change passwords</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Create, send, forward, reply and receiving items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Attach files</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Schedule appointments, tasks and reminder notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Basic understanding of the Calendar function</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Setting alarms for diary items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Print, save and delete items in mailbox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Empty trash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Search for users and resources in address book</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Set up and use groups to address items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Set up frequent contacts and creating personal address books</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Search for items and text in items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Create Signatures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Basic Word*

*Basic Excel*

*ESS*

*Web Portal – InfraActive* (not active yet but will be coming possibly 2003 – this is for logging IT related problems with Support Desks)
<table>
<thead>
<tr>
<th>DLS</th>
<th>Library</th>
<th>AMS</th>
<th>Terra text (SIM)</th>
<th>NDS</th>
<th>SAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 2</strong></td>
<td>Facilitating and managing a course in the DLS</td>
<td>Functional AMS Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Participate in an online discussion.</td>
<td>- Search Strategies</td>
<td>This will be role specific, but the following AMS courses would be offered at this level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Participate in a synchronous chat session</td>
<td>- Searching databases for articles</td>
<td>AMS009 – Selection Officer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Creating online tests and surveys.</td>
<td>- Develop understanding about remote access</td>
<td>AMS014 – Managing Enrolments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Discussion of advantages and disadvantages of online testing.</td>
<td>- Effective Internet searching</td>
<td>AMS022B – Course Substitution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Online tutorials overview</td>
<td>AMS023 – Attendance Confirmation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMS024A – Reports and Queries Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMS032 - Grading</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Functional Groupwise Skills**
1. Create and Maintain Rules
2. Understand and apply the principles and rules of Archiving
3. Customise their toolbar
4. Access their email remotely
5. Understand and apply their Options
6. Search effectively
7. Manage all aspects of the Appointment Function
8. Manage all aspects of the Calendar Function
9. Manage all aspects of the Task Function
10. Use Reminder Notes
11. Manage and Use the functionality of the Address Book
12. Manage and Use Filters

**Intermediate Word**

**Intermediate Excel**

**PowerPoint**

**WebAccess**
### Developing a Course in the DLS

1. Setting up a Course structure in BlackBoard. Documents to include.
2. Using the DLS to add value to your course.
3. Catering for students with special learning needs via the DLS.
4. Accessing and using online resources at RMIT
5. QA, copyright and IP issues

### Library

- E-reserve (Electronic Use System)
- Other Library catalogues (Coolcat)
- Document delivery
- Accessing streaming content
- Ordering new resources online

### AMS

#### Functional AMS Skills

This will be role specific, but the following AMS courses would be offered at this level

- AMS013B – Managing Student Records Advanced
- AMS015 – Basic Student Financials
- AMS020 – Third Party Contracts
- AMS022A – Manage Academic Advisement
- AMS024B – Reports and Queries Advanced

### Terra text (SIM)

### NDS

#### Functional Groupwise Skills

1. Understand and Use Routing Slip
2. Schedule recurring appointments
3. Give Other People Access to Your Mailbox
4. Use the proxy facility to manage all aspects of another staff member’s mailbox
5. Viewing the Schedules of Multiple Users

### SAP

- Advanced Word
- Advanced Excel
Designing for flexible delivery.
1. Managing a course in Blackboard **course statistics**
2. Setting up groups
3. Setting up Discussion forum
4. Archiving discussions
5. Peer review
6. Planning to go live

<table>
<thead>
<tr>
<th><strong>Level 4</strong></th>
<th><strong>Library</strong></th>
<th><strong>AMS</strong></th>
<th><strong>Terra text (SIM)</strong></th>
<th>NDS</th>
<th>SAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Using Endnote</td>
<td></td>
<td>Functional AMS Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Library and the DLS - RMIT Library and your online course</td>
<td></td>
<td>This will be role specific, but the following AMS courses would be offered at this level</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Database profiles (creating alerts)</td>
<td></td>
<td>AMS015 – Advanced Student Financials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Information Literacy vs ICT Literacy (Includes Info Lit Standards)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Facilitating and evaluating online course delivery**
1. Set-up to deliver a course in the DLS.
2. Facilitate a course in the DLS.
3. Participation in a collaborative network of staff involved in online teaching activities to discuss through the RMIT Teaching and Learning Website. Appropriate and effective facilitation strategies.
4. Conduct an evaluation of a course including student feedback, leading to continuous improvement

<table>
<thead>
<tr>
<th><strong>Level 5</strong></th>
<th><strong>Library</strong></th>
<th><strong>AMS</strong></th>
<th><strong>Terra text (SIM)</strong></th>
<th>NDS</th>
<th>SAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functional AMS Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialist AMS training for Faculty / Business Unit AMS Coordinators</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
**Item 12. Process for Managing Strategic Change**

This section presents the collection of four process diagrams developed to illustrate how the Maturity Model for Strategy could operate within an organisation.

**12.1 Overview**

The next five diagrams represent the interrelated management process outlined in the Exegesis (See Chapter 6. These diagrams are equivalent to Figures 6.2-6.6 and link in the same way.)

Figure 12.1 gives an overview of how the diagrams link together. Note that Figure 12.5 is embedded in Figure 12.3.

This process has been iteratively developed during the research and represents the further development of earlier processes outlined in the papers presented in Item 4 and Item 7 of this Portfolio.

The process outlined here brings together much of the theory discussed in the Exegesis.

![Diagram of the Organisational Management Process](image_url)
12.2 Strategic Project Initiation Process

At a strategic level, management instigates activities to gather data and research alternatives which will be used to inform strategic directions. Feasibility studies and pilot projects may form a part of this process. The aim of the strategy formation process is to reduce uncertainties and thereby reduce risks. It enables the strategy to develop in response to changing circumstances.
The greater the uncertainty and unpredictability of the situation, the more crucial is the initiation stage. The organisation needs to be open to learning what it can during this period and responsive to the data. The establishment of pilot projects to test a range of solutions will provide information based on practice and reduce uncertainties. This will help to form a clearer picture of the strategy and inform decision making by providing: a practical means of estimating the impact on organisational resources, a clearer picture of the potential benefits to the organisation and will assist in the development of a shared vision.
Implementation stage

Once a decision is made to implement a radical change strategy, a sponsor from senior management needs to be identified and a portfolio of projects established. However, on proceeding to the implementation phase, it can be seen that the establishment of this project will have significant resource implications.

