

Stop Re-inventing the Wheel: Management of Learning Resources in Institutes of Technology and Polytechnics

By

Gwen Blake

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Thesis supervised by:

Associate Professor Donald Joyce – Unitec NZ

Dr Noel Bridgeman – Unitec NZ

Abstract

There did not appear to be any means of managing learning resources in the institution where the author works. There were a number of electronic areas where learning resources could be stored, but nothing existed that would manage them in terms of making it easy to retrieve them or being able to read about them.

It was wondered if this was the case in other institutions and if so, did others think that a management system for these resources could be useful to New Zealand Polytechnics.

An inductive course of research activities was undertaken following an interpretivist philosophy and stance.

Four research questions were formulated from which four research objectives were established.

Ten tutors from the computing departments of New Zealand Polytechnics participated in a survey consisting of 12 questions and 15 rating exercises.

Four tutors from two institutions, but different departments (Computing, Business Administration, Foundation Studies and Hospitality) were interviewed.

Their responses were analyzed and the results were interpreted to answer four basic research questions. The following results were gained:

- There did appear to be a need for such a system

- The purpose of such a system was postulated
- Features of a system were identified
- Suggestions were made on how the system could be used.

Acknowledgements

My beloved late husband, Gordon Blake, was my inspiration for most things. In this matter he encouraged me relentlessly and, before he died, made me promise to complete the project. To him I dedicate this work.

Dr Noel Bridgeman, my primary supervisor in this study, was also my tutor and mentor in graduate study; he has continued to support me throughout this undertaking as a friend and mentor. Thank you Dr Noel.

Dr Donald Joyce, my associate supervisor for this project, has always been there to encourage me with sound suggestions and delightful smiles. Thank you Donald.

Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Master of Computing, is entirely my own work and has not been taken from the work of others, except where that work has been cited and acknowledged within the text of my work.

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Chapter 1 - Introduction

Background

Electronic and other learning resources are continually being produced by academic staff in Institutes of Technology and Polytechnics (ITPs); usually such resources are stored and managed by their developer.

Many academic staff members continue to create new resources or update existing ones without knowing what their colleagues may have already developed or are currently developing.

Computing technologies have provided tools with which to develop, store, catalogue, manipulate and deliver resources. It could be argued that because of the speed and sophistication of these technologies, the number of resources being created increases daily, therefore perhaps the need for formal Institute-wide management systems also grows daily.

Definition

To enable the reader to appreciate and understand this study it will be helpful to define the term 'learning resource' or 'reusable learning object' used in this study.

A learning resource could be any tutor-created/developed/assembled tool that assists a tutor to share knowledge and/or skills.

Such resources could be in electronic form, that is to say they have been created in a format suitable for viewing on a computer or through a computer and displayed on a large screen through data show.

Resources could be paper-based or made of some other material.

Examples of learning resources to which the author refers are as follows:

Electronic

- Individual PowerPoint slides
- Collection of PowerPoint slides assembled into a slide show
- Individual PDF files
- Collection of PDF files linked together to form a slideshow
- Word documents
- Excel documents
- Access documents (Database)
- Resources created with HTML
- Any electronic resource created by and supplied by book publishers. (Such resources are supplied to tutors for use with a particular text book.)
- A resource created using any software able to be used on the institute's computer network
- Video tapes
- DVDs
- CD ROMS

- Cassette tapes
- 3.5" floppy discs

Paper-based

- Class exercises such as crosswords or lists of tasks to be performed.
- Information sheets
- Individual and collections of readings
- Cut outs of cardboard shapes for practical exercises
- Collections of items previously assembled for one particular purpose. i.e. packs of string, paper clips, drinking straws, rubber bands, Sellotape, styrene cups, etc. for use in problem solving exercises plus instructions
- Collection of felt tipped pens and newsprint for poster making plus instructions

Learning resources in this case do not include course materials such as course descriptors, outlines, or stationery on which to run electronic resources.

Possible uses of Learning Resources

A learning resource or reusable learning object could be classified according to how it would be used. A resource could be designed so that a student may use it as a self-paced study tool, or a revision tool prior to an examination. A resource could be an electronic file, a PowerPoint presentation for instance, that is to be used to support the

person giving a lecture. A resource could be a tool built in a popular package that enables the student to perform and perfect a skill; and for the tutor to observe the students while doing so.

Reasons for amassing Learning Resources

As tutors are often required to create their own resources for each paper or course that they facilitate, they are continually making or updating resources, even for courses they have taught previously. Sometime older versions of a resource are worth keeping in addition to the newer updated version. Often a resource will be used in a number of papers simultaneously; having a generic character. Copies of such resources are likely to be duplicated across files and folders (drawers even!) so that each repository contains a version.

If tutors share their resources with their colleagues, it is possible that they may have been emailed or handed over on a CDROM. In which case, further copies of the resource are created and have to be stored somewhere. It would be interesting to read the results of a study that tracked one particular generic file throughout its users and were able to verify how many copies were kept in however many different locations.

Courses and Papers

It is likely that the majority of tutors teach a number of papers or courses; some across disciplines. Some tutors teach on different levels of the same subject and have created appropriate resources for each level. Resources need constant updating, even if the tutor has always taught that particular paper.

Sharing Learning resources

It is the writer's impression that many tutors share their resources with their colleagues and long may it happen. However, it was wondered if they are satisfied with the quality and effectiveness of others' resources and if they altered them in any way. It could be a good thing to share resources in terms of not reinventing wheels, but one wonders if it is practical.

Ownership

It was presumed that most institutions had a policy on ownership of learning resources, and that most assumed ownership of any learning resources created by their staff whilst in their employ.

Human resource experts extol the virtues of 'empowerment' for eliciting productivity from people. Another term used in this area is 'taking ownership of'.

This being so, the researcher wondered if it followed that tutors would produce learning resources of a higher quality and effectiveness if they 'owned' them? Or at least had some acknowledged relationship with the resources they created? Whilst the answers to these questions might seem superfluous in this research – and could be another area for further study, it was possible that tutor's attitudes to the ownership of learning resources could have a bearing on the level of importance they place upon the quality and organization of the resources.

Management

The word 'management' implies organization, policies and procedures. It implies commitment and organization with purpose, and successful outcomes.

Were institutes managing their resources or reusable learning objects and if so, was it being done effectively?

If resources were not being managed, it was hoped to ascertain if creators and users of such resources thought it could be useful to employ a management system and its possible features.

The purpose of this research was to find out whether there was a common way in which learning resources, or reusable learning objects, could be managed at an Institute-wide level.

To help address the issue the following Research Questions were posed:

RQ1 Is there a need for a management system at an Institute level?

RQ2 What might the purpose of the management system be?

RQ3 What would this system comprise of?

RQ4 How would this system be used?

From the above questions, four Research Objectives emerged:

RO1 To establish if a management system was needed at an institute level

RO2 To postulate the purpose of a management system

RO3 To identify the features of this system

RO4 To recommend ways in which the system may be used

Chapter 2 - Literature Review

There are many articles on why learning resources are created, used and stored however, it soon became apparent however that authors appeared to be discussing learning resources in terms of how they were stored and used and how educators perceived the resources would be used by students. Keeping these two avenues in mind, the this review was divided into two major areas, Managed Learning Environments and Other Resources.

2.1 Managed Learning Environments - The onset of and drive towards flexible delivery of programmes and courses has been a major contributing factor towards the adoption and use of Managed Learning Environments (MLEs) by most tertiary providers at this time. It was of interest to see who was publishing papers and articles about them, and whether they might reveal some information about current management activities within MLEs and/or whether there were any perceived issues. Authors were writing about three MLEs (two commercial - Blackboard, and WebCT and one open source – Moodle) that concerned the area of this research (Bremer and Bryant 2005., Jamieson and Verhaart, 2005., and Rogers and Tabatabaei, 2005)

A possible method of identifying published papers and articles could be to use Google Scholar as a tool to search for such publications. The number of hits gained for each MLE might be an indication of its use and be a source of further information.

A variety of terms and expressions were used by authors; this proved to be a problem when trying to identify key words for the searches.

Managed Learning Environments are also called Learning Management Systems (LMS) (Nanaykkara, 2005). The use of such systems can be said to be using 'computer moderated' tools (Huddlestone and Pike, 2006). Learning resources may also be called Learning Objects.

Most papers and articles appeared to be based on Blackboard, with WebCT second; followed by Moodle.

A number of articles (see Table 1. Selected articles about aspects of LMS) were selected from each category and were used to establish the basis of their debate and to see if it was relevant to this study.

Topic	Reference
Metadata.	Allert, H., Dhraief, Hadhami, & Nejd, W. (2002)
Review of tools for online courses.	Barron, A. E., & Lyskawa, C. (1998).
Claiming that quality assurance is essential when using a repository.	Barton, J., Currier, S. & Hey, J.M.N. (2003)
Reasons why teacher would want to use learning objects.	Bratina, T.A., Hayes, D. & Blumsack, S.L. (2002)
Comparison of a commercial LMS with an open source regime.	Bremer, D. & Bryant, R. (2005)

Pedagogical evaluation of LMNs	Brown, M., Riley, T. & Santos, I. (1999)
Rejecting commercial in favour of open source.	Corich, S. (2005).
Asking if LMSs are managerial tools rather than educational tools.	Danaher, P. A., Luck, J., Jones, D. & McConnachie, J. (2004)
Standards and protocols for learning objects	Friesen, N. (2005)
Future of learning objects.	Hodgins, H.W. (2002)
A site showing features of a repository.	Merlot.org (n.d.)
Migration issues from one LMN to another	Jamieson, J. & Verhaart, M. (2005)
Naming of learning environments. Claim us underutilisation of LMNs.	Nanaykkara, C. (2007)
Justifications for using MLEs	Nichols, M. (2007) Pain, D., & Le Heron, J. (2003)
Pessimistic view of on-line technology in education.	Parrish, P. E. (2004)
Definition and fundamental principles of learning objects	Polsani, P. R. (2003).
How was WebCT being used and were the technological students being as innovative as they liked to think?	Rogers, C.F., & Tabatabaei, M. (2005)
Another view of what a repository is.	Smith-Nash, S. (2005).
Usability of LMNs; interfaces, navigation etc.	Storey, M. A., Phillips, B., Maczewski, M. & Wang, M. (2002)

Bridge or building block proposed between a commercial LMS and a knowledge pool system.	Vandepitte, P., Van Rentergem, L., Duval, E., Ternier, S. & Neven, F. (2003).
Models and architectures for learning objects.	Verbert, K. & Duval, E. (2004).
Survey of how WebCT was being used and what issues existed and how could they be improved.	Weaver, D., Nair, C. S., & Spratt, C. (2005)

Table 1: Selected articles about aspects of LMS'

Good reasons for the adoption of MLEs were discussed and justified, such as cheating and larger class sizes in IT programmes (Pain and Le Heron, 2002) and E-learning and flexible delivery of programmes and courses (Nichols, 2007).

After studying the adoption of LMSs by institutions, Nanaykkara (2005) claimed that the effort and investment were often wasted as such systems were underutilised.

A number of authors evaluated two or more of the three systems in question in this study. Some from a pedagogical point of view (Brown, Riley and Santos, 1999); others looked at migrating from one to the other, identifying problem areas. (Jamieson and Verhaart, 2005).

Bremer and Bryant (2005) compared Moodle, an open source LMS, with Blackboard, a commercial LMS.

Corich (2005) was more direct by using the title of his paper to ask the question "Is it time to Moodle?" He looked at the fact that some universities in NZ had already adopted a commercial type of learning management system such as Blackboard or WebCT and noted the move by other tertiary providers towards a cheaper product based on open source development. This offered many more perceived benefits such as the opportunity to offer ideas for development in addition to the obvious financial benefits.

Rogers and Tabatabaei (2005) sought to determine how their system of choice, WebCT, was being used and if their students, who had previously been regarded as technology-leaders, were still making good use of the tool.

A number of surveys and reviews had been conducted, one to establish how their managed learning environment was being used, what features were used and if any improvements were required (Weaver, Nair and Spratt, 2005); another simply reviewed tools for developing and managing online courses (Barron and Lyskawa, 1998).

Another study undertaken by Storey, Phillips, Maczewski and Wang, in 2002, looked particularly at the interface, the barrier between their system and the student. The authors were interested in navigation and the basic usability of the system as well as customization and student management. They took their study further by investigating if their student's perception of the system impacted positively or negatively on their learning.

