



Managing innovation in educational institutions

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Traditionally, project management practices have not drawn any distinction between the characteristics of different projects. Recent research has found that innovative projects require different project management approaches if quality outcomes are to be achieved. Projects involving more innovation require more open management processes and contain a higher percentage of academic and/or professional staff. These characteristics often apply to educational projects in tertiary institutions. There is conflict inherent in managing change projects in educational environments between the classical 'project management' approach and the way that academics and teaching staff, who are independent professionals, traditionally work.

This study derived from experience at RMIT, where a system wide online learning system (the Distributed Learning System, DLS) has been implemented since 1999. The implications for the project management approaches suitable for educational projects are discussed and a typology is suggested to categorise projects within an organisation and link them to key factors for successful project management.

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 organisations have shifted to a more corporate model of management with central strategic planning processes and priorities, budgetary controls and increased accountability mechanisms.

A common element in innovation, as Lines (2000) observed in the seven universities which she studied, is 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) points 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 rationalisation 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 was 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 (eg. *Blackboard* which is currently used in about 85% of courses on the DLS) enabled staff to publish learning materials on the DLS with a minimum of about two hours training.

It was soon realised, however, that staff also needed support beyond this basic initial 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 2000a, 2000b) and required a much closer link with organisational planning processes than was the case previously (Kenny & McNaught (2000).

The preparation of meaningful learning experiences required changes in teaching practice and a re-think how to best deliver the materials using the technology (Kenny & McNaught, 2000; Inglis et al, 1999). The development of associated multimedia 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 resources 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 produce product rapidly in a number of programs, without any consideration of the particular needs for each renewal project team. The schedule left little room for the re-thinking of the learning. There was little

attention given to development of the skills staff would require for maintaining the course after the initial development.

The introduction of the DLS at RMIT also demonstrated clearly that the development of quality online courseware involves change management issues as well as planning concerns. Kenny and McNaught (2000) considered that planning processes for such projects have to be integrated with 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)

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)

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 1: Descriptions of Project Uncertainty Scale.
Based on work from Shenhar and Dvir (1996)

Project type	Characteristics	Examples
Type A	Low technological uncertainty - involves the use of established technology.	Common building projects
Type B	Medium technological uncertainty - involves adapting familiar technologies or some new feature	Common industrial projects
Type C	High technological uncertainty - involves the use of new technology, largely untried and maybe the integration of several new technologies.	Defence development projects
Type D	Super high technological uncertainty - technologies are non existent and have to be developed.	Apollo moon landing project.

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 (Types C& D) and incremental innovation (Types A& B). Table 2 gives a description of the terms used to categorise the scope of the system and some more examples to illustrate.

Figure 1: Typology of Project Management
After Shenhar and Dvir (1996)

Increasing system scope	Incremental innovation		Radical innovation			
	3. Array	Modernisation of New York's subway system	The channel tunnel			Strategic Defence Initiative. (Star Wars)
	2. System	Building project	Development of a new car	Development of Patriot missile		
	1. Assembly			Development of first VCR.		
	Type A Low tech	Type B Medium tech	Type C High tech	Type D Super high tech	Increasing technological uncertainty	

Table 2: Descriptions of Project Scope Scale.
Adapted from Shenhar and Dvir (1996)

Scope	Description	Example
1. Assembly	Building a single component to stand alone or to be a part of a larger system	A radar receiver, Microwave oven
2. System	A complex collection of interactive elements and subsystems jointly performing independent functions to meet a specific operational need or mission.	A radar system, an aircraft, a bus company.
3. Array	A large, widely dispersed collection of systems	A nation's air defense system. A city's public transport system

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 mottos (Sheasley, 1999, p51)

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 throughput 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.

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:

... 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 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.

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 (1998) 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 organisation as

arduous and encounters significant resistance...In general, the more significant the change is, the more intense the shock will be." (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 3: Estimating the level of uncertainty associated with change

<i>Change</i> <i>Nature of change</i>	<i>Magnitude</i>		<i>Pace</i>		<i>Degree of uncertainty</i>
	<i>Scope</i>	<i>Amplitude</i>	<i>Tempo</i>	<i>Timing</i>	
Radical/Strategic	Broad	High	Rapid/urgent	Immediate	Very high
Radical/Concrete	Low	High	Rapid/urgent	Immediate	High
Incremental/Strategic	Broad	Low	Steady	Gradual	Medium
Incremental Concrete	Low	Low	Steady	Gradual	Low

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, Baccharini (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. Baccharini (1999) contended that in an organisational, 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 and Comminos (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 characterised 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 Schon (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 innovation (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 optimised. 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 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 organisation where the number of projects seemed to proliferate. Lester (1998), Bates (2000) and Verwey and Comminos (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 resources 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.

The diagram in 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 is explained more fully in Table Four 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 organisation which may not fall under the definition of projects, such as key operational imperatives.

Figure 2: Typology of organisational activities
Adapted from Shenhar & Dvir (1996)

System scope	Incremental (Evolutionary) Change		Radical (Revolutionary) Change		
4. Top organisational level	Three		One		<i>More strategic activities</i>
3. Second organisational level					
2. Third organisational level	Four		Two		<i>More concrete operational activities</i>
1. Fourth organisational level (individual or work-group)					
	Type A Low level of uncertainty	Type B Medium level of uncertainty	Type C High level of uncertainty	Type D Very high level of uncertainty	

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.

Table 4: An explanation of the characteristics for each category of organisational activity

<i>Characteristics</i>	<i>Descriptions</i>	<i>Examples</i>
<i>Category One</i> Broad radical change or innovation.	Strategic Projects with high to very high levels of uncertainty and wide organisational impact.	<ul style="list-style-type: none"> • Major organisational re-structure. • Implementation of the DLS at RMIT • Implementation of a new strategic direction or policy for the organisation with significant implications for practice.
<i>Category Two</i> Localised radical change or innovation.	Projects with high to very high levels of uncertainty but low organisational impact.	<ul style="list-style-type: none"> • Preliminary pilot study related to a category one project. • Development of a new program. • Radical change or innovation project initiated at the work unit level
<i>Category Three</i> Broad incremental change or continuous improvement.	Projects with low levels of uncertainty but wide organisational impact.	<ul style="list-style-type: none"> • Upgrade of desk-top computers within the organisation. • Routine improvements to a course or program.
<i>Category Four</i> Localised incremental change or continuous improvement.	Projects with low levels of uncertainty and low organisational impact.	<ul style="list-style-type: none"> • Routine improvements to an existing subject or course.

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 innovative 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

processes 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, exploration of new ideas, and incorporation of new developments. They rely on the commitment and ownership of the team members. Examples of such projects include 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 is recognised as a basis for an organisation to be adaptable. Such a culture will also enable the organisation to more effectively adapt to any 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 accustomed to operating independently. Rigid project management approaches tend to be ineffective with such groups. Effective project management processes in such projects are 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. Their project is linked into 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 better able to be innovative and adaptive towards 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.

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