Management could return to the Typology (Figure P1) and estimate the likely impact on resources of the full implementation and determine a workable means to manage the implementation process.

12.4 Management Process for Type B Projects

FIGURE 12.4 Management Process for Type B Projects (with Low to Medium Uncertainty)
12.5 A Model for managing innovative educational change

This section outlines a model for the management of projects with high levels of uncertainty. It synthesises theoretical data from literature in the project management, innovation, management and professional change fields of study as detailed in the Exegesis (Chapter three) as well as drawing on the research data from this study.

FIGURE 12.5 ALAR Based Team Structure for Innovative Change Projects.

Teams involved in innovative projects need to be set-up as self-managed teams, with open communication and a focus on sharing ideas and learning. The aim is to reduce uncertainties. Practitioner based research activities such as action research and action learning are well documented and suited such projects.

The projects teams are established using action research methodology. Each project is scoped, approved, set-up and resourced as a self-managed project team within the normal planning processes of the organisation.

Figure P4 links into Figure P3 (at point indicated by the star) and represents how action research and action learning processes can be used to underpin the functions of the project team. Each innovative project is considered a collaborative research project. Embedded within each action research project, is a series of action learning activities linked to the individual learning of each team member.

The action research process forms the basis of the operation of the project team. Ongoing collaborative cycles of planning, doing and reflecting then follow with reports periodically at the end of each development cycle.

The action learning activities embedded within the overall project recognise that each individual practitioner will engage in his/her own growth process, as noted by Rogers (1995). Time for collaboration and sharing of experience allows each member of the team to engage in regular “learning conversations” with their peers. The emphasis is not solely on achievement of goals, but on also learning.

The associated organisational processes are designed to establish the conditions for innovation to occur.
Item 13. Project Evaluation and the Accountability Processes

Evaluation is a critical aspect of the determining the development and success of a strategy. Management needs feedback information in order to gauge the success or otherwise of a course of action and to justify the allocation of resources. Feedback is particularly crucial when a project or a course of action has high levels of uncertainty and risk associated with it.

Figures 11.1, 11.2, 11.3, and 11.4 include feedback loops to ensure that the learning is captured. The most appropriate means of gathering the evaluation data is the focus of consideration in this section.

Two aspects the evaluation will be considered formative evaluation and summative evaluation.

13.1 Formative assessment

Formative evaluation refers to evaluative activities which occur while the project is underway. It can occur as informal and formal activities. Informal formative evaluation activities happen as a normal part of the team’s communication and interactions, when significant issues are raised and dealt with in a timely manner. This form of evaluation is critical for situations with very high levels of uncertainty, addressing problems to be addressed as they arise, thereby reducing uncertainty and maximising learning. More formal formative evaluation can be scheduled to occur as an integral part of the action research process at the end of each iteration of development.

As innovative change projects are investigative by nature, hence the suitability of action research methods (Figure 11.4). The emphasis is on learning and progress rather than the achievement of pre-determined outcomes. The formal formative assessment is based around four key questions which the project team will address for each iteration:

- What was the goal?
- What was achieved?
- What has been learned?
- What is planned for the next phase?

These questions will help to identify the learning and progress of the project. The information is then fed back into the organisation through the more formal reporting channels (see link C in Figures A.2 and A.3). The organisational governing body uses the formal reporting from each project to gauge the progress of the strategic initiative as a whole and to inform the strategy itself. Adjustments to the strategic goals are then fed back to the project teams. This group also makes decisions about whether to continue supporting, reduce support or cease supporting the projects.

13.2 Summative evaluation

Based on the literature the Table 13.1 below is presented as a means of conducting a summative evaluation. It results a synthesis of work by Baccarini (1999) and Sadeh, Dvir, and Shenhar (2000). It recognises that the traditional measures of project success are not adequate for projects within an organisational context. A wider range of factors need to be taken into account to measure the effectiveness of a project. The table below may well be sufficient for the evaluation of conventional projects.

Summative evaluation refers to evaluation activities undertaken upon completion of the project. While the information may not influence the project concerned, it may help to identify lessons which can be applied to other activities in the organisation. When these summative criteria are used in conjunction with the formative activities discussed above, these tools present a significant source of evaluative information for more innovative projects also.

The criteria are presented in three levels:

S1 are criteria related to the organisational goals and priorities- project effectiveness.
S2 are related to the outcomes and priorities of the project team—project efficiency.

S3 is an overall measure of the project—project success, which recognise that the success of a project needs to be gauged on its effects on the organisation as a whole.

TABLE 13.1: Summative success criteria for project effectiveness and efficiency.

<table>
<thead>
<tr>
<th>Success Dimension</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Goal</td>
<td>Contributed to the strategic objective(s)</td>
</tr>
<tr>
<td></td>
<td>Decreased dependence on outside resources</td>
</tr>
<tr>
<td></td>
<td>Led to increased cost efficiencies</td>
</tr>
<tr>
<td></td>
<td>Opened up new markets</td>
</tr>
<tr>
<td></td>
<td>Increased positive reputation</td>
</tr>
<tr>
<td>Project Purpose</td>
<td>Is fit for purpose</td>
</tr>
<tr>
<td></td>
<td>Provide spin-off benefits to other projects</td>
</tr>
<tr>
<td></td>
<td>Is cost–effective (ROI)</td>
</tr>
<tr>
<td></td>
<td>Meets the operational needs</td>
</tr>
<tr>
<td></td>
<td>Led to operational improvements</td>
</tr>
<tr>
<td></td>
<td>Led to user satisfaction</td>
</tr>
<tr>
<td>Project Output</td>
<td>Met the functional specifications</td>
</tr>
<tr>
<td></td>
<td>Was successfully commissioned and handed over</td>
</tr>
<tr>
<td></td>
<td>Is able to be maintained and updated</td>
</tr>
<tr>
<td></td>
<td>Increased staff capability</td>
</tr>
<tr>
<td>Project Input</td>
<td>Met technical specifications</td>
</tr>
<tr>
<td></td>
<td>Met schedule goals</td>
</tr>
<tr>
<td></td>
<td>Met budget goals</td>
</tr>
<tr>
<td></td>
<td>Met quality goals</td>
</tr>
<tr>
<td>Project Success</td>
<td>A combined measure for project success</td>
</tr>
</tbody>
</table>