In an effort to narrow the fields of discussion and to establish if anyone had written anything about MLEs and resources used with them, the author searched for publications about Learning Resources and or Learning Objects.

Friesen (2005) was interested in standards and specifications' bodies and processes relevant to e-learning, and attempted to provide an overview of such. Parrish (2004) took a pessimistic view of the perceived benefits of universal access to online instructional materials, reminding us that the problems of education are "always more complex than technology alone can solve" (p.51).

All this information was very interesting but, still, the author had not found any literature about the focus of this study – learning resources and the management (storage and retrieval of reusable learning objects).

The reuse of learning objects was an area of interest because it suggested some sort of 'management' process in order to accomplish it. Another search was conducted, using the word 'reuse' along with previously used 'Learning Objects'.

At last, an article was found that suggested that in order to reuse learning objects, we would need information about them, albeit metadata, database and standard-based discussion, rather than the actual management of the objects (Allert, Dhraief and Nejdli, 2002).

Definition of the term Learning Object, fundamental principles for developing a concept of Learning Objects and suggesting a methodology and guidelines were the objects of a paper by Polsani (2003).

Content models with which to define learning objects and their components were discussed by Verbert and Duval, (2004), who proposed a global architecture for learning objects. Hodgins (2002) discussed the future of learning objects and made the claim that "their most significant promise is to increase and improve the effectiveness of e-learning and human performance" (p.76).

Vandepitte, Rentergem, Duval, Ternier and Neven (2002) discussed a building block that they had developed to bridge between Blackboard and the ADRIADNE knowledge pool system. They outlined the difference between a Learning Management System (LMS) and a Learning Content Management System (LCMS).

Bratina, Hayes and Blumsack (2002) explored the subject of why teachers would want to use learning objects and explained how to facilitate them to "enlarge and enrich their repertoire of instructional techniques for presenting content" (p.2).

Danaher, Luck, Jones and McConnachie (2004) used a celestial metaphor to describe the position universities appear to take as opposed to the down-to-earth and often stifling forces of law,

funding and rulings imposed by governments and managers. They suggested that a managed learning system could be the most likely navigation between those “blue skies of innovation and the pragmatism of managerialism in relation to learning technologies in contemporary Australian universities” (p.1).

Another search yielded publications that included the word ‘repositories’ in their discussion. In order to manage a resource, surely it would be first held in a repository?

One of the many large repositories in use in the world can be found at Multimedia Education Resources for Learning and Online Teaching, (MERLOT). Their mission statement on the first page of their website reads:

“Putting Educational Innovations Into Practice

Find peer reviewed online teaching and learning materials. Share advice and expertise about education with expert colleagues. Be recognized for your contributions to quality education.”

Merlot.org (n.d.)

Smith-Nash (2005) suggests that the repository itself is a learning object in the field of e-learning. Of course, a repository on its own does not constitute a management system.

Should such a system be developed that handled metadata, quality assurance would be a major feature;

“Standardized metadata is central to interoperability; at its best it is a powerful tool that enables the user to discover and select relevant materials quickly and easily. At worst, poor quality metadata can mean that a resource is essentially invisible within a repository or archive and remains unused.”

(Barton, Currier & Hey, 2003, p

2.2 **Other Resources** – Authors, as listed in table below (Table 2: Selected Articles about other Resources) below, talk much about learning or teaching resources but tend to refer to them as being digital or web-based. Much discussion centres on the on-screen, interactive type of resource and little on the bread and butter type resources that could have existed in hard copy form previous to the onset of computers.

Topic	Authors
Purposes of Resources	Hicks, Reid, & George (1999) Heinrich, & Chen (2001) Boyle (2003)
Attributes and Benefits of Resources	Bradley, & Boyle (2003) Kennedy, & McNaught (2001)
Flexible Delivery	Agostino, Bennett, Lockyer, & Haper (2004) Tzoumakas, & Theodoulidis (2003)
Organising Resources	McNaught, Burd, Whithear, Prescott, & Browning (2002)
Quality Management	McNaught (2001)

Table 2: Selected articles about Other Resources

Focus appears to be on supporting students rather than giving consideration to learning and teaching resources and how they should be managed (Hicks, Reid and George, 1999).

Whether a resource is digital or not, it requires management if users are to make the best use of it.

Heinrich and Chen, (2001) referred to and wrote about learning objects Learning in the light of using them on particular platforms or environments.

Descriptions of objects, and how they relate to each other and to various applications, seem to take precedence over explanations of what sort of learning or teaching resource they can accommodate (Boyle, 2003).

(Bradley and Boyle, 2003) claimed that there is evidence to show that learning objects, built while observing educational theory and practice and incorporating pedagogical values to ensure quality, can increase pass rates.

The requirement for flexible delivery has caused educators to focus on offering students remote access to course materials and learning resources. Learning objects are a form of packaging a learning resource (or 'learning event' as some authors call them) so that it can be viewed through any web browser (Agostinho, Bennet, Lockyer and Harper, 2004).

Evaluation of such materials is of course essential if learning objects or resources are to be used for flexible delivery. (Tzoumakas and Theodoulidis, 2003).

Video tapes have long been a much-used resource but very little is mentioned about their management.

Many resources are made with MS Office applications and are stored as hard copy and/or soft copy. Audio files are kept on hard disc or on CDs or DVDs. Course documents, whilst outside the scope of this research, could be viewed as resources; storage space and efficient retrieval methods, and permissions to do so, are also required for them.

While it may appear relatively easy to store, catalogue and retrieve digital files, the fact is that it is very complicated. (McNaught, Burd, Whithear, Prescott, and Browning, 2002)

There is no single location to store a file in order that tutors and students can access it locally and remotely in whatever format it has been created.

Teaching and learning resources are many and varied, requiring different application and system software to run them. Then there are the actual material resources, things that you can touch, feel and smell. They too need managing. So, any system that is designed to manage such resources needs to encompass a catalogue facility that points to the location of such an object.

Problems arise when one wishes to manage non-digital files. How does one manage hard copy or physical resources that require specific storage facilities? Books are probably the most efficient way of information storage and retrieval; books hundreds of years old can still be read. In the digital age, we are living with technology that changes rapidly and we need to

consider if and how we move our information from one format to another.

Future operability of resources must be given consideration. Will the applications used in their creation still be in use? Will there be future versions and will the resource still work with them? Will the resource be able to be used on future operating systems?

It could be useful to include facilities to audit the resource to establish who has used it and for what purpose it was used for (Kennedy and McNaught, 2001).

Quality Management is a term used widely in the world today. It does not however, appear to have been used in relation to learning resources. The population in New Zealand is used to viewing high quality graphics and text through television, the Internet and hard copy publications. Students will not allow credit to poorly constructed and published material and such learning resources will miss the mark completely in terms of educational effectiveness (McNaught, 2001).

Feedback on the quality of learning resources can be difficult to give and request. Depending on who has created the resource, students and/or tutors could feel intimidated about commenting on its quality and effectiveness unless offered a safe context in which to do so. Therefore an environment that accommodates such activities could provide an added bonus of providing a safe and efficient arena for creation and validity of quality learning resources.

2.3 **Summary** - As indicated above, the majority of the identified articles comment on the general field of Managed Learning Environments, Learning Management Systems or Learning Objects, with few commenting on the specific area of this study, *managing reusable learning objects*. However, that being said, those articles that have been found, and referred to, will give the reader a general understanding of the area of managed learning environments, with the primary data that has been gathered helping to inform the specific area this researcher is interested in, namely the processes for the storage and retrieval of reusable learning objects.

Resources that were created, stored, used, shared, edited and reused were mentioned, however the author found no articles that discussed how those things were managed, or if there was anyone addressing quality management of resources. While some authors addressed pedagogy and educational theories, they appeared to do so in terms of e-learning and the presentation of the on-line course, rather than managing objects and planning how they were to be used.

Technology and the science of technology is attractive to a certain branch of educators, especially when the World Wide Web is included in the equation. However, the basic 'housekeeping' of resources, their management from creation, storing, editing, sharing, repurposing, educational appropriateness, level positioning, evaluation and further development must also be addressed, sooner rather than later.

Chapter 3 - Research Method

This chapter describes and outlines the research methods used to conduct the research.

In order to choose a clearly defined research pathway it was necessary to first establish the context in which the pathway would exist. From there it was necessary to choose a pathway of suitable composition on which to accommodate the type and weight of this particular research.

Context

The term 'philosophy of research' implies that there exist one or more basic truths in the way research is conducted. Further, to articulate the background that gives rise to why such reasons exist, it is also necessary to explain the starting point and intention of this research.

This being the case, the interpretivist philosophical context of the research was chosen. The basic set of beliefs (a paradigm) was used as a model on which to explore the possibilities for methods of research to be undertaken in this instance.

Two 'enquiry paradigms' that exist are the *positivist* approach, where people exist as 'things'. 'A did this, B did that and this was the result for each'; this could be likened to 'cause and effect'. Such research is based on theory and principles and allows for no alternative to either result (Brotherton, 1999).

In the *interpretive* approach, A's and B's behaviour is observed and, using an empirical stance, is then open to reasoning and interpretation as to why they did it, why they did it like this and why they did it like this at that particular time, depending on their individual beliefs.

The ontology of the *interpretivist* makes the distinction between things, animals and people and considers how they interact together. The *positivist* looks at such things as 'being' or 'existing'; the *interpretivist* accepts that people and animals 'behave' in the world, or 'experience' the world.

Therefore, while the positivist might base research on 'truths' or 'givens' of the world in a generalized nature, and use existing theories (external stimuli), and frameworks of research with which to further their enquiries, the interpretivist does not assume any such truths.

Instead, the interpretivist, knowing the 'truths or 'givens' for the research they are about to conduct are not clear cut or 'set in concrete'; that they could be individual and subjective perceptions, employs an ontological stance of seeking to understand rather than to prove or count.

Such a stance then demands particular methodologies, or methods of enquiry, with which to conduct research.

Methods of enquiry for this research needed to be designed to elicit opinions and individual experiences and, rather than trying to match these to well known facts or align them with existing theories, (*positivist*) the *interpretivist* course was chosen. It was felt that the *positivist* philosophy and resultant enquiry methods would not render a sufficiently rich picture and could possibly prevent the researcher from following a strand of enquiry that may arise during the research (Taylor and Edgar as cited in Brotherton 1999).

The choice of methodology used, dictated by this philosophy, included interviews and surveys. All were conducted and later analyzed using

the *interpretivist* stance of understanding rather than establishing provable facts.

Planning the Research

The title of this thesis almost presupposed that management of some type exists for resources in Polytechnics and other tertiary institutions in New Zealand. The writer wished to find out if and how this was happening.

It was decided to construct four basic research questions that would meet this need:

- Is there a need for a learning resource management system at an Institute level?
- What might the purpose of the management system be?
- What would this system comprise of?
- How would this system be used?

From these questions, four Research Objectives were formulated:

- To establish if a management system was needed at an institute level
- To postulate the purpose of a management system
- To identify the features of this system
- To recommend ways in which the system may be used

The first question was the pivot for the rest of the research. If the responses had been negative there would have been no point in asking the remaining three questions.

While the first question appeared to pose a hypothesis it was actually meant to establish whether a previously-experienced strong attitude existed.

It is important to clarify this situation; otherwise the reader might be expecting the research conducted to have followed a deductive approach. Rather, an inductive path was used.

The researcher worked from the idea that

“Inductive reasoning works the other way, moving from specific observations to broader generalizations and theories. Informally, we sometimes call this a "bottom up" approach (please note that it's "bottom up" and *not* "bottoms up" which is the kind of thing the bartender says to customers when he's trying to close for the night!). In inductive reasoning, we begin with specific observations and measures, begin to detect patterns and regularities, formulate some tentative hypotheses that we can explore, and finally end up developing some general conclusions or theories.”

(Trochim, 2006)

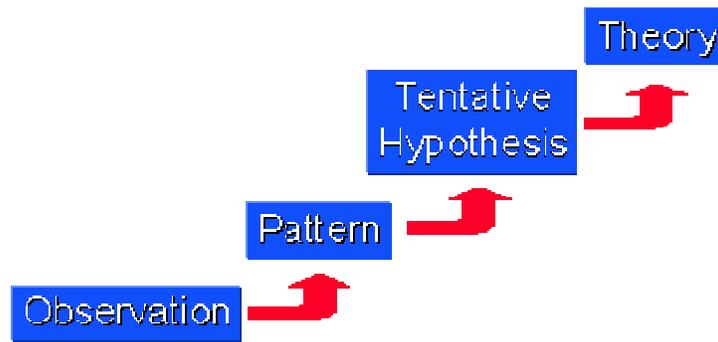


Figure 1 Illustration of the steps in Inductive Theory.

Observation consisted of identifying the problem and formulating research questions; from these, objectives were established.

Pattern was the plan of how the objectives were to be achieved; this area included data gathering design, and execution.

Tentative Hypothesis included the analysis of the gathered data and conclusions gained from it.

Theory was deciding if the conclusions provided answers to the research questions and ultimately, a solution to the original problem.

The following diagram on learning communication, taken from the book 'In search of the virtual class; Education in an Information Society' by Tiffin and Rajasingham (1991), has been used to show where the area of this research is seated.

The diagram shows a system model of inputs, processes and outputs. Feedback and control is shown outside the main processing area of activity.

A dotted line has been used to highlight the area of support and control; the area of this research. Specifically, issues regarding the

support and control of learning resources form the focus of this research.

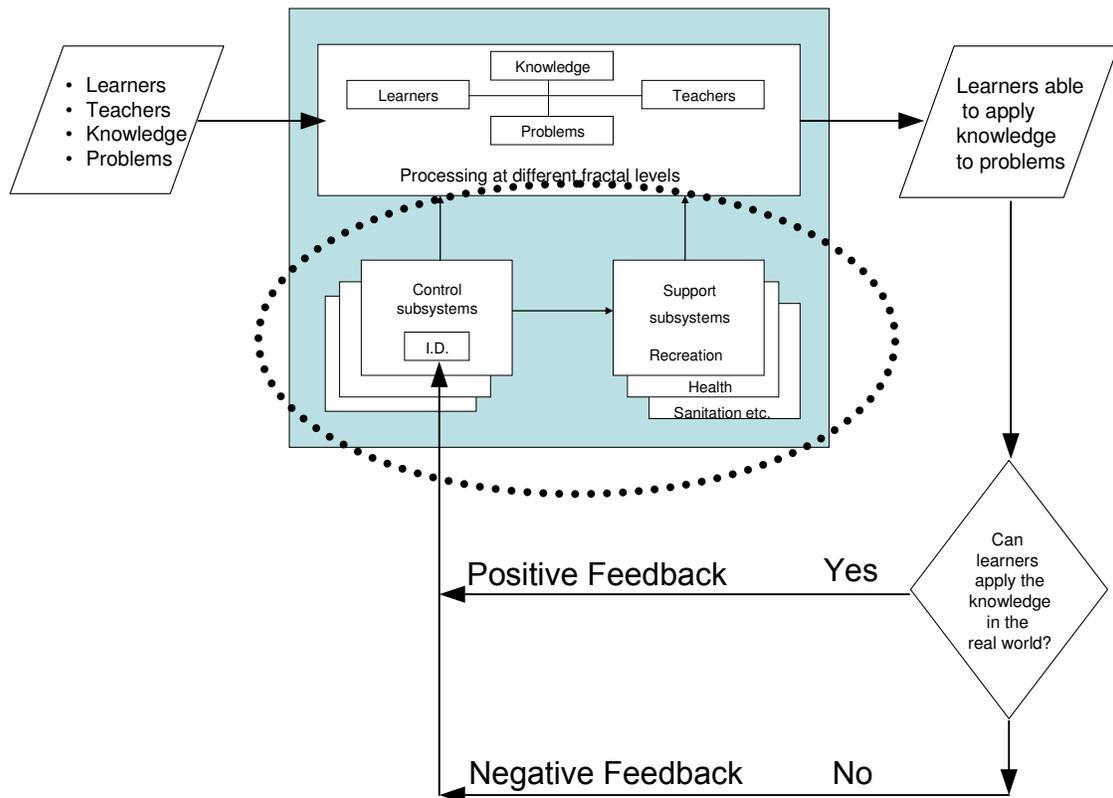


Figure 2 Education system as a communications systems, adapted from Tiffin and Rajasingham, (1991). The dotted circle shows this author’s area of research.

Users in this part of the system would be tutors and administration staff. It was decided to focus on the tutors as major creators and users of learning resources.

Survey

Data was gathered from tutors from 10 remote locations through the use of a survey. The research activities used in this part of the

research could be categorized as mixed methods. This is because both quantitative and qualitative approaches took place.

In the survey (questionnaire) closed questions were asked to which answers were already known; Yes or No. These must be categorized as quantitative:

“Surveys include cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection, with the intent of generalizing from a sample to a population.”

(Babbie, 1990, as cited in Cresswell, 2003, p.14).

Respondents were then asked to make additional comments and those comments could have been anything, rendering them qualitative.

“Case studies, in which the researcher explores in depth a program, an event, an activity, a process, or one or more individuals. The case(s) are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.”

(Stake, 1995 as cited in Cresswell, 2003, p.15).

Likert scale ratings were used to establish how strongly tutors felt about certain issues, these were phrased as statements ranging through five rating stages from ‘strongly disagree’ through to ‘strongly agree’. No qualitative questions were asked here.

It was hoped that the four interviews that were held would triangulate the research by validating (or otherwise) results from the questionnaires. A qualitative approach was taken in that the questions ranged from closed to open and could have led anywhere. "The same

set of questions were used with each of the four interviewees (see pages 61 to 73); this was qualitative research."

Analysis

After the data was gathered, it was entered into an Excel spreadsheet to enable analysis to take place. The spread sheet served a number of purposes:

- A repository to hold and manipulate incoming data
- An organization tool for the data
- A focus for the project

Questions, answers and comments were able to be entered in columns and quickly summed to determine the strength of feeling. Additional columns were later added for the analyzer to make comments on her reflections about each question and answer.

Later, results from the survey, ratings and interviews were aligned with each of the four research questions. The conclusions reached established if the research objectives had been met.

Chapter 4 - Results and Findings

Survey

A questionnaire was designed and printed (see Appendix 2) and sent together with an information sheet and consent form (see Appendices 1 and 3) to the computing departments of 20 tertiary institutions throughout New Zealand. 10 institutions responded with completed questionnaires by the due date. The gender, age or discipline of the respondents were not requested.

Collated questions and answers from the survey were entered into an Excel Workbook which made it easier to analyse. (Please see Appendices 4, 5, and 6).

The following results were produced:

Yes/No questions are coded **Q** (e.g. **Q1**)

Ratings are coded **R** (e.g. **R1**)

Interview Questions are coded **I** (e.g. **I 1**)

Q 1 Do you use electronic learning resources?

Respondents 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 answered YES

Comments:

Respondent 4: Documents stored electronically, distributed on paper

Respondent 8: Blackboard, PowerPoint

Respondent 10: Important in an IS/IT degree

Summary

- All tutors used electronic learning resources.
- Two respondents mentioned the resources they used
- One respondent offered a positive opinion on the importance of electronic resources in an IS/IT degree.

Q 2 Do you use other types of learning resources?

Respondents 1, 2, 3, 5, 6, 7, 8, 9, and 10 answered YES

Respondent 4 answered NO

Comments:

Respondent 8: Class exercises, physical equipment, information sheets

Respondent 10: Suitable to course

Summary

- Nearly all respondents used other types of learning resources.
- One respondent did not use non electronic learning resources.
- Two respondents commented on the other types of learning resources they used.

Q 3 Did you create/develop/assemble any of these resources?

Respondents 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 answered YES

Comments:

Respondent 8: Yes, all of them

Respondent 10: Yes, no available resources other than to develop your own

Summary

- All respondents created some of the resources in their use.
- One respondent created all of his/her resources.
- One respondent had no choice but to develop his/her own resources as none were available.

Q 4 Do you share any of these resources with your colleagues?

Respondents 1, 2, 4, 5, 6, 7, 9, and 10 answered YES

Respondents 3 and 8 answered NO

Comments:

Respondent 3: No one else teaches same subject

Respondent 8: No-one else teaches them

Respondent 10: Yes my resources are freely available to other tutors

Summary

- Eight of the ten of respondents agreed that they shared their resources with other tutors.
- The two that did not share their resources gave the reason that no-one else in their departments taught that particular paper.
- One respondent affirmed that his/her resources were freely available to others.

Q 5 Do you consider that you own these resources?

Respondents 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 answered NO

Comments:

Respondent 8: My employer does

Summary

- All tutors felt that they did not own the resources that they created.
- The only comment made was to reinforce the fact that their employers owned the resources that the tutor had created/developed or assembled.

Q 6 Does your institute have a policy on ownership of tutor-created resources?

Respondents 1, 2, 3, 4, 7, 8 and 10 answered YES

Respondents 6 and 9 answered NO

Respondent 5 did not know

Comments:

Respondent 5: Don't know

Respondent 8: My employer considers that as my employer – payer for my time and provider of my equipment – they own what I produce

Summary

- Seven respondents answered that their organizations did have a policy on ownership of such resources.
- Two respondents said that their organizations did not have such a policy.
- One respondent did not know.

Q 7 To your knowledge, does your institute have the facilities and resources to create professional electronic resources?

Respondents 1, 2, 3, 4, 7 and 8 answered YES

Respondents 5, 6, 9 and 10 answered NO

Comments:

Respondent 8: Yes, I could have someone else produce the Blackboard material if I wanted

Respondent 10: This would require a dedicated staff member and electronic resources

Summary

- Six respondents thought their organization had the facilities and resources to create professional electronic resources.
- Four respondents thought their organizations did not have such amenities.

Q 8 Does your institute give credit to tutors who create learning resources? If yes, please explain how in the Comments box.

Respondents 1 and 8 answered YES

Respondents 2, 3, 4, 5, 6, 7, 9 and 10 answered NO

Respondent 3 did not know.

Comments:

Respondent 1: Awards for best teaching practice. Recognized in performance reviews

Respondent 3: I don't know

Respondent 6: Considered part of the job

Respondent 8: You get your name on the resource book, your name on the Blackboard site, etc

Respondent 10: No! It is expected as part of the job

Summary

- Two respondents said their organizations gave credit to tutors who created resources.

- Seven respondents said their organizations did not give credit to tutors who create learning resources.
- One merely stated that they “didn’t know”.
- Two comments were positive; one stating that awards for best teaching practice and recognition in performance reviews were awarded at his/her institution and the other that the author’s name was placed on the resource or books created or on the electronic site.
- Two respondents stated that their institution considered that the creation of resources was considered part of their job.

Q 9 How do you think credit should be given to the creator of resources? (Please use Comments box).

Comments:

Respondent 1: Teaching relief to develop the resources – it should be part of a full time lecturers job to continually develop your course but if your materials are going to be used by another course there should be some form of recognition

Respondent 2 did not offer a comment

Respondent 3: Referencing

Respondent 4: Time allocated specifically for creation of resources

Respondent 5: Extra Pay

Respondent 6: No, unless asked to create resources for a subject that is not part of teaching load.

Respondent 7: Statement on the resources

Respondent 8: You get your name on the resource book, you name on the Blackboard site, etc

Respondent 9: Recognition as outputs of merit. Name on resource.

Respondent 10: Acknowledged by Manager and also on learning resource.

Summary

Five respondents thought that acknowledgement should be made to the author of a resource in the form of referencing such as author's name on the resource. One of them thought that such activities should be recognized as an 'output of merit'.

- Two thought that time or teaching relief should be allocated to tutors who create resources.
- One thought that extra pay should be given to teachers who create resources.
- One respondent thought credit should only be given if the tutor created resources for a subject that was not in his/her normal teaching load.
- One respondent did not offer a comment.

Q 10 Do you have any means of indexing and/or cataloguing yours and others' learning resources?

Respondents 1 and 4 answered YES

Respondents 2, 3, 5, 6, 7, 9 and 10 answered NO

Respondent 8 did not know.

Comments:

Respondent 1: Blackboard – however everyone has been responsible for their own course and materials have gone missing so we are currently working out a system whereby teaching materials and past assessments are stored on the H:/ staff shared drive

Respondent 8: Don't know – don't think so

Summary

- Two respondents answered YES
- Seven respondents answered NO
- One respondent did not know, but did not think they had any means by which to index or catalogue their resources.
- Another respondent said they had Blackboard as their Managed Learning Environment (MLE) and everyone was responsible for their learning materials. They had experienced loss of files and so currently a system was being designed on another drive on their network.

Q 11 Do you and your colleagues keep your learning resources in a central location?