It has to be recognised that, by their nature, the outcomes of innovative projects cannot always be predicted. There may well be unintended outcomes which may be both beneficial and detrimental to the organisation. This is an aspect of the uncertainty associated with these activities. The learning from innovative projects must be captured and fed back into the organisation through reporting channels. Link C in Figures 2 and 3 illustrates this.

The strategic management group uses the formal reporting from each project to gauge the progress of the strategic initiative as a whole and to inform the strategy itself. Adjustments to the strategic goals are then fed back to the project teams. This group also makes decisions about whether to continue supporting, reduce support or cease supporting the projects.

13.3 Success factors for innovative or radical change projects

In summary, based on the research and taking a systemic view, the following success factors apply for radical strategic change projects within an organisation:
Internal factors-

1. There is senior management support or sponsorship.
2. The organisational management processes and culture provide the right environment and adequate resources for the project team to do its work.
3. The project outputs are directed towards the organisational strategic goals, but the project team contextualises the strategic goals and plans to its own situation.
4. During the initiation phase, management focuses on research and establishes pilot projects to inform the strategy.
5. The lessons learned are applied in deciding how to manage the implementation phase.

Within the project teams

6. Iterative cyclical development processes form the basis of the team operation. The aim is to reduce uncertainty. Sharing of ideas is encouraged and educational questions are at the core of the design decisions. Action research action learning processes provide a suitable mechanism for project teams.
7. Micro scheduling and planning every activity is inappropriate. The project team needs flexibility to adapt to changing circumstances and new developments while keeping the broad strategic goals in mind.
8. The project team needs to be largely self-managing and have the required skills, access to them or the means to acquire them.
9. The project team establishes open communication processes, shares ideas and regularly checks progress to reduce uncertainties.
10. It is recognised that each individual practitioner has to learn and grow as a part of the project. Appropriate professional development is built into the project plan.

Accountability

11. Accountability processes are not intrusive. Periodic formative reporting should occur at the completion of each development cycle. The reporting emphasises learning and is based on the questions
   - What was the goal?
   - What was achieved?
   - What has been learned?
   - What is planned for the next phase?
12. Success is defined in a broad sense, rather than just achievement of the project goals.
13. Feedback from the projects is used to inform the strategic direction and goals.
14. The organisational culture rewards entrepreneurial activity and risk taking.

Organisational culture

A supportive organisational culture is necessary for innovative change. An organisation demonstrates what it values by how it prioritises the allocation of resources, what it rewards and how it acknowledges its staff. Management has an important role to play in establishing appropriate organisational structures and processes ensure that these processes are helping to create an environment in which the individuals of the organisation can bring about effective change and growth professionally.
Item 14. Maturity Model for Strategy

This section of the Portfolio lists the tools associated with the Maturity Model for Strategy. This is a major outcome of the research, in which many of the ideas developed earlier have been synthesised.

Figure 14.1: The Strategy Developmental Continuum

<table>
<thead>
<tr>
<th>Interpretive</th>
<th>Adaptive</th>
<th>Linear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Order Learning</td>
<td>Second Order Learning</td>
<td>First Order Learning</td>
</tr>
<tr>
<td>Generative/Critical</td>
<td>Adaptive/Practical</td>
<td>Incremental/Technical</td>
</tr>
</tbody>
</table>

(Uncertainty is greater when the strategic problem is poorly understood)

(Understanding increases as the strategic problem is clarified)

TABLE 14.1: Description of Uncertainty Factors Related to Dimensions of Strategy

<table>
<thead>
<tr>
<th>Dimension: Source of Uncertainty</th>
<th>Description: Related Factors per dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Content Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Rapidity (R)</td>
<td>An estimate of the urgency associated with the project.</td>
</tr>
<tr>
<td>Technology (T)</td>
<td>An estimate of the degree of new technology associated with the project.</td>
</tr>
<tr>
<td>Learning (L1)</td>
<td>An estimate of the degree of learning for staff required to implement the change.</td>
</tr>
<tr>
<td>Learning (L2)</td>
<td>An estimate of the degree of organisational learning</td>
</tr>
<tr>
<td><strong>Strategic Context Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Internal Factors (I)</td>
<td>An estimate of the influence of significant factors at play in an organisation which may have an impact on the strategy.</td>
</tr>
<tr>
<td>External factors (E)</td>
<td>An estimate of the influence of external political and/or economic factors which may have an impact on the strategy</td>
</tr>
<tr>
<td><strong>Strategic Process Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Scope (S)</td>
<td>An estimate of the extent or how widespread the change will be: Array, system, organisation or local</td>
</tr>
<tr>
<td>Work Fraction (w)</td>
<td>An estimate of the average time fraction of workload for the project by members of the project team.</td>
</tr>
</tbody>
</table>

**Uncertainty Index**

\[ U = \text{Content} \times \text{Context} \times \text{Process} \]

\[ U = (1-w) \ S \ (I+E) \ (R+T+L1+L2) \]
### TABLE 14.2 - Uncertainty Factor Ratings

<table>
<thead>
<tr>
<th>Uncertainty Factor rating</th>
<th>Uncertainty ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Scope-(S)</td>
<td>Array</td>
</tr>
<tr>
<td>Individual Learning Model-(L1)</td>
<td>N/A</td>
</tr>
<tr>
<td>Organisational Learning Model-(L2)</td>
<td>N/A</td>
</tr>
<tr>
<td>Rapidity of change- (R)</td>
<td>N/A</td>
</tr>
<tr>
<td>Technology- (T)</td>
<td>Super high tech</td>
</tr>
<tr>
<td>Internal context factors- (I)</td>
<td>Excessive</td>
</tr>
<tr>
<td>External context factors- (E)</td>
<td>Excessive</td>
</tr>
<tr>
<td>Work fraction- (w)</td>
<td>Average work fraction devoted to project by members of the project team</td>
</tr>
</tbody>
</table>

(w is given a value between 0.1 and 0.9)

These ratings are used to estimate values for each factor. The nominal value for uncertainty then can be located on Table 14.3.