Respondents 1, 4, 6 and 8 answered YES

Respondents 2, 3, 5, 7, 9 and 10 answered NO

Comments:

Respondent 5: Sort of. We have MOODLE running but it doesn't have a 'sharable resource catalogue' feature.

Respondent 8: On Blackboard, and network

Summary

- Four respondents kept their learning resources in a central location.
- Six respondents did not keep their resources in a central location.

Q 12 Do you have any means with which to convert paper-based learning resources into electronic format if necessary?

Respondents 1, 2, 3, 4, 5, 6, 7, 8, and 10 answered YES

Respondent 9 answered NO

Comments:

Respondent 1: Scanner

Respondent 7: Key it in

Respondent 8: Either give them to the eLearning Team to do, or use a PDF converter or a PowerPoint to Flash converter,

Respondent 10: Scanner

Summary

- Nine respondents answered YES
- One respondent answered NO
- Two respondents named a scanner as their means of conversion from paper-based to digital.
- One respondent said that they would simply “key it in”.
- One respondent said that the item could be given to the “eLearning” team to do, or converted using specific software packages.

Q 13 Are your learning resources moderated?

Respondents 3, 5, 6, 7 and 8 answered YES

Respondents 1, 2, 4, 9, and 10 answered NO

Comments:

Respondent 1: The assessment and assignment items are but not teaching resources

Respondent 5: Some

Respondent 8: For assessment material – yes, by colleagues from hard copy

Respondent 9: For other material – yes, by our eLearning team and by student evaluation

Summary

- Five respondents answered YES
- Five Respondents answered NO
- Two respondents qualified their answers by stating that assessment materials were moderated but not teaching resources.
- One respondent said “Some”.
- One respondent stated that other material is moderated by their eLearning team or evaluated by students

Q 14 Have you ever wished to alter a learning resource created by another person?

Respondents 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 answered YES

Comments:

Respondent 1: I would like to alter the entire paper I am teaching at the moment (I inherited this semester) and I will do so.

Respondent 4: No problem... keeps the original, and makes a new copy for myself

Respondent 8: When I saw something I thought was not very good – did not comply with usability standards, instructional design standards, etc

Respondent 10: As each person is different, usually the way they teach a course is different, so usually I require my own learning resources

Summary

- All respondents answered YES.
- One respondent wished to alter the entire paper that he/she is teaching at the moment.
- Another respondent said that the original copy is kept but a new one is created for the current tutor.
- One would only change it if they saw something that did not comply with usability standards, instructional design standards and so forth.
- Another respondent observed that people teach differently and therefore this respondent usually requires his/her own learning resources.

Q 15 What other issues are important to you in regard to the origins and use of learning resources?

Respondent 1 Blackboard is too limited – not really a teaching tool it needs to be more interactive – I would like to see more interactive technology used in classrooms – PDA – wireless capabilities.

Respondent 2 No comment

Respondent 3 Accessibility regardless of format

Respondent 4 Ratings Possible to share with other Polytechs?

- Respondent 5* Stupid copyright laws for education
- Respondent 6* No comment
- Respondent 7* Avoid plagiarism
- Respondent 8* None – no problems here
- Respondent 9* Quality control. Moderation. Ease of locating for use. Profiling of each resource.
- Respondent 10* It is important to try to get texts that have some learning resources

Summary

- One respondent thought that Blackboard was too limited; not really a teaching tool; that it needed to be more interactive. This person wanted to see more interactivity in classrooms with the use of PDA and wireless capabilities.
- Another respondent thought that accessibility, regardless of format is important.
- Another respondent thought rating for resources could be useful especially if they were able to be shared with other Polytechnics.
- One respondent felt that “stupid copyright laws” impacted on education.
- One respondent felt that avoiding plagiarism was important in regard to origins and the use of learning resources.

- A respondent thought that quality control, moderation of resources and ease of locating resources were important. This respondent also suggested creating a profile for each resource.
- Another respondent thought that it was important to locate and use textbooks that are accompanied by electronic learning resources.

Ratings

The same respondents were asked to rate 12 statements on the following five point scale:

5 = strongly agree

4 = agree

3 = don't have any opinion

2 = disagree

1 = strongly disagree

R 1 Learning resources should be moderated to ensure quality

Respondents 1, 6 and 9 strongly agreed

Respondents 3, 4 and 5 agreed

Respondent 10 held no opinion

Respondent 2 disagreed

Respondents 7 and 8 did not offer a rating.

Summary

- The majority (6/10) were in favour of moderation for learning resources. Only one disagreed, the others had no opinion or did not provide a rating.

R 2 Learning resources should bear the name of their creator and/or source of information

Respondents 1, 6, 9 and 10 strongly agreed

Respondents 2, 3, 4 and 5 agreed

Respondents 7 and 8 did not rate the statement.

Summary

- The majority (8/10) thought learning resources should bear the name of the creator or source of information.
- The other two did not provide a rating.

R 3 A learning resource management system (LRMS) should contain links to electronic learning resources

Respondents 1, 4, 5, 6, 9 and 10 strongly agreed.

Respondents 2 and 3 agreed.

Respondents 7 and 8 did not rate the statement.

Summary

- The majority (8/10) thought a management system should contain links to resources.
- The other two did not provide a rating.

R 4 A LRMS should be able to indicate the location of paper-based or other type of learning resource

Respondents 1, 5, 7, 9 and 10 strongly agreed

Respondents 2, 3, 4 and 6 agreed.

Respondent 8 did not rate the statement.

Summary

- The majority (9/10) thought such a system should be able to indicate the location of a resource.
- The other one did not provide a rating.

R 5 A facility where a new learning resource can be examined, tested and reviewed should be available within a LRMS

Respondents 1, 2, 5 and 9 strongly agree.

Respondent 6 agreed.

Respondents 3, 4, 7 and 10 held no opinion

Respondent 8 did not rate the statement.

Summary

- Half thought that such a facility should be available

The others had no opinion or did not provide a rating.

R 6 A description of a learning resource should be available within a LRMS

Respondents 1, 5, 6, 7, 9 and 10 strongly agreed

Respondents 2 and 3 agreed

Respondent 4 held no opinion

Respondent 8 did not rate the statement.

Summary

- The majority (8/10) thought that a description of each learning resource should be available in the system
- The others had no opinion or did not provide a rating

R 7 Possible uses of learning resources should be available within a LRMS

Respondent 5 and 9 strongly agreed

Respondents 1, 6 and 10 agreed

Respondent 3, 4 and 7 held no opinion

Respondent 5 strongly disagreed

Respondent 8 did not rate the statement

Summary

- Half thought that recommended possible uses for resources should exist in the system
- One strongly disagreed
- The others had no opinion or did not provide a rating

R 8 A LRMS should match up a learning resource with appropriate papers/courses.

Respondents 1, 6 and 9 strongly agreed

Respondents 2, 4, 7 and 10 agreed

Respondents 3 held no opinion

Respondent 5 strongly disagreed

Respondent 8 did not rate the statement

Summary

- One respondent felt strongly that the system should not offer any match between a resource and paper (course)
- The majority (7/10) thought that it should
- The others had no opinion or did not provide a rating

R 9 Feedback opportunities should be available within a LRMS

Respondents 1, 2, 6 and 7 strongly agreed

Respondents 3, 4, and 5 agreed

Respondents 9 and 10 held no opinion

Respondent 8 did not rate the statement

Summary

- The majority (7/10) thought that feedback opportunities should be available within the LRMS
- The others had no opinion or did not provide a rating

R 10 A learning resource should carry a rating based on the feedback within the LRMS

Respondent 1 and 6 strongly agreed

Respondent 5 agreed

Respondents 2, 4, 9 and 10 held no opinion

Respondent 3 disagreed

Respondent 7 strongly disagreed

Respondent 8 did not rate the statement

Summary

- Three thought that resources should be rated.
- Two did not agree
- The others had no opinion or did not provide a rating

R 11 A LRMS should have a full-time administrator

Respondents 1, 2, 5 and 6 strongly agreed

Respondents 4 and 9 held no opinion

Respondents 3, 7 and 10 disagreed

Respondent 8 did not rate the statement

Summary

- Four thought that a LRMS should have a full-time administrator
- Three did not agree
- The others had no opinion or did not provide a rating

R 12 A LRMS should log the use of each learning resource

Respondents 1, 5, 6 and 9 strongly agreed

Respondent 10 agreed

Respondents 3 and 4 held no opinion

Respondent 7 disagreed

Respondents 2 and 8 did not rate the statement

Summary

- Half thought that the use of each learning resource should be logged.
- One did not agree

- The others had no opinion or did not provide a rating

No	Topic	Strongly agree	Agree	No opinion	Disagree	Strongly disagree	No rating
1	Moderation	3	3	1	1		2
2	Acknowledgment	4	4				2
3	Links	6	2				2
4	Location	5	4				1
5	Review	4	1	4			1
6	Descriptions	6	2	1			1
7	Uses	2	3	3		1	1
8	Courses	3	4	1		1	1
9	Feedback	4	3	2			1
10	Rating	2	1	4	1	1	1
11	Administrator	4		2	3		1
12	Log use	4	1	2	1		2

Table 3: Topics aligned to numbers of ratings

There was strong support among the respondents for LRMS having these features:

information about location of other resources (9 positive ratings)

links to electronic resources (8 positive)

acknowledgement of authorship/sources (8 positive)

descriptions of learning resources (8 positive, 1 neutral)

feedback opportunities (7 positive, 2 neutral)

matches to papers/courses (7 positive, 1 neutral, 1 negative)

moderation (6 positive ratings, 1 neutral, 1 negative)

There was less support among the respondents for LRMS having these features:

review facility (5 positive, 4 neutral)

log resource use (5 positive, 2 neutral, 1 negative)

possible uses (5 positive, 3 neutral, 1 negative)

ratings (3 positive, 4 neutral, 2 negative)

full-time administrator (4 positive ratings, 2 neutral, 3 negative)

Interviews

Face to face interviews took place with four tutors over a period of six weeks. Each worked in a different discipline; three were from the same institution, the other was from another institution. They taught in the following departments of their institutions: Computing, Business Administration, Foundation Studies and Hospitality.

All four tutors were female. Their ages ranged from early 30s to middle 50s. All tutors had post graduate qualifications. Each interview was held in a different location. All 12 questions in the interview were the same.

I 1 *Assuming you have electronic and paper-based learning resources, do you have any system with which to organize them?*

Interviewee A Only the shared drive on the institute's network and on MOODLE of course. Although, most of our resources are used in the classroom during exercise-driven sessions.

Interviewee B The only electronic files that I have are kept on my profile drive and some at home. Paper-based and other resources are kept here in my office. Some of our resources - very few - are kept on MOODLE, the new system that we are trying to learn to use. However, MOODLE is limited for us as most of our students don't have a computer or the means with which to access our network from home.

Interviewee C My own system which is electronic. Drives, folders etc. There is so much data redundancy and it takes me ages to find anything.

Interviewee D I keep my electronic resources on the shared drive for tutors, on the shared drive for students, on MOODLE where appropriate and in drives and discs of my own. Ridiculous isn't it? Too many places, too many copies! However, when I want to find something it's missing!

Summary

- Three people used shared drives within their institutions and each mentioned the use of their institutions' MLE, MOODLE.
- One person used a system of drives and folders to organize resources but found there was too much data redundancy as well as being time consuming.
- Two people mentioned data redundancy.

I 2 *Explain how you organize your resources.*

Interviewee A This is quite a problem. At least three copies of a resource could exist, sitting in folders made for different courses or papers. Usually I have another copy at home too!

Interviewee B Being a communications tutor most of my resources are physical rather than electronic. Most are kept here in my office and are easy to organise and locate.

Interviewee C On the drives and in folders. Naming them and organizing them is so difficult.

Interviewee D I tend to keep a pen drive for each separate subject.

Summary

- All four people interviewed used electronic resources; one however used only a few.
- It was acknowledged that it was a problem to organize resources often resulting in multiple copies of any one resource in addition to any kept at home.
- Resources were kept in folders made for different courses or papers.
- Physical resources were kept in one physical location, which made them easy to organize and locate.
- Resources were kept on the institution's drives, in folders, however naming them and organizing them was found to be difficult.

I 3 *If you were to teach a new course (you may or may not be confident in the topic) how do you go about amassing resources?*

Interviewee A We are lucky in our department, we tend to have a 'share culture'. Also, we have put together 'kits' for different papers purely in case of a tutor being sick and someone having to stand in temporarily. Must be emphasized that these kits are for temporary situations only, not as a replacement for a tutor.

Interviewee B I already have many resources but often surf the Internet for ideas. I usually assemble new resources at home.

Interviewee C "Beg borrow or steal"! Use any existing resources if it's the first time I've taught the course, if they are up to standard, then evolve and improve/replace the resources with experience.

Interviewee D I find that to use other people's resources takes more time to understand their logic; it's easier and quicker to make my own. This takes a lot of out-of-hours work however, but I do this to make my life easier in the classroom.

Summary

- One department had created resource kits for tutors to use if a regular tutor was away sick.
- Some resources could be found on the Internet.
- Tutors have amassed collections of resources.
- Some tutors would acquire resources from colleagues and then after judging quality and effectiveness, would improve or replace them if necessary.
- Using other people's resources took more time, so it could be more effective to put in extra time to make one's own resources.
- Resources were assembled or created at tutors' homes in their own time.

I 4 *What do you find most frustrating about learning resources?*

Interviewee A Looking for resources that I have made and stored somewhere! Where to keep them so that I can find them easily. Waste time looking for them.

Interviewee B Nothing really. I don't have enough of them to lose them.

Interviewee C Existing resources are often not geared to the prescription and subsequent assessments. Non-electronic resources take time to convert. Finding resources, getting information about them all takes time.

Interviewee D Understanding the logic of people who made them. There is nothing to explain where they were coming from and what pedagogical principals they were addressing. Also, matching such resources to different types of learning styles can be difficult. Also, I use many paper-based resources in my courses, books written by others and there are so many mistakes.

Summary

- Time was wasted in locating resources.
- Existing resources were often not geared to the prescription so had to be changed anyway.
- Time was required to convert resources.

- Understanding the logic of the person who had created existing resources could be frustrating.

I 5 If you have ever wished to alter someone else's resource, explain why.

Interviewee A Yes, every time I use a resource! I think this is because we each teach in different ways and resources made by another person don't exactly fit your style. I am most happy for my colleagues to alter my resources to meet their needs, by the way.

Interviewee B Of course and usually just alter to suit my students and my way of teaching.

Interviewee C Yes, mainly to simplify. So many existing resources are too bulky and written in language that is ambiguous.

Interviewee D Yes, in fact I reject most because they need so much alteration.

Summary

- All four people interviewed agreed they wished to change other people's resources often.
- Tutors use different styles of teaching.
- Many existing resources are too bulky and require simplifying.
- Most existing resources need alteration when used by other people.

Interviewee A Yes, there are a number of resources that could be categorized as such.

Interviewee B Communication resources are basic truths and as so I suppose many of them could be used in most courses.

Interviewee C Yes

Interviewee D Oh yes. Getting the levels right however is another question.

Summary

- Three readily agreed that they had resources that could be termed 'generic'.
- One interviewee agreed that some of his/her communication resources could be termed 'generic'.
- One interviewee agreed but pointed out that variations might arise between levels.

I 7 Do you put your name, as the creator, on all the resources that you have made?

Interviewee A Always! This is a basic courtesy that should be acknowledged by all - after all they do in research! Even if you've taken the info from a book, the author should be acknowledged and also you for assembling it in this manner. We know we don't own the resources we make, but we do require acknowledgement as authors. We also ensure that

authors' are acknowledged by mentioning new resources at our meetings and so they and their creators are minuted.

Interviewee B No, never thought of it. But it's a good idea; maybe I'll start doing that.

Interviewee C No

Interviewee D No, but I will from now on. I never really thought about until recently. I just didn't think I could be as the institution owned them.

Summary

- One interviewee always put his/her name on resources created by him/her.
- Three interviewees did not put their names on their creations.
- Two interviewees had never thought of putting their names on their resources.
- Two interviewees said they would start putting their names on their resources from there on.

I 8 If electronic, explain how resources are published and shared.

Interviewee A As I said before, on the shared drive so that any tutor can access them.

Interviewee B No electronic resources.

Interviewee C Shared drive to store or make available to students. Not published though.

Interviewee D They are just put on the shared drives for anyone who wants to use them. Students are of course directed to them as part of their course through MOODLE.

Summary

- One interviewee did not have any electronic resources.
- Three interviewees put their resources on a shared drive.
- One interviewee put their resources on a shared drive so that other tutors could access them.
- One interviewee put their resources on a shared drive so that students could access them; but qualified that the resources were not 'published'.
- One interviewee put them on a shared drive for anyone to access them.
- One interviewee said that students were directed to the resources through a Managed Learning Environment called MOODLE.

I 9 If you create resources yourself, when do you do this?

Interviewee A At home in my own time!! We don't have time or the facilities and resources to do it here.

Interviewee B At home in my own time.

Interviewee C Often in my own time. Not enough duty time to do this. I make use of the study breaks when students are not here and classes are not happening. Not enough time though.

Interviewee D Usually very late at night when my children are in bed.

Summary

- Two interviewees said they created their resources at home in their own time.
- One interviewee said that he/she often may the resources in their own time.
- One interviewee said he/she usually made their resources very late at night when children are in bed, so one deducts that it happens in the tutor's own home.
- Two interviewees mentioned not enough time as the reason for creating resources at home in their own time.
- One interviewee stated that the place of work did not have facilities or resources to make resources.

I 10 Do you use electronic resources that accompany text? Teaching or learning?

Interviewee A No. We teach to unit standards and so tend to produce our own workbooks.

Interviewee B No. Any text books we use will have been made by us.

Interviewee C Yes, for learning. Rare though.

Interviewee D Yes, just exercises.

Summary

- Two interviewees said they did not use electronic learning resources that accompanied learning texts.
- One interviewees agreed that he/she did use such resources for learning, but rarely.
- One interviewee agreed he/she used such resources for exercises only.

I 11 If you think that tutor-created electronic learning resources should be moderated, how do you think this could be accomplished?

Interviewee A I think it could be useful from one point of view, but not in another. Such moderation may not achieve the goal of the exercise. Would tend to be messy, lots of problems. I do think quality should be encouraged though and think this could be achieved with education and training.

Interviewee B Who would moderate them and using what sort of yardstick? Seems like too much extra work for tutors again. Agree quality is important but that could be gained with education.

Interviewee C I do! But we have a problem in staffing. We need quality of image and accuracy. New eyes can see things the author can't. Our resources should be valid and fellow tutors could give feedback and ultimately credibility.

Interviewee D Proof of the pudding. Let other tutors and students rate them as well as checking results from course.

Summary

- One interviewee definitely agreed that tutor created electronic learning resources should be moderated.
- One interviewee thought it could be useful to moderate resources, from one point of view but not from another.
- One interviewee said they had a problem with staffing.
- Three interviewees agreed that quality of such resources was important.
- One interviewee though moderation may not achieve the goal of the exercise as it would be too messy.
- Two interviewees thought that fellow tutors could give feedback.

I 12 Please tell me about any other issues that you may regard as important in regard to learning resources.

Interviewee A Nothing really. I don't have enough of them to lose them.

Interviewee B Just that our resources are usually paper-based having been created and stored electronically. There are no computers in this part of our institute.

Interviewee C There appears to be a current philosophy of “this is mine”; people don’t seem to share. We have to change a mindset.

Interviewee D We are often told what to use and given a resource that is flawed in a number of ways. Sometimes that resource has been created by colleagues in power and it is difficult to reject or even alter the resource.

Summary

- One interviewee did not have enough resources to worry about losing them.
- One interviewee had only paper-based resources.
- One interviewee thought a mindset of not sharing existed.
- One interviewee had experienced being made to use flawed resources that had been made by a colleague ‘in power’ and he/she did not feel they could give feedback, alter or even refuse to use the resources.

Conclusion

Interviews yielded similar information to that gained from the survey. Tutors used and created different types of resources. Tutors saw the organisation of these resources only as being able to store them in some way on drives; they did not mention management of the

resources. While these tutors thought moderation could be useful they saw the problems in the act of moderation first rather than the benefits. Sharing their resources was not useful due to such things as them being the only person to teach a certain paper or others' resources were not up to standard. Using other people's resources appeared to present problems; they would always need 'tweaking' to suit their needs.

The interview results, served to reinforce the results already gathered in the survey and ratings.

Chapter 5 - Discussion

The four Research Questions were:

RQ1 Is there a need for a management system at an Institute level?

RQ2 What might the purpose of the management system be?

RQ3 What would this system comprise of?

RQ4 How would this system be used?

A matrix was used to identify the areas of the survey that centered on each question. (See Appendix 4)

Q 1,2,3, and I1,2 and 9 related to RQ 1.

RQ1: ***Is there a need for a management system at an Institute level?***

Q 1 *Do you use electronic learning resources?*

It was important to establish if tutors used electronic learning resources. The mere fact that they were all 'computer tutors' didn't necessarily mean that they used computing technology as learning tools. They might have been teaching 'about' the computer only. The researcher knew that many had paper-based learning resources and wondered if they had converted them or designed new for use on the computer.

Most tutors have recognised the advantages of using electronic resources, primarily for storage and transportation. However, other

factors have come in to play over the last ten years that have necessitated the day to day use of electronic resources.

Use of the World Wide Web has exposed the public to information often presented in formats previously considered highly professional. Students now expect to have handouts and other course related material available in electronic form.

Cost cutting across tertiary institutions in order to survive has been another reason for using electronic resources wherever possible. Costs of stationery, printing and postage can be reduced significantly if electronic versions are made and used.

Q 2 *Do you use other types of learning resources?*

The researcher wanted to know if non-electronic types of resources would need to be indexed. If hardly anyone was using such resources then there would be no issue. However, as nine out of the 10 respondents claimed to use such resources, they are then still to be accounted for and managed in such a system.

Respondents were given a list of all possible resources before they completed the questionnaire, so they were well aware of the types of 'other' resources in question.

Q 3 *Did you create/develop/assemble any of these resources?*

It is the writer's impression that all tutors create resources and the question needed to be asked of tutors from a wider range of institutions.

All ratings were positive and one tutor even commented that there would not have been any resources for his/her course had he/she not created them.

I 1 *Assuming you have electronic and paper-based learning resources, do you have any system with which to organize them?*

Tutors did try to organize their resources with the tools available to them at this time. Such tools consisted of shared drives on their employee's intranets or Managed Learning Environments, or on their own systems at home.

Institutions had failed to devise a system to meet their needs.

Paper-based and other files were kept in their offices with no indexing or cataloguing facilities to assist them, yet were easier to locate because they were kept in one place and were fewer in number.

MOODLE and BLACKBOARD were the MLEs used. Tutors felt they did not meet their needs in regard to storing and managing resources. The biggest problem was redundancy.

I 2 *Explain how you organize your resources.*

Tutors kept their resources on drives and in folders, but found the organization of them to be a problem. They usually had a number of copies of each resource.

Summary

The writer wanted to be sure that the people she was talking to actually used electronic learning resources. The mere fact that they were all 'computer tutors' didn't necessarily mean that they used

computing technology as learning tools. They might have been teaching 'about' the computer only. She knew that many had paper-based learning resources and wondered if they had converted them or designed new ones for use on the computer.

All tutors used different types of learning resources and had often developed them. Apart from MLEs, tutors used their own systems to organize their resources and the physical resources were better able to be managed because they were kept in one location.

Q 5,6,8,12,14, R 2 and I 3, 4 and 7, related to RQ 2.

RQ2 ***What might the purpose of the management system be?***

Q 5 *Do you consider that you own these resources?*

The writer wanted to get a view on tutors' attitudes to ownership of resources. It was wondered if it were possible that if they don't 'feel ownership' they might not put as much effort into the overall quality of the resources they had created and later organizing.

A unanimous opinion existed among all ten tutors that their institute definitely owned the resources they had created.

Q 6 *Does your institute have a policy on ownership of tutor-created resources?*

Knowing if their institute had a policy on the subject might indicate that the subject had crossed their minds before and so therefore they might have an opinion on it.

Seven respondents said that their institutes had a policy, two said their institutes did not and one did not know.

Q 8 *Does your institute give credit to tutors who create learning resources? If yes, please explain how in the Comments box.*

It was wondered if institutions recognize the extra time, effort and talent of tutors that create such resources by rewarding them and if so, what sort of recognition is currently given. It is possible that the institute's stance on this could impact on attitudes of potential 'resource creators' towards their institutions.

Only two of the ten tutors stated that their institutions gave credit for such activities, one institution gave awards for best teaching practice and recognized this in performance reviews. At the other institution the only credit one is given is by having one's name on the resource, be it a book or a site on the MLE.