### TABLE 14.3 - Nominal Scale for Uncertainty

<table>
<thead>
<tr>
<th>Uncertainty Rating Scale by Scope and Strategic Process Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of change</td>
</tr>
<tr>
<td>Strategy model</td>
</tr>
<tr>
<td>Array</td>
</tr>
<tr>
<td>Systemic</td>
</tr>
<tr>
<td>Organisational</td>
</tr>
<tr>
<td>Local</td>
</tr>
<tr>
<td>Uncertainty rating</td>
</tr>
<tr>
<td>Phase of Strategy Formation</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
</tbody>
</table>
| **Aim of strategy**         | • Monitoring the environment and increasing understanding of the change to reduce uncertainty  
                              • Developing innovative and sustainable responses. | • Clarifying the change through social interaction.  
                              • Ensuring organisational plans are coherent | • Setting and achieving organisational goals. |
| **Strategy Process Model**  | **Interpretive** | **Adaptive** | **Adaptive/Linear** |
| **Content of strategy**     | • Unknown or very unclear | • Partially understood | • Well understood |
| **Context of strategy**     | • Very high uncertainty | • Medium to High uncertainty | • Low uncertainty |
| **Organisational Learning model** | • Generative Learning | • Adaptive Learning | • Incremental Learning |
| **Organisational Learning Goals** | • Revolutionary change, Discontinuous Innovation  
                              • Developing shared understanding of strategy. | • Adaptive Change, Architectural Innovation  
                              • Developing a shared vision. | • Evolutionary change, Continuous Innovation  
                              • Implementing the shared vision. |
<table>
<thead>
<tr>
<th>Phase of Strategy Formation</th>
<th>Initiation</th>
<th>Implementation (Establishment)</th>
<th>Implementation (Consolidation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual learning model</td>
<td>A third order or critical approach to learning</td>
<td>A second order or practical approach to learning.</td>
<td>A first order or technical approach to learning.</td>
</tr>
</tbody>
</table>
| Role of Management          | Monitoring internal and external environment  
|                             | Developing a common understanding  
|                             | Gauging resource and capability requirements  
|                             | Supporting and facilitating learning  
|                             | Capturing, analysing and communicating learning  
|                             | Evaluating progress  
|                             | Monitoring internal and external environment  
|                             | Building organisational shared vision of change.  
|                             | Building staff capability  
|                             | Developing new workable processes  
|                             | Restructuring the organisation as required  
|                             | Building alignment of processes  
|                             | Evaluating progress  
|                             | Adjusting organisational processes, plans and structures to support the change  
|                             | Clarifying and communicating performance goals  
|                             | Building the change into normal on-going operations.  
|                             | Looking for efficiencies and improvements.  
|                             | Building staff capability.  
<p>|                             | Monitoring medium and long term performance.  |</p>
<table>
<thead>
<tr>
<th>Phase of Strategy Formation</th>
<th>Initiation</th>
<th>Implementation (Establishment)</th>
<th>Implementation (Consolidation)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Role of staff</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Finding creative solutions.</td>
<td>• Engaging and participating in change.</td>
<td>• Developing awareness of change.</td>
</tr>
<tr>
<td></td>
<td>• Offering critical comment and feedback based on experience.</td>
<td>• Undertaking staff development and training.</td>
<td>• Incorporation of change into normal practice.</td>
</tr>
<tr>
<td></td>
<td>• Building capability and taking risks.</td>
<td>• Looking for improvements and making suggestions based on experience.</td>
<td>• Looking for efficiencies.</td>
</tr>
<tr>
<td><strong>Key activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pilot projects, Research, Scenario planning, Stakeholder consultations, Discussion, Feedback, Communication, Sharing of Ideas.</td>
<td>• Building staff capability: Action learning projects, training and staff development.</td>
<td>• Developing performance targets.</td>
</tr>
<tr>
<td></td>
<td>• Documenting learning, understanding implications and synthesizing ideas.</td>
<td>• Building alignment of organisational structures, budgets, work planning, recruitment, reward systems, etc.</td>
<td>• Building the strategy into normal operations.</td>
</tr>
<tr>
<td><strong>Evaluation models</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Continuous formative evaluation and feedback.</td>
<td>• Continuous formative evaluation and feedback.</td>
<td>• Periodic evaluation of progress</td>
</tr>
<tr>
<td>Phase of Strategy Formation</td>
<td>Initiation</td>
<td>Implementation (Establishment)</td>
<td>Implementation (Consolidation)</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| Performance measures        | • Identification of key success factors, risks and resources requirements.  
                              • Recommendation of possible solutions with a view to implementation. | • Formative evaluation and feedback to monitor progress.  
                              • Development of shared vision.  
                              • Clarification of performance targets. | • Evaluation of long-term benefits of the change.  
                              • Achievement of performance targets |

Maturity Model for Strategy
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Appendix

Item 15. Paper: Implementing An Institutional Online Learning System- Some illustrative Case Studies at RMIT.


Background

Prior to 1998, there were pockets of activity at RMIT as staff explored web-based technology to build more flexible course options. Using web-based technology became formalized as a strategy of the University, when the ‘Teaching and Learning Strategy at RMIT (1998-2000)’, advocated the development of more student centred, flexible learning experiences. A report commissioned in 1998, ‘The Education, Training and Information Technology Alignment Report’ (ITAP) (Czech et al. 1998), investigated how the information technology infrastructure of the University could be developed to support and align with the educational needs of the staff and students. This resulted in 113 recommendations concerned with the development and implementation of a centrally supported, web-based student learning and management environment.