Two stated that creating resources for their courses is considered part of their job.

Q 12 *Do you have any means with which to convert paper-based learning resources into electronic format if necessary?*

The writer actually wanted to know if any institution had a skilled person to do this. This was intended to refer to more complicated conversion work than simply scanning or copying.

One respondent talked about an e-learning team, but most indicated that they had the means to convert non-electronic learning resources to electronic format; they assumed it meant a computer and themselves! The question should have been "Does your institution

provide qualified, skilled staff to interpret your learning resources into pedagogically appropriate electronic formats?" Tutors then have scanned or re-typed or re-worked their learning resources so that they can be used electronically.

It is possible that most institutions do not yet have the means with which to do this and the task, if and when deemed necessary, is carried out by a tutor.

Type 'learning resources' into a search engine such as GOOGLE SCHOLAR and one will be overwhelmed with papers on web-based creations. In this research 'electronic' does not necessarily mean 'web-based', nor is it desirable that it should. Perhaps we should refer to electronic resources as 'any resource that can be viewed or interacted with on a computer'.

Q 14 *Have you ever wished to alter a learning resource created by another person?*

Even the best learning resource might not completely suit the needs of a tutor and some 'tweaking' might be desirable. It was wondered if any tutors have never wanted to tweak something. If none, then it was possible generic resources could be useful. If a significant number wanted to tweak, then would open source type resources better meet the needs of individual tutoring methods and practices?

All indicated that they had wanted at some time to alter an existing learning resource and gave different reasons for doing so. None mentioned copyright or said that they had asked permission to do so. More unanswered questions have arisen here – 'did those resources display their creator's name?' 'What sort of resources were they?'

'Accepting that each tutor teaches in his/her own way, would they like an open source system?'

R 2 *Learning resources should bear the name of their creator and/or source of information*

Eight out of the ten respondents agreed with this statement; half of them strongly.

People feel recognition is necessary and even appear to prefer it than to be paid for creating resources.

I 3 *If you were to teach a new course (you may or may not be confident in the topic) how do you go about amassing resources?*

One department had addressed the fact that tutors sometimes have to teach classes for absent colleagues and had created course kits for such occasions. While this is a good idea for one-off babysitting type sessions, it would not meet the needs of effective continuity of classes at a higher level.

This question was another way of asking if tutors shared resources with each other, and if any 'borrowed' would have to be changed in some way to meet their particular needs.

I 4 *What do you find most frustrating about learning resources?*

Trying to determine tutor's feelings about their resources was the motivation for asking this question. Storage and suitability for different levels appeared to be the main sources of frustration.

I 7 *Do you put your name, as the creator, on all the resources that you have made?*

It is an author's right to put their name on anything they have created. This is separate from ownership.

Only one of the four did this on a regular basis, the other three interviewees had not thought of it. They all said they would do so in future.

Summary

The writer felt that interviewees, while acknowledging that the learning resources in question were owned by their institutions, had not considered that authorship had any rights.

The writer simply wanted to get a view on tutors' attitudes towards resources and had wondered if it was possible that if they didn't 'feel ownership, they might not put as much effort into the quality of the resource? On the other hand, if they thought they owned them, where could that lead in terms of innovation and quality?

Tutors seemed happy with the thought that they were 'authors' and seemed ready to advertise the fact.

Q7, R 3,4,5,6,7 and 11, and I 8 are related to RQ3

RQ3 *What would this system comprise of?*

Q 7 *To your knowledge, does your institute have the facilities and resources to create professional electronic resources?*

Quality of content and presentation of a learning resource can make or break its usefulness. Students are used to high quality presentation now that so many use the World Wide Web for research. It was wondered if institutions realize this and take this into account.

It was also going to be interesting to know how many institutions employ suitably skilled people to perform this work. 'Suitably skilled' includes all aspects of electronic learning tools from educational and communication theory through to multi media design and programming.

Over half of the respondents indicated that their institutions had the facilities and resources to create professional resources. One wonders then why so many tutors create their own resources.

R 3 *A learning resource management system (LRMS) should contain links to electronic learning resources*

Eight respondents thought a management system should contain links to resources. Two did not provide a rating.

The usefulness of a system can be increased by actually containing or linking to resources. This gives the user more interactivity with the system.

R 4 *A LRMS should be able to indicate the location of paper-based or other type of learning resource*

Nine respondents thought such a system should be able to indicate the location of a resource. It would indeed be most useful to be able to source other learning resources by having the LRMS show the location of such.

R 5 *A facility where a new learning resource can be examined, tested and reviewed should be available within a LRMS*

No-one felt negative towards a facility for moderation, but support was nearly equally divided between positive and negative ratings.

Not so much "should resources be moderated?" as "should we have a place within a system where this can happen?" Most agreed but it wasn't an overwhelming affirmation.

R 6 *A description of a learning resource should be available within a LRMS*

Eight respondents thought that a description of each learning resource should be available in the system.

What's the use of a system that doesn't describe its contents? It could almost be said to be a data dictionary to describe the data within.

R 7 *Possible uses of learning resources should be available within a LRMS*

Five respondents thought that recommended possible uses for resources should exist in the system ranged from strongly for, to no feelings. No negatives were indicated.

It would be helpful to know why the creator/developer/assembler produced and published each resource. Presumably, tutors would ultimately be able to decide for themselves how they used the resource.

R 11 *A LRMS should have a full-time administrator*

Only four respondents thought that a LRMS should have a full-time administrator. Maybe those that displayed little or no enthusiasm for this suggestion could be more accurately described as 'realists'. It

would be very nice to have a system where one person can administer it full time, but is it not feasible in these fiscally-challenged times.

I 8 *If electronic, explain how resources are published and shared.*

Resources were not published, but simply placed on a common drive where others could gain access.

Sharing would have come about through verbal consent rather than online permissions.

Summary

Quality of content and presentation of a learning resource could make or break its usefulness. It appears that few institutions use suitably skilled people to do this at this point in time.

There seemed to be no vehicle to publish resources, other than to load them onto a shared drive where they may be accessed by others who have rights to that drive

Q 4,9,10,11,13 and 15, R 8,9,10 and 12, and I 5,6,10,11 and 12 are related to **RQ4**

RQ4 *How would this system be used?*

Q 4 *Do you share any of these resources with your colleagues?*

This question was intended to establish if any people did not share resources because they did not want to, but those who did not share were the only tutors teaching in those disciplines.

Eight out of the ten tutors stated that they shared resources. The writer was left with the impression that their resources were available to be shared, not that resources they had created were being used by other tutors or even institutions on a regular basis. A more specific question should have been asked here; indeed more research could be conducted in this area with a view to instigating collaborative resource creation and use.

Q 9 *How do you think credit should be given to the creator of resources? (Please use Comments box).*

The writer was interested to know what tutors and lecturers would like to happen in regard to reward for such work. Despite what individual contracts say, there is no doubt that extra time and effort, to say nothing of skill, is required to create such resources.

All but one respondent gave an opinion here. Three mentioned or referred to provision of time. Only one mentioned payment in terms of money.

Most respondents wanted recognition, either by some reference on the resource or by acknowledgement by seniors within the workplace. A question that arises here, relating to copyright, is, "Are institutions or even tutors, aware of the moral rights of the authors of work?"

This result demonstrates that throwing money at a situation does not necessarily solve it. People need affirmation and acknowledgement.

Q 10 *Do you have any means of indexing and/or cataloguing yours and others' learning resources?*

It was important to establish how tutors currently manage their learning resources to determine if a system would be useful to them.

Some institutions use managed learning environments (MLEs). Two said they had a means with which to index or catalogue their resources. One of these said they used Blackboard for this, but then went on to say that resources had gone missing and so they were looking at creating a system on the shared drive of their network.

Most respondents did not have a means of cataloguing or indexing their learning resources.

Existing Managed Learning Environments are usually 'managed' by others (IT service centres or network administrators, for instance). Therefore the tutors do not have control over their resources and are unable to share them with others unless the network administrator gives permission.

The existing features of the MLE dictate what can happen to objects (files) stored within it. For example, it might not support multiple accesses to one resource; often a resource has to be loaded into many different areas if multiple sharing is to take place. Such a methodology is unacceptable and contrary to the best practices of any database specialist.

Indexing and cataloguing infer some sort of order is made of contents and therefore some search facility is available. Some MLEs provide this feature, but again, difficulties are often encountered if the MLE is not supported by a sound database structure.

A search feature is of paramount importance if a tutor is to be able to quickly locate resources. Many tutors would agree that they waste

time searching for existing resources in their folders, both manual and electronic. Browsing capabilities should also be available for those tutors who can spare the time to look around for possible resources. Library databases have not always included this feature (Cunningham, 2002) but now that people are using browsing technology to navigate the Internet, it seems logical to suggest that it could be used when locating resources in such a system.

Q 11 *Do you and your colleagues keep your learning resources in a central location?*

The writer wanted to know if anyone had made provision to store their collective resources in one place. If they had, how had that happened? Had someone already thought about this situation?

Four respondents indicated that they had a central place in which to store resources; two used the managed learning environments, Blackboard and MOODLE. No-one mentioned an intranet or database. Most did not have a central location where learning resources could be stored.

It is desirable that learning resources can be stored in a central location so that time is not wasted trying to locate any particular resource and so that more than one person can use the resource at the same time.

Q 13 *Are your learning resources moderated?*

3 respondents affirmed that their resources were moderated and 5 said they were not. There seemed to be confusion between 'resources' and assessment material. eLearning material was also mentioned as being

moderated or evaluated. The writer does not feel that an answer, either way, has been achieved.

Q 15 *What other issues are important to you in regard to the origins and use of learning resources?*

A range of matters important to tutors arose here; some described a 'wish list' of features they would like to see in their institutions, ranging from more interactive technology in classrooms and wireless capability to searching out textbooks that were accompanied by electronic learning resources.

Important issues such as access to all resources, despite their formats and versions, should be addressed while another supported sharing of resources with other tertiary institutions.

There is a huge choice of technological 'toys' that could be used as, or in conjunction with, learning resources. It is no wonder that tutors find it hard to come up with one or two firm ideas of particular issues that are important to them as they utilize them.

One issue that did not arise in this research was that of the often daunting range of new technology and with institutions' requirement for their tutors to stay up to date in their field. Tutors can feel intimidated by others, both tutors and students, who are conversant with new technology. Institutions should stay aware of this situation and be open to supporting their staff with training and networking opportunities to build up their knowledge and skill base.

R 8 *A LRMS should match up a learning resource with appropriate papers/courses.*

One respondent felt strongly that the system should not offer any match between a resource and paper (course), the majority thought that it should.

While most liked the idea of a match between resource and course/paper, one most definitely did not and one wonders why? Would this 'blinker' tutors on how to use the resource? Would it restrict or influence?

R 9 *Feedback opportunities should be available within a LRMS*

Most respondents thought that feedback opportunities should be available within the LRMS and the strength of their feelings ranged from medium to strong.

This seems to show a willingness to learn on the part of tutors. It would be easy to refuse or ignore feedback. Tutors know that without feedback, systems die. It was interesting that respondents did not connect this question with 'moderation' or see the possibilities of feedback and control constituting the moderation process.

R 10 *A learning resource should carry a rating based on the feedback within the LRMS*

Most had no opinion or did not agree. This was interesting. The quality or effectiveness of a resource would not only come through ratings, but through a range of other controls.

R 12 *LRMS should log the use of each learning resource*

4 respondents strongly agreed that the use of each learning resource should be logged, or recorded and 1 person agreed. 7 respondents however disagreed, while 2 people offered no opinion.

It appears that a slightly larger number of tutors do not want a system that records events; that how they use resources and how often is still an area over which they maintain choice and autonomy.

I 5 *If you have ever wished to alter someone else's resource, explain why.*

No-one seems happy with others' resources! One wonders if, even with moderation facilities in place and an effective management system, tutors would still want to change resources.

I 6 *Do you have any resources that you term 'generic'? That is, can you use them on more than one course that you teach?*

All agreed that they had 'generic' resources. Only one person mentioned the fact that applying such resources to different levels could be a problem.

It could be possible that a resource could be made for each generic topic and shared without having to alter it. It could be possible for tutors to collaborate on shared resources.

I 10 *Do you use electronic resources that accompany text? Teaching or learning?*

The answers to this question were surprising. Most courses in the institution have an accompanying text, and many publisher now

provide CDs or DVDs containing resources for the tutor and/or the students.

Two did concur that they used such resources for exercises in class, but did not sound too enthusiastic.

Publishers often provide a CD to support their books. The CD may contain exercises or electronic presentations to accompany book chapters. Sometimes the CD contains a shareware copy of a version of software; this is usually limited to a time frame for use, after which it expires and becomes useless.

I 11 *If you think that tutor-created electronic learning resources should be moderated, how do you think this could be accomplished?*

While most tutors agreed that it could be useful, they thought it could be difficult to accomplish.

Quality was important to tutors; their credibility was at stake. The credibility of the course, and ultimately the institution can partly rest on the quality of its resources. Never was this truer than in this present age where people have access to top quality materials through magazines, newspapers, television, and the Internet.

I 12 *Please tell me about any other issues that you may regard as important in regard to learning resources.*

Two comments were made here that were contrary to previously collected data; those from Interviewees C and D.

Two issues arose here; one tutor experienced an environment where resources were not shared. It was interesting that in previous data gathering methods, so many tutors claimed to share their resources yet here was a statement to the opposite effect.

Another tutor was concerned about the resources she was forced to use; they were flawed and she felt intimidated about raising the issue as her 'colleagues in power' had created them.

Summary

The writer felt that tutors reinvent the wheel constantly and wondered if any had realised that it was not necessary to do so. The research showed that tutors were certainly not possessive of their resources.

The writer thought it would be interesting to know what tutors would like to happen in regard to reward for their efforts in creating resources; despite what individual's contracts say, there was no doubt that extra time and effort, to say nothing of skill, was required to create such resources. All tutors appeared to want was credit for their work in the form of recognition such as their name on the resource.

How tutors currently managed their learning resources was another area of interest. Some institutes had learning environments but these did not fulfil the role of 'managing' resources? There was no mention of indexes or catalogues in the responses nor reference to whether users could find and use other people's resources? Apparently, tutors simply used their own methods of file management within their institute's network drives, or simply on a PC drive.

The writer wanted to know if anyone had made provision to store their collective resources in one place and if so, how had that happened?

This had not apparently happened.

The writer also wanted to know if anyone had viewed their learning resources before they were 'let loose' on the students. With the greatest respect, some learning resources handed to her, as a student, over the years, were pathetic and did nothing for her attitude toward the tutor or the subject on which the study was based. At least if someone else had viewed them (moderated) some improvement might have been suggested and used. No processes for quality management appeared to be in place.

Chapter 6 - Conclusions and Recommendations

The purpose of this chapter is to examine the outcomes from the previous chapter to ascertain if the following Research Objectives have been met.

Research Objectives Proposed

RO1 To establish if a management system was needed at an institute level

RO2 To postulate the purpose of a management system

RO3 To identify the features of this system

RO4 To recommend ways in which the system may be used

Research Objectives Met

RO1 (Need)

I wanted to be sure that the people I was talking to actually used electronic learning resources. The mere fact that they were all 'computer tutors' didn't necessarily mean that they used computing technology as learning tools. They might have been teaching 'about' the computer only. I knew that many had paper-based learning resources and wondered if they had converted them or designed new for use on the computer.

All 10 respondents had developed their own resources, most of them electronic, for a number of reasons and were having trouble organizing them. They agreed that a management system was needed for a number of reasons.

RO2 (Purpose)

The purpose of a learning resource management system should be to fulfill the following:

- Be able to store electronic resources or information about electronic and other types of resources'
- Allow efficient and effective location and retrieval of resources.
- Have capability to inform would-be users about each resource.
- Allow multiple use of any stored resource at the same time.
- Be able to support all popular software and associated versions of software.
- Have the ability to link to resources within and without its boundaries.
- Have the ability to support quality control features, including the receiving and processing of feedback.

RO3 (Features)

Such a management system could consist of the following:

Support From all levels of users, initially from Management.

People Skilled and qualified people to design, operate and maintain the system.

Policies To provide guidelines for the users of the system.

Processes That describe and support every part of the system.

Software Including, but not limited to, database technology with indexing and searching features.

Hardware Machinery for input, processing and output.

Data Resources and associated data.

RO4 (Uses)

To provide a repository and catalogued index for resources:

The efficient and effective use of learning resources was the motivation behind this research. This encompasses places for storage, size, versions, descriptions and search features.

To provide a vehicle for publishing and sharing resources between users:

Tutors could publish their resources, offer them up for sharing and then gain feedback from their peers.

To convert existing resources into electronic resources:

Facilities should be in place to convert paper-based resources if required. Facilities should include consultation and advice from people with expertise, and qualified staff to perform conversion and quality control applications.

Some existing managed environments could be extended to fulfill many of the features brought to light through this research. Institutions should explore how their chosen MLEs could do this.

Quality Management

The quality and effectiveness of such resources should be a concern to institutions. There is no doubt that most tutors in the tertiary sector do not have the specialised skills, the time or the finance with which to create effective learning resources.

There is also no doubt that today's students are used to viewing quality text, diagrams, illustrations, photographs, animations and other on-line representations. They have come to expect a similar degree of quality in their learning resources and finding them lacking in this way could lower their expectations of the course and tutor.

Whilst management of quality was not a major focus of this research, the author strongly recommends it as an area for further study.

Review of Research Plan

The adopted stance of 'understanding rather than proving' assisted the author to undertake collection and interpretation of data for this study because it allowed her to interact with respondents, particularly those being interviewed.

Whilst each interview was based on the same twelve questions, each interview was quite different because of the differences in interviewees, locations and disciplines. Different interviewing techniques had to be employed before, during and after the interviews; for instance, the researcher did not always have control over the environment and had to try to influence it at the start of the interview in order to better elicit information.

An example of this is that one tutor invited the interviewer into her office and sat on her side of the desk waiting to be interviewed. If effective communication was to take place it was necessary for her to be on the same side of the desk as the interviewer. This was accomplished by the interviewer suggesting they both go and find a cup of coffee somewhere. No misconceptions of status or power on either side should be allowed to influence the communication that was so vital to the extraction of data.

In fact, the variety of communication processes in each interview was quite stimulating for the interviewer and more than the original 12 questions were asked and answered, as well discussion taking place around other issues that arose.

It would have been very useful to follow up on the people who completed the written survey; to hold interviews with each of them. Far more data would have been available and a great deal more information would now be available on this subject.

After reviewing and analyzing the data from this research, the author is definitely of the opinion that this study is merely a launching pad for much more study. She is initially able to identify a number of focus areas worth further consideration. For instance, personal details of respondents were not required in the survey so the researcher was unable to identify any gender, age or discipline differences could have influenced the data..

Perhaps the tutor's gender or age could have influenced her/his perception, creation and use of a resource. The discipline certainly would have an influence on the type of resources used and, depending on a number of other factors, could affect how the image of that discipline is presented to students.

The survey did not take into account other contributing factors such as environments and working cultures. It would have been useful to further exploit the chosen methodology and explored at least some of that.

It would have been useful also to employ other methods of data gathering such as observation, participation and focus groups, and only by meeting and interviewing all participants could this have been possible. It would have been interesting to experience other institutions' managed learning environments, their physical learning environments, and their working environments.

Where to from here

The subject of this research is a passion of the writer, who has developed and generally experimented with prototypes of a number of potential management system features, including a number of databases and some SCORM objects, over the past four years. There is no doubt that learning resources will increase in quantity and evolve in different formats to match the technology currently in use.

Educators must continue to adapt to new technology in the hope that more efficient ways of creating, storing, retrieving, utilizing and delivering learning resources can be identified (Franklin & Peat, 2000).

One area of focus must be how institutions and tutors will teach their courses in the future. Will they lean more heavily on materials suitable for online delivery or will the classroom continue to be the main arena for delivery and assessment (Holt, Rice, Smissen & Bowly, 2001). Whatever happens, learning resources will grow in number, size and format, and will therefore need to be cared for and managed in a manner that will gain optimum benefit from their use and justify the effort it took to create them.

References

- Agostino, S., Bennett, S., Lockyer, L., & Haper, B. *Investigating the suitability of pedagogical descriptors for digital learning resources*. Paper presented at World Conference on Educational Multimedia, Hypermedia and Telecommunications (EDMEDIA) (2004). Lugano, Switzerland
- Allert, H., Dhraief, H., & Nejdil, W. (2002). *How are learning objects used in learning processes? Instructional roles of learning objects in LOM*. Learning Lab Lower Saxony, University of Hanover. Retrieved May 27 2008 from citeseer.ist.psu.edu/allert02how.html
- Barron, A. E., & Lyskawa, C. (1998). A review of tools for developing and managing online courses. Retrieved from *Teacher education handbook*. Retrieved 20 February, 2008 from <http://scholar.google.co.nz/scholar?num=100&hl=en&lr=&q=An+n+E+Barron+%2B+Chet+Lyskawa&btnG=Search>
- Barton, Jane and Currier, Sarah and Hey, Jessie M. N. (2003) Building quality assurance into metadata creation: an analysis based on the learning objects and e-prints communities of practice. In Sutton, S. and Greenberg, J. and Tennis, J., Eds. *Proceedings 2003 Dublin Core Conference: Supporting Communities of Discourse and Practice - Metadata Research and Applications*, Seattle, Washington (USA).
- Boyle, T. (2003). Design principles for authoring dynamic, reusable learning objects. *Australian Journal of Educational Technology* 19(1), 46-58.
- Bradley, C. & Boyle, T. (2004). *The Development and deployment of multimedia learning objects*. Retrieved 7 May 2008 from

<http://www.cs.kuleuven.ac.be/~erikd/PRES/2003/LO2003/Bradley.pdf>

- Bratina, T.A., Hayes, D. & Blumsack, S.L. (2002). *Preparing teachers to use learning objects*. The Technology Source, Nov/Dec 2002 p.2.) Retrieved February 2008 from <http://ts.mivu.org/default.asp?show=article&id=1034>.
- Bremer, D. & Bryant, R. *A comparison of two learning management systems: Moodle vs Blackboard*. A paper presented at NACCQ Conference, July 2005. Tauranga, New Zealand.
- Brotherton, B. (Ed.) (1999). *The handbook of contemporary hospitality management research*. New York: John Wiley.
- Brown, M., Riley, T. & Santos, I. *Weaving a workable web: lessons from an online post-graduate distance education course*. A paper presented at the Joint AARF and NZARE Conference, Melbourne, November 1999.
- Corich, S. *Is it time to Moodle?* A paper presented at NACCQ Conference, Tauranga, July 2005.
- Cresswell, J. W. (2003). *Research design: qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.
- Cunningham, S. J. *Building a digital library from the ground up: an examination of emergent information resources in the machine learning community*. A paper presented at International Conference on Asian Digital Libraries 2002. Berlin: Springer-Verlag.
- Danaher, P. A., Luck, J., Jones, D. & McConnachie, J. *Course management systems: innovation versus managerialism*. A paper presented at the International Conference of the Association for Learning Technology, 14-16 Sept 2004, Exeter, England.