Two key projects were established under the management of Learning Technology Services (LTS): the Academic Management System (AMS) Project and the Distributed Learning System (DLS) Project.

The AMS aims to put all the University’s administrative processes online, so that staff and students can access them via a web interface. Stage one is due for release in due for release in October 2001. The DLS is a learning management system which has been operating since 1999 and will be integrated with the AMS in due course.

Since it was first implemented in semester one 1999, the DLS has undergone several development iterations. It consists of a secure portal, the ‘Learning Hub’, where students login to access course materials, communication software and other information and services such as electronic library resources and email. The DLS is an integration of several web-based learning tools into a secure environment. The tools included in the DLS are: Blackboard CourseInfo; WebBoard, QM Perception and WebLearn (an RMIT produced product). Recently another RMIT product called ‘e-Journal’ was added to enable a reflective journaling capability for students.

Staff are able to attend training sessions and there are training materials provided online for staff and students. Staff can also apply for a ‘development space’, which can be used to develop a course. Table one indicates how the number of courses within the DLS grew rapidly.

<table>
<thead>
<tr>
<th>Version of the DLS</th>
<th>Number of registered courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark-semester one 1999</td>
<td>45</td>
</tr>
<tr>
<td>Semester two 1999</td>
<td>225</td>
</tr>
<tr>
<td>Semester one 2000</td>
<td>683</td>
</tr>
<tr>
<td>Semester One 2001</td>
<td>1053</td>
</tr>
</tbody>
</table>
Issues of Quality Emerge

Three evaluations of the effects of the introduction of the DLS have been conducted since its creation in semester one 1999: Kenny, (2000), McNaught et al. (1999) and a Quality Assurance (QA) review by McNaught et al. (2000). These reports highlighted technological problems, planning issues, resourcing problems and professional development issues. Readers are directed to Kenny and McNaught (2000) for a deeper analysis of many of the institutional issues. Much of the early feedback was concerned with the technical problems.

The QA review, McNaught et al. (2000), demonstrated that, while the number of courses had grown rapidly, much of the material was generally poorly suited to the new learning environment. Since then, a QA process has been developed whereby courses going live to students using the DLS have to be signed off by senior faculty personnel. The courses discussed in this paper were operating prior to this.

Salmon (2000) has developed a training plan for facilitators of learning using new technology (she uses the term ‘e-moderator’) based on her experiences at the open university. She points out the critical nature of staff development as a part of any technological implementation aimed at improving teaching and learning:

“Any significant initiative aimed at changing teaching methods or the introduction of technology into teaching and learning should include effective e-moderator support and training, otherwise its outcomes are likely to be meager and unsuccessful….a fair bit of rethinking of course methodologies and of training and support for e-moderators is needed for success.” Page.55

The ‘Teaching and Learning Strategy at RMIT (1998-2000)’ sees new technology as a means of encouraging a re-think of teaching and learning practices, not simply transferring established practice to an online environment. Alexander et al. (1998) in their research of educational projects using new technology identified a number of success factors for this:

The integration of the technology into the learning
That support needs of students and staff are identified and planned for
Use of a design/strategy based good teaching in higher education.
Use of the technology addresses particular student needs such as:
helps students to learn particular content which is difficult
enables individualised feedback to students
provides tools which facilitate learning activities.

However, as Taylor (2000) has also pointed out, change of this magnitude will necessarily have to be incremental in nature, as it involves developing staff professional skills.

Sometimes faculties will have to go through what might look like a sub-optimal phase of development, but only by doing so will they be able to move forward. This is particularly relevant in an environment where implicit teaching knowledge and expertise will need to be articulated before a multimedia approach to the subject can be considered or designed.

Taylor (2000: 8)

Kenny and McNaught (2000) expanded on this point

To promote quality in teaching and learning is a complex task. In the classroom, it has to do with the teaching practices, student capabilities, resources, design of the subject and the types of assessment undertaken. Many staff may need professional development in some of
these areas to go along with the training and professional development associated with the use of new learning technologies themselves.

For three of the staff involved in this study, this was their first attempt at using the DLS in their courses, the other two had only used the DLS in the previous year.

**The Case Study in a Nutshell**

The aim of this case study was to provide a clearer picture of what was happening at the course level as the staff adapted their courses to the new technology. It also aimed to complement the earlier evaluation reports and to gain some more in-depth evaluation information particularly regarding staff issues and the effects on student learning. The five courses involved were chosen from across the university.

**The Process**

After calling for expressions of interest to participate, there was an initial interview with each applicant to explain the process. A follow-up interview was held with those staff who decided proceed. This case study then went ahead with five courses. Table 2 below lists a brief summary of the courses involved in the study.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>On Campus</th>
<th>Mixed Mode</th>
<th>Off-Campus</th>
<th>Discussion Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>A first year higher education course in the Faculty of Business. Offered in a face-to-face mode with course content online.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>A service course offered by the faculty of Business to applied science students. Used a mixture of face-to-face teaching and web-content delivery, threaded discussion and synchronous chat.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td>A post-graduate course in the Faculty of Constructed Environment. It Used a mixture of face-to-face sessions and online delivery of content and a threaded discussion. Most students are practitioners in the field.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Four</td>
<td>A course offered by the Faculty of Art and Design. It was offered in two modes, face to face mode and independent (online) mode. The independent mode used a mixture of face-to-face sessions and online conferencing.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five</td>
<td>A fully online course offered to off-campus students by the Faculty of Education Languages and Community Services. Involved the delivery of course information and content via the web and use of a threaded discussion.</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Table 2: Courses involved in the LTS Case Study, Semester One 2000

Data Collection Methods

Regular meetings were arranged to maintain contact during the semester and plan the evaluation activities and instruments. A series of evaluation activities was planned for the semester. These included staff interviews, focus groups and questionnaires.

The Boyer (1990) scholarship model has been adopted at RMIT to encourage reflection and research on teaching. In line with this model, a forum was organized after the semester to allow all participating staff to share their learning.