- Franklin, S & Peat, M. (2000). Managing change: the use of mixed delivery modes to increase learning opportunities. *Australian Journal of Educational Technology* 17(1), 37-49. Retrieved October 6, 2006, from <http://www.ascilite.org.au/ajet/ajet17/franklin.html>
- Friesen, N. (2005a) Interoperability and learning objects: an overview of e-learning standardization. *Interdisciplinary Journal of Knowledge and Learning Objects*. Volume1/v1p023-031
- Heinrich, E, & Chen, J. (2001). *A framework for the multi-model description of learning objects*. A paper presented at the International Conference on Dublin Core and Metadata Applications. Japan, 22– 26 October. Retrieved February 20, 2006, from <http://www.nii.ac.jp/dc2001/>
- Hicks, M., Reid, I. & George, R. *Enhancing online teaching: designing responsive learning environments*. A paper presented at the HERDSA Annual international Conference, Melbourne 1999.
- Hodgins, H.W. *The future of learning objects*. A paper presented at the ECI Conference on e-Technologies in Engineering Education: Learning Outcomes Providing Future Possibilities. Davos: Switzerland 2002.
- Holt, D., Rice, M., Smissen, I., & Bowly, J. *Towards institution-wide online teaching and learning systems: trends, drivers and issues*. A paper presented at the ASCILITE Conference Meeting at the Crossroads Melbourne: Australia 2001. Retrieved August 12, 2006, from <http://www.ascilite.org.au/conferences/melbourne01/pdf/papers/holtd.pdf><http://www.ascilite.org.au/conferences/melbourne01/pdf/papers/holtd.pdf>

- Huddlestone, J & Pike, J. (2006) *An integrated model for learning object reuse*. A paper presented at The Interservice/Industry Training, Simulation and Education Conference (I/IT/SEC). Florida 2008. Retrieved July 10, 2008 from <http://ntsa.metapress.com/app/home/main.asp?referrer=backto>
- Jamieson, J. & Verhaart, M. *Issues surrounding course content migration: Blackboard to Moodle*. A paper presented at the NACCQ Conference, July 2005, Tauranga, New Zealand.
- Kennedy, D. M., & McNaught, C. *Computer-based cognitive tools: description and design*. A paper presented at the World Conference on Educational Multimedia, Hypermedia & Telecommunications. Tampere, Finland, 25-30 June 2001. Retrieved May 6 2008 from http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED466185&ERICExtSearch_SearchType_0=no&accno=ED466185
- McNaught, C. *Quality assurance for online courses: from policy to process to improvement?* A paper presented at the ASCILITE Conference. Melbourne, 9 – 11 October 2001.
- McNaught, C., Burd, A., Whithear, K., Prescott, J., & Browning, G. (2002). It takes more than metadata and stories of success: understanding barriers to reuse of computer facilitated learning resources. *Australian Journal of Educational Technology*, 19(1), 72–86. Retrieved July 19, 2006, from <http://www.ascilite.org.au/ajet/ajet19/mcnaught.html>
- Merlot.org (n.d.) Welcome to MERLOY. Retrieved May 5, 2008 from <http://www.merlot.org/merlot/iindex.htm>
- Nanaykkara, C. (2007). A model of user acceptance of learning management systems: a study within tertiary institutions in New

- Zealand. *The International Journal of Learning*, Volume 13, Issue 12, pp.223-232. Retrieved 27 May 2008 from <http://scholar.google.co.nz/scholar?num=100&hl=en&lr=&q=Charith+Nanayakkara&btnG=Search>
- Nichols, M. (2007). No. 1: E-Learning in context. In *E-Primer Series. Bible College of New Zealand*, (p2.) Retrieved 27 May, 2007 from <http://www.flinz.ac.nz/>.
- Pain, D., & Le Heron, J. (2003). WebCT and online assessment: the best thing since SOAP? *Educational Technology and Society*, 6(2), 62-71. Retrieved 20 May, 2008 from http://www.ifets.info/journals/6_2/7.html
- Parrish, P. E. (2004). The trouble with learning objects. *Educational and Technology Research and Development*. Volume 52. No 1. pp 49-67. Retrieved 20 May, 2008 from <http://www.springerlink.com/content/j2j16gk743153717/>
- Polsani, P. R. (2003). Use and abuse of reusable learning objects. *Journal of Digital Information*, 4. Article No. 164, 2003. Themes: Information Management.
- Rogers, C.F., & Tabatabaei, M. (2005). WebCT usage: are information systems faculty using e-learning courseware tools more than others on campus? *Issues in Information Systems*. Vol V1. No. 1, pp 142.
- Smith-Nash, S. (2005). Learning objects, learning object repositories and learning theory: preliminary best practices for online courses. *Interdisciplinary Journal of Knowledge and Learning Objects*, Vol. 1, 2005. pp. 217.
- Storey, B. Phillips., M. Maczewski., and M. Wang. Evaluating the usability of web-based learning tools. *Educational Technology &*

- Society journal*, 5(3), July 2002. Retrieved 20 May, 2008 from <http://citeseer.ist.psu.edu/storey02evaluating.html>
- Tiffin, J., & Rajasingham, L. (1995). *In search of the virtual class: education in an information society*. London: Routledge.
- Trochim, W.M.K. (2008). *Deductive and Inductive Thinking*. Retrieved March 19, 2008, from <http://www.socialresearchmethods.net/kb/dedind.php>
- Tzoumakas, V., & Theodoulidis, B. (2003). *Visualizing learning networks for instructor support*. A paper presented at the IASTED International Conference on Web-Based Education. Innsbruck, Austria. Retrieved April 25, 2005 from http://www.hci.gr/files/461-827_tzoumakas_final.pdf
- Vandepite, P., Van Rentergem, L., Duval, E., Ternier, S. & Neven, F. (2003). *Bridging an LCM and an LMS: a Blackboard building block for the ARIADNE knowledge pool system*. A paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications 2003 Chesapeake, VA: AACE.
- Verbert, K. & Duval, E. *Towards a global architecture for learning objects: a comparative analysis of learning object content models*. A paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications 2004 Chesapeake, VA: AACE.
- Weaver, D., Nair, C. S., & Spratt, C. *Evaluation: WebCT and the Student Experience*. A paper presented at the Making a Difference: Evaluations and Assessment Conference. 30 November - 1 December, 2005. Sydney.

Appendices



Appendix 1: Request to Participate in Survey

“Stop Re-inventing the Wheel: Requirements for the Electronic Management of Tutor-Created Resources in Institutes of Technology and Polytechnics.”

We would be grateful if you would take a few minutes (about 15 – 30 minutes) to complete the questionnaire enclosed and return it to us by email: bblakke@xtra.co.nz by 20 June 2005. You are more than welcome to make any additional comments, simply by typing your words in the end of this sheet. Your co-operation will be greatly appreciated.

This is a study on the management of learning resources in use in Polytechnics and ITPs in New Zealand in an endeavour to identify desirable characteristics of a proposed electronic system to manage them.

The primary researcher is Gwen BLAKE. The research will be conducted under supervision from UNITEC. The research will take place over an 8-month period from May 2005 to December 2005.

The information you provide will be kept confidential. An acknowledgement of your contribution, the result and finding of this study will be sent to you at the end of this research. If you wish, you can be listed as one of our research co-operators in the research report, which will be made available for all New Zealand TEIs.

Please feel free to contact the primary researcher (Gwen BLAKE) if you have any further questions.

Gwen Blake - (Primary Researcher)

202 Regan Street

STRATFORD

Taranaki Email: bblakke@xtra.co.nz; Tel/Fax: 0064 6 7656533

23 May 2005

Appendix 2: Questionnaire about Learning Resources

Definition of 'learning resource'

Tutor created/developed/assembled tools to assist a tutor to share knowledge and/or skills.

Such resources could be in electronic form, that is to say they have been created in a format suitable for viewing on a computer or, through a computer and displayed on a large screen through data show.

Resources could be paper-based or made of some other material.

Examples of learning resources to which the author refers:

Electronic

- Individual PowerPoint slides
- Collection of PowerPoint slides assembled into a slide show
- Individual PDF files
- Collection of PDF files linked together to form a slideshow
- Word documents
- Excel documents
- Access documents (Database)
- Resources created with HTML
- Any electronic resource created by and supplied by book publishers. (Such resources are supplied to tutors for use with a particular text book.)
- A resource created using any software able to be used on the institute's computer network
- Video tapes
- DVDs
- CD ROMS
- Cassette tapes
- 3.5" floppy discs

Paper-based

- Class exercises such as crosswords or lists of tasks to be performed.
- Information sheets
- Individual and collections of readings
- Cut outs of cardboard shapes for practical exercises

- Collections of items previously assembled for one particular purpose. i.e. packs of string, paper clips, drinking straws, rubber bands, Sellotape, styrene cups, etc. for use in problem solving exercises plus instructions
- Collection of felt tipped pens and newsprint for poster making plus instructions

Learning resources in this case does not include course materials such as Course Descriptors, Outlines, stationery or machinery on which to run electronic resources.

Definition of 'Management'

In this instance, management is the term used to indicate a set of policies, procedures, processes, people and data that, used in conjunction with hardware and software, will provide a system with which an educator can store, locate, learn about, manipulate, publish and present learning resources.

Please answer each question by placing a tick in either the Yes or No box. Please feel free to use the Comments box if you wish.

Q No	Question	Yes	No	Comments
1	Do you use electronic learning resources?			
2	Do you use other types of learning resources?			
3	Did you create/develop/assemble any of these resources?			
4	Do you share any of these resources with your colleagues?			
5	Do you consider that you own these resources?			
6	Does your institute have a policy on ownership of tutor-created resources?			
7	To your knowledge, does your			

	institute have the facilities and resources to create professional electronic resources?			
8	Does your institute give credit to tutors who create learning resources? If yes, please explain how in the Comments box.			
9	How do you think credit should be given to the creator of resources? (Please use Comments box).			
10	Do you have any means of indexing and/or cataloguing yours and others' learning resources?			
11	Do you and your colleagues keep your learning resources in a central location?			
12	Do you have any means with which to convert paper-based learning resources into electronic format if necessary?			
13	Are your learning resources moderated?			
14	Have you ever wished to alter a learning resources created by another person?			
15	What other issues are important to you in regard to the origins and use of learning resources?			

"Given that there is a need for an electronic management system, to manage/share tutor created resources to avoid unnecessary duplication or effort, I think that..."

Please indicate with a tick in the appropriate box which of the headings below most describes your feelings about the following issues:

5 = strongly agree

4 = agree

3 = don't have any opinion

2 = disagree

1 = strongly disagree

No	Statement	5	4	3	2	1
1	Learning resources should be moderated to ensure quality					
2	Learning resources should bear the name of their creator and/or source of information					
3	A learning resource management system (LRMS) should contain links to electronic learning resources					
4	A LRMS should be able to indicate the location of paper-based or other type of learning resource					
5	A facility where a new learning resource can be examined, tested and reviewed should be available within a LRMS					
6	A description of a learning resource should be available within a LRMS					
7	Possible uses of learning resources should be available within a LRMS					
8	A LRMS should match up a learning resource with appropriate papers/courses.					
9	Feedback opportunities should be available within a LRMS					
10	A learning resource should carry a rating based on the feedback within the LRMS					
11	A LRMS should have a full-time administrator					
12	A LRMS should log the use of each learning					

	resource					
Please offer any further suggestions or ideas that you may have for such a system						

Will you be attending the Annual NACCQ Conference in Tauranga? (Please delete as appropriate)

 Y **N**

If you indicated Y, would you allow me to meet up with you and interview you at the conference?

 Y **N**

If you answered Y to the last two questions, please email me at bblakke@xtra.co.nz to confirm and I will contact you.

Your confidentiality and anonymity is assured.

Thank you for taking the time to assist me in my research by completing this questionnaire. I will advise you of the outcome of this research in due course.

I hope that this research will lead to the design and implementation of such a system. If such a system does eventuate, then you may regard yourself as having played an important role in its initial design – thank you.

Gwen Blake



Appendix 3: Research Participation

Consent Form

“Stop Re-inventing the Wheel: Requirements for the Electronic Management of Tutor-Created Resources in Institutes of Technology and Polytechnics.”

This is a proposed study on the management of learning resources in use in Polytechnics and ITPs in New Zealand in an endeavour to identify desirable characteristics of a proposed electronic system to manage them.

The research is being done by Gwen Blake from WITT, Taranaki, New Zealand, and will be supervised by Dr Donald Joyce, UNITEC and Dr Noel Bridgeman, UNITEC.

Name of Participant:.....

I have seen the Information Sheet dated 23 May 2005 for people taking part in the learning resources research. I have had the opportunity to read the contents of the information sheet and to discuss the project with Gwen Blake. I am satisfied with the

explanations I have been given. I understand that taking part in this project is voluntary (my choice) and that I may withdraw from the project at any time.

I understand that I can withdraw from the interview if, for any reason, I want this.

I understand that my participation in this project is confidential and that no material that could identify me will be used in any reports on this project.

I have had enough time to consider whether I want to take part.

I know whom to contact if I have any questions or concerns about the project.

The **principal researcher** for this project is Gwen Blake - email: bblakke@xtra.co.nz, phone 06 7656533 (home).

Signature.....(participant)

.....(date)

Project explained by Gwen Blake

Signature.....

..... (Date)

The participant should retain a copy of this consent form.

This study has been approved by the UNITEC Research Ethics Committee from 3 May to December 2005. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the Secretary (ph: 09 815-4321 ext 8041). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix 4: Matrix to identify the areas of the survey that centered on each question.

Research Question (RQ)	Question	Rating	Interview
RQ1	1,2,3		1.2.9
RQ2	5,6,8,12,14	2	3,4,7
RQ3	7	3,4,5,6,7	8
RQ4	4,9,10,11,13,15	8,9,10,12	5,6,10,11,12