Online questionnaires were developed containing some common questions for all courses. 178 students were involved in the five courses. The return rate of the online questionnaires was low (25 returns out of 178 students) and some of these were only partially completed. In two cases, the staff gave out a paper-based questionnaire. One of these had a 70% return rate (70 questionnaires).

Three student focus groups and one staff interview were held, along with regular interviews of course leaders.

Course One

A first year higher education course with a hundred students. The aim was to evaluate the response to a new course structure in which the course materials were put online, combined with a weekly three hour face-to-face lecture. The DLS was used to deliver all course materials, no printed materials were given to students.

The Course Coordinator doubted the reliability of the DLS, so she was not willing to put in a lot of time into the redevelopment of the course at this stage. A back-up version of the course website was available on a faculty server for students. As it turned out, the two versions of the website were slightly different, which caused some confusion.

Teacher feedback

One teacher was interviewed. She did not use the website at all once she had downloaded the learning materials. She found that the new course structure added flexibility to the face-to-face sessions, allowing her to make better use of the time available.

Student feedback

A return of 70 questionnaires from the hundred students, with 70% of them agreeing that the new three hour class format was ‘a better environment for ... learning as opposed to a two hour lecture and a one hour class.’ The majority (58%) of students did not like the strategy of using the DLS to deliver large amounts of text which they then had to print off themselves.

The appeal of having the course materials online was:

- accessibility
- convenience
- savings on travel

Overall, aside from the technical problems, the students favoured using the DLS. The coordinator had provided web links as resources for students, but they did not use them because they were not written in as part of the assigned work. Some students could see the potential of the technology and encouraged greater use of it.
Course Two

This course was for higher education undergraduates. The teacher had prior experience teaching the course in an online mode. The DLS was used to deliver course materials and provide communication tools such as threaded discussion and chat. Activities included small group projects, case studies and face-to-face sessions during the semester. Between these sessions, students were to form teams to complete the activities.

The teacher wanted the teams to communicate and apply their understanding of the team skills theory. She also hoped using the technology would provide students with more flexibility and IT skills relevant to their future careers.

Two face-to-face sessions were spent training the students to use the DLS technology. A back-up website also contained the learning resources. Unfortunately there were inconsistencies between the learning materials on the back-up website and the DLS and duplication of discussion software tools. It was not surprising then that the staff member and the students logged into different tools for a scheduled chat session.

Teacher Feedback

The teacher reported that she found it difficult to balance her workload in the online course. She had a high face-to-face teaching load requiring a lot of time in preparation and teaching, so she did not get into the online classroom and discussions as much as she had wanted.

Student Feedback

A focus group, at which there were 10 students, reported that they valued the IT skills they were learning and the flexibility the course offered. With no lectures and deadlines, there was a tendency to put off working on the course to complete work in other courses.

Some students suggested more regular classes. The balance of both online and face-to-face was seen as appealing. The early technical problems affected the attitude of the students less experienced with technology.

Course Three

The teacher’s aim was to focus more on discussion of concepts and issues in lectures by using the DLS to provide course materials. Nine post-graduate fee-paying students participated. Students worked on small group projects, case studies and attended lab sessions and tutorials. There was also an existing website with content. Two lab sessions were scheduled to introduce students to the online environment and to begin work on the first two topics.

There were three sources of evaluation data: teacher interviews and journal, a student focus group (with 6 student participants) and a student online questionnaire (4 students attempted, one completed).

Teacher Feedback

The course leader commented that he noticed an improvement in the student learning experience due to the use of the online technology.

“Nearly all students demonstrated a very high understanding of the materials and were able to apply these concepts and knowledge in the assignments.”

Student Feedback

Students had a mixed response to their experience. A number of students encountered problems due to firewalls when they tried to access the DLS from their workplaces.
Using the web as a part of their learning was a new experience for these students. They felt that their fees were to be used to provide an academic in face-to-face sessions, infrastructure and accreditation. Several said that they would not be prepared to pay high fees for online classes. They feared that using online delivery might lead to the replacement of face-to-face teaching.

**Positives comments from students were**

Access to materials anytime and anywhere
Convenience
Save on travel time
Increased knowledge of the Internet

**Negatives comments from students were**

Lack of access to computers in laboratories
Lack of preparation on how to use the system
Problems with firewalls
ISP problems
Necessity to login in twice to access course materials

**Student comments on the course**

There is a lot of reading material on the website. They tended to print relevant material to read more carefully. Most felt the class every two weeks was good, with the ability to access the material in their own time between classes, but the discipline of the regular class was very important to keep up their motivation.

There were a lot of comments concerning the organisation of the materials and notifications within the website. They suggested more structure of the materials on the website, e.g. clearly stated times for submission and completion to help with time management. The students also found lack of closure in the discussion boards confusing.

“There needs to be a closure time or constraint put onto the threaded discussions, they tend to drag on too long.”

**Course Four**

This course is an elective which was previously developed and conducted by a different lecturer. A new sessional lecturer, who had no experience teaching online, was appointed to conduct the course.

The course activities included lectures, tutorials and individual student projects. It was offered in two modes, an on-campus mode and an independent mode (online). 31 students elected to participate in the independent (online) mode. The activities for the independent mode were built around the course website and a threaded discussion area and three two hour face-to-face sessions.

The course was stored outside the DLS on a faculty server where students had access to course materials and a threaded discussion using software not supported by the DLS. As a new teacher external to the department, she had some concerns that the threaded discussion tool used in the course did not have sufficient student management facilities, requiring a lot of time setting up and maintaining student records. To improve student management capabilities, she decided to move the course onto the DLS and use the conferencing tool it provided (WebBoard). This change of tools and login procedures, caused quite a few problems for students.
The Evaluation Data

There were two main sources of evaluation data. The online questionnaires and the teacher’s journal which formed the basis of the regular discussions with the evaluator during the semester.

Teacher Feedback

The hand over from the teacher/developer to a sessional teacher, inexperienced in online teaching and with little training, was a considerable source of problems. As a sessional teacher, she had no knowledge of the ISP services and supports offered by RMIT. There were on-going login problems. Despite the problems outlined, she did notice a number of positives for learning arising from the use of the threaded discussion:

“...being able to contribute and respond to others reflectively and fully - in a way classroom conversation does not permit. I would say, from student comments, that this was the most valued aspect for them – academically.”

A factor in the value of the threaded discussion was the assessment requirements, which were clearly linked to the use of the medium.

Student Feedback

The only feedback directly was from 13 students who attempted the questionnaire, five of whom completed it fully. There points they raised included:

That online mode provided considerable flexibility.

Seven out of eight, who addressed the questions on access, accessed the material from home.

The change of the conferencing tools caused much confusion.

Course Five

This was a totally online higher education self-paced undergraduate course. About eighteen students participated, six of them practicing police officers. A development period, including testing and independent user trialling had preceded putting the course into the DLS. The activities included small group projects, lectures and fieldwork. Students underwent no formal induction, but were provided with detailed instructions on how to access and use the online learning environment.

The Evaluation Process

There were three sources of evaluation data: an online student feedback questionnaire, staff journal and interviews.

Teacher Feedback

There were initial student access problems, but once these settled, the major issue the teacher had was managing the students in a totally flexible environment. Students were able to do the course at their own pace. Some elected to take time off work to finish quickly, while others took a long time to get started. The teacher believed that many students did not organise themselves due to the absence of deadlines.

The teacher felt some of the students were discouraged by login problems. Discussion threads operated, but with limited success because the students were at different stages. This made it harder to maintain a vibrant discussion. However, a session called ‘Ask the Expert’, in which a practicing senior sergeant from the police force contributed to the discussion, generated some activity.

Among the strengths of the course, the teacher points to being able to access current material and gain access to industry practitioners.
“Timeliness of information. As most content is drawn from the web, the material provided to students is very recent compared with a tendency in face to face to use the same old material and remain in the lecturer's comfort zone.”

He felt students have preconceptions, based on the traditional classroom, about the role of the teacher and what learning involves, which can affect their attitudes to online learning. He describes this current period as a transitional stage in which the nature of the classroom is changing.

Student Feedback

Feedback was received from 5 students directly via questionnaire returns. The students were pleased with the layout of the course and with the appearance and usability of the DLS. Two of the students reported more confidence with using the technology. All students giving feedback accessed the course materials off campus.

Too much flexibility can be a problem and students requested deadlines to be used to help them organise themselves more easily.

“Maybe a little bit too much flexibility in terms of not having any due dates for assignments. I tended to prioritise all my face to face courses and leave this course until the end.”

However, the comments indicated that these students were generally pleased with the flexibility the online mode offered them. One student was able to maintain her involvement in the course despite being injured.

“Working at own pace, especially when you have a full-time job and a family. Doing this class on line meant that I didn't have to withdraw from the class regardless of serious injuries from a car accident.”

Aside from the technical problems, students generally were positive about the learning experience. One suggested some traditional activities be conducted alongside the online learning.

“Learning hub is a fantastic way to complete classes on line. Would it be wise to incorporate some face to face interactions during the study year.”

Another emphasized the importance of contact with the teacher as a success factor:

“It has been a different way of learning, and I am glad to have experienced it. I would recommend the course to others. A vital part of the effectiveness of this form of learning, I believe, is having regular contact with your lecturer and being able to share any problems with him/her. Without this contact available, I think students would feel very isolated and at times frustrated, if they experience problems with the course.”

Summary of Key Issues

Staff issues - Workload

There is little information contained in this study about staff workload, but some staff indicated that a lot of effort needs to be put into the initial course development phase, with the pay-off being less re-development time, fewer problems and fewer student queries during the running of the course.

Sessional Staff

The increased use of sessional staff raises a concern. This practice is wide-spread across many tertiary institutions. While sessional staff may bring particular advantages, it cannot be assumed that they have the skills to teach in an online learning environment.

The upfront development costs for courseware also has implications for the hiring of sessional staff.
Student Attitudes

This a transitional stage in which the nature of the classroom is changing. However, most students saw the potential benefits, particularly the flexibility, convenience and access to resources the online environment offers, provided the technology is reliable. Students could see the relevance and value of the IT skills they were learning as a result of using the DLS.

Many students have a traditional view of the learning environment and do not eagerly accept the move to online learning. Brace-Govan & Clulow (2000) believe that study mode options available to students affects their perceptions of the online environment. In their study they concluded that:

- where printed distance education was the perceived alternative, the students were very positive about the level of contact offered by online… (it) only became a problem when the students’ alternative mode of delivery was face to face classroom.

I would add that the student’s confidence with the technology and technical issues have a distinct bearing on their perceptions, at least in the early stages. One could argue that these effects would lessen over time. The teacher of course five also expressed this observation:

- Different cohorts of students may perceive the course differently and their confidence with IT and the reliability of the DLS will have a major impact on the experience.

Seeing students as a part of the change process and dealing with their expectations is essential. Students in several of the courses expressed the fear that online learning is set to replace face-to-face teaching. Students in course three felt the online approach was not what they paid for. However, generally students liked online learning, particularly when it was used in conjunction with face-to-face classes.

Time management

Student comments indicate a need to balance flexibility with structure. Several students commented on the difficulty of disciplining themselves to do their online course that it was too easy to put off doing the online activities and let the demands of normal face-to-face classes predominate. This was particularly the case where there were few deadlines in place for the online learning activities. Brace-Govan & Clulow (2000) also considered this issue significant:

- …the time management characteristics of their students and the extent to which students find that the technology intrudes into the time they allocated for study.

Students seemed to need the structure, particularly during this period where they were adjusting to the online learning environment.

Access points

Many of the students made use of the ability to access the course from other locations. As table three shows, 18 of the students used their home as a regular access point.

<table>
<thead>
<tr>
<th>Access</th>
<th>Home</th>
<th>RMIT Lab</th>
<th>Work</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where did you normally access your online course? (student could select multiple several responses)</td>
<td>18</td>
<td>4</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Student access points to use the DLS

Access from work raised the issue of dealing with firewalls for a number of students in course three.

Educational design

The causes of the design problems reported in the case study courses were a lack of understanding of the online environment and a lack of confidence in the stability of the system. This led to three
of the teachers setting up back-up systems on servers outside of the DLS. Unfortunately, in two
cases, the materials on the back-up systems were inconsistent in some ways with the materials on
the DLS, which caused some confusion for students.

Students asked for clear instructions and guidance to be able to work independently. There were
four courses in which the learning materials were criticised for being inconsistent or not providing
enough guidance. The issue of linking between the different activities or sections of the course was
also mentioned.

Two teachers commented on the web as a source of current material and a means of gaining access
to industry practitioners. Where the technology was used most effectively, the course was designed
to require students to access and use the websites on a regular basis. Alexander et al. (1998) found
that this involves integrating the course administration, learning activities and assessment with the
technology in appropriate ways. Where the use of the web resources is not integral to the course
activities, students tended to not use them.

There was considerable comment by students in three of the courses, on the practice of putting
large quantities of text online for them to study. Invariably they would download and print,
choosing not to read it on screen. This is in agreement with the findings of Brace-Govan & Clulow
(2000).

It is an important consideration when designing course materials to decide how much and
what to put into print. The implications are not only about the ease of use and quality of
learning, but also costs to students who find printing the material more efficient and raises
underlying issues about access and equity.

There needs to be some thought regarding the most effective use of the various media employed in
a course.

**Threaded Discussion**

The DLS was created in a modular format. Staff wanting to use a threaded discussion could use
either the facility offered in CourseInfo or WebBoard. However, in three cases, staff made both
threaded discussion systems visible to students and seemed unaware of the confusion this might
cause. The QA system should pick this up in future.

Salmon (2000) proposes a five stage model (p.26) for teaching and learning using ‘Computer
Mediated Communication (CMC)’ (see Table 4). Teachers could use this model to plan for learning
experiences using threaded discussion.

<table>
<thead>
<tr>
<th>Stage One</th>
<th>Students are concerned with getting access to and using the system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access and Motivation</td>
<td></td>
</tr>
<tr>
<td>Stage Two</td>
<td>Students begin to send and receive messages.</td>
</tr>
<tr>
<td>Socialization</td>
<td></td>
</tr>
<tr>
<td>Stage Three</td>
<td>Students begin to realize and access the range of information</td>
</tr>
<tr>
<td>Information Exchange</td>
<td>available on the web.</td>
</tr>
<tr>
<td>Stage Four</td>
<td>Students begin to share and comment on each others’ ideas.</td>
</tr>
<tr>
<td>Knowledge Construction</td>
<td></td>
</tr>
<tr>
<td>Stage Five</td>
<td>Students take responsibility for their learning and become</td>
</tr>
<tr>
<td>Development</td>
<td>critics of the medium itself.</td>
</tr>
</tbody>
</table>

**Table 4: The five stage model of teaching and learning, Salmon (2000)**
Four of the courses in the study used threaded discussions. Except course five, the teachers spent some sessions ensuring stage one was reached.

Access problems and confusion in course two probably prevented these students rising above stage two. While students in course four probably operated at stage three or four. In course three the teacher commented that he noticed an improvement in the student learning experience due to the use of the online technology.

They are able to be more reflective and participatory. They appreciate feedback and comment from fellow students and myself - which is more easily digested at their own pace, so it seems.

This description would place their operation at stage four of Salmon’s Model (2000).

In course five, another problem arose because of the flexibility offered. The course was totally self-paced. The staff member found it hard to establish and maintain a vibrant discussion as all the students were at different points in the course. However, one student commented on her willingness to participate in the discussion board

I feel more confident in projecting my personal views on the online mode than in class.

The need for closure of conferences was identified in course three.

In each course, use of the discussion board was built into the educational experiences and the assessment process and this is an important component in the educational design. Several teachers commented that the student contributions to online discussions were more reflective and there was a higher level of participation, when compared to normal face-to-face tutorials.

**Technical Issues**

**Reliability of the Technology**

Technical problems with the DLS were prevalent early in semester one 2000. Students in all of the five courses reported difficulties with the login procedure. The case studies have shown that if staff do not have confidence in the system, they will devise ‘workarounds’. This led to problems with versioning and editing material as well as confusion of students.

**Effects on Student Performance.**

Table five below lists student responses to two questions about how they perceived the online materials affected their learning and how willing they were to go through the experience again.

<table>
<thead>
<tr>
<th>Educational experience</th>
<th>Greatly improved it/ improved it</th>
<th>Made no difference</th>
<th>Made it worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did it affect the educational experience?</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Educational experience</td>
<td>Very willing/ willing</td>
<td>Not in near future/Never</td>
<td></td>
</tr>
<tr>
<td>On the basis of you experience how willing are you to do another online course?</td>
<td>7</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 5: Summary of responses received from students to questions about their educational experience (courses 3, 4 and 5 only)
The majority (60%) said that online learning had positive effects on their educational experience. The major factor contributing to the neutral responses seemed to be the technical problems encountered by the students.

**Conclusions**

Online learning systems provide an opportunity for a substantial increase in flexibility for both staff and students. This can be achieved by making more use of the communication and management functions available. It is not an appropriate medium to deliver vast amounts of text for students to download and print. Those courses currently putting content online would add considerable flexibility for students simply by making use of communication functions, which can be activated with little increase in training and development required.

The case studies provided a deeper look at how staff and students were coping with implementing the online environment. Technical problems aside, the students reported positive benefits for their learning and were encouraging of the move to online learning, provided it was not intended to replace face-to-face learning.

There are benefits in flexibility for students in using online resources either as a support for face-to-face or as off-campus courses. However, both students and staff need to feel confident with the technology before the full effect of these benefits will flow.

The development of quality online courseware, however, tended to lag the development of the technical system, as it requires staff and students to adjust to the new environment and presents a range of educational design, professional development and workload issues for staff to deal with. The development of quality educational resources will necessarily be an iterative process.

**Other papers not included in the text are:**
