

**Approaches and implications of eLearning Adoption on
Academic Staff Efficacy and Working Practice:
An Annotated Bibliography**

Bronwyn Hegarty
Merrolee Penman
Mark Nichols
Cheryl Brown
Jessica Hayden
Beverley Gower
Oriell Kelly
Maurice Moore

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Palmerston North, New Zealand.**

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CHAPTER ONE: INTRODUCTION

The purpose of this annotated bibliography is to present a detailed summary of literature which will be used to underpin and support an investigation into the ways tertiary academic staff in New Zealand are prepared for eLearning. The literature was reviewed for several purposes. The first was to inform the development of items for a questionnaire delivered online to staff across six institutions. The literature reviewed was also supported by information obtained from focus group interviews across the six institutions. The second purpose was to provide a basis for the analysis of the questionnaires and the development of profiles of those participants who were willing to be interviewed about their experiences. Finally the literature presented in this document will also be used to inform the analysis of interview. The research is designed to investigate the following questions:

1. What is the range of eLearning staff development models offered by New Zealand tertiary providers?
2. How do staff development models prepare academic staff for eLearning?
 - Are staff experiences of eLearning and levels of self-efficacy related to the type of staff development provided?
3. Why are some staff development models more effective than others?
 - Does the use of metacognitive strategies in professional development have an effect on self-efficacy levels of learners?
 - Does the level of self-efficacy influence staff experiences of eLearning and how they apply their knowledge to courses using online delivery?

This annotated bibliography provides the published data for questions two and three, against which the New Zealand experiences (data gathered from focus groups, questionnaires and interviews) can be compared.

The literature reviewed for this project is presented in Chapter Two to Chapter Five. Chapter Two covers early and late adopters in eLearning, Chapter Three is related to models of staff development, while Chapter Four focuses on literature related to self-efficacy and eLearning. While the focus of this study is on staff development models specifically the connection between types of staff development and impact on self-efficacy, it was clear from the literature that staff development is embedded within the infrastructure of most organisations. The importance of institutional policies and strategic planning clearly showed through in many of the studies, and for this reason chapter five is included to address this area of the literature.

Each chapter is arranged in a similar format. The chapter begins with a brief introduction to the topic, followed by the publications reviewed (in alphabetical order). The

publications are a combination of published research studies, along with conference presentations, and reviews of the literature. The key points from each article are summarised.

CHAPTER TWO: ADOPTION OF ELEARNING

Introduction

This research study comes from the stance that a number of factors influence the effectiveness of staff development models in shaping the eLearning practices of academics in education. In Chapter Two, one of these factors, the personal context associated with the adoption of eLearning is presented. In reviewing the literature, it is clear that there most people fall into one of two groups. The first are early adopters, identified as those academics who are innovators, and are willing to take risks with technology. The second group is the late adopters who prefer gradual or no change, only following others into the use of technology if they have to conform (Berge and Muilenburg, 2000). Identification of these two groups of people is important in terms of considering how best to organise staff development to meet their disparate needs. Chapter Two is a review of six publications that specifically focus on the differences between early and late adopters.

Annotated Bibliography

Berge, Z.L. & Muilenburg L.Y. (2000). Barriers to distance education as perceived by managers and administrators: Results of a survey. In Melanie Clay (Ed.), Distance Learning Administration Annual 2000. Retrieved from http://www.emoderators.com/barriers/man_admin.shtml

Berge & Muilenburg (2000) undertook a widespread online survey (2504 valid responses) to examine the perceptions of managers and administrators (as a single group across a whole range of types of institutions) to the uptake of distance education. From an online survey sixty-four possible barriers were identified and correlated against five job functional groups. The authors were able to identify the differences between early adopters (innovators and early adopters who initiate and take risks with ICT) and mainstream staff (in the early majority, late majority and laggards who tend to follow others in use of ICT and prefer gradual change or no change).

The main barriers considered by managers and administrators to have the most effect were nearly identical to those identified by the participants from the four other functional groups (that is, support staff, teachers/trainers, researchers, and students). Most of the significant barriers were related to organisational and cultural change and included:

- Organizational resistance to change
- Lack of shared vision for distance education in the organization
- Lack of strategic planning for distance education

- Slow pace of implementation
- Difficulty keeping up with technological change.

Berge & Muilenburg (2000) noted an important issue recognised by all was the need for cultural change throughout the organisations involved in distance education and training. They conclude more analysis of the data is needed to understand and describe the perceived barriers to distance education.

Burdett, J. (2003). A switch to online takes time: academics' experience of ICT innovation (Electronic version). In G. Crisp, D. Thiele, I. Scholten, S. Barker and J. Baron (Eds), Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Tertiary Education, Adelaide, 7-10-December 2003.

Burdett (2003) investigated the sources of resistance as identified by academic staff in using ICT. The university had provided their staff with encouragement and web-authoring tools since 1999. All courses were provided with an automatically generated web-page, but the implementation of ICT for teaching and learning was optional. At the time of the study management staff noted the use of ICT in teaching and learning was limited, yet its use in administration was widespread. Burdett interviewed ten academics, split between early and late adopters. Using Harmon and Jones's (2000) five level model (informational, supplemental, essential, communal and immersive), clear differences in the level of ICT adoption were demonstrated between early and late adopters. It was found that early adopters were using ICT at higher levels (essential and communal) than late adopters, whose accomplishments were mostly email at an informational level. In addition, it was discovered that early adopters tended to utilise several features of the web-page such as quizzes and online discussion more fully than late adopters, who tended to either not use the web-page at all, or used it to only give students information (Burdett, 2003). Early adopters were more interested in using new and innovative technologies, and believed there was potential for ICT to improve learning.

There were some similarities between the two groups of staff in Burdett's (2003) findings. None of the interviewees supported fully online courses replacing more traditional face-to-face teaching methods. Time was mentioned by all interviewees as a major deterrent to ICT implementation, and both early and late adopters were worried about technical reliability. Both expressed concern about the potential for negative effects on student learning. Burdett (2003) suggested addressing three key issues to narrow the gap between early and late adopters:

- Providing user friendly, reliable technology.
- Timely staff development.
- Reasonable workloads.

Jacobsen, D M. (1998). Adoption patterns and characteristics of faculty who integrate computer technology for teaching and learning in higher education (Electronic version). Doctoral dissertation. Alberta: Department Of Educational Psychology, University of Calgary

In a comprehensive study of 76 faculty Jacobsen (1998) found a relationship between computer confidence and the use of technology in education. Jacobsen (1998) discovered that early adopters differ from mainstream faculty in a number of ways. It was found that early adopters had a broader computer history and tended to use computers more in their day to day activities, even though their actual ownership of computers was on a par with mainstream faculty. Early adopters also tended to try out new technologies sooner than mainstream faculty, were more confident about their ability to troubleshoot, and were more tenacious when confronted with IT problems. Additionally, early adopters tended to develop stronger communication relationships with each other, used communities to develop and expand knowledge, and regarded technology skills as divorced from pedagogical skill. Early adopters were intrinsically motivated, even to the extent of purchasing software from their own pocket if the institutional budget would not stretch. Further, they used technology to solve problems, expressed frustration with bureaucracies and funding processes, and at times felt left out of decision making processes. All of the early adopters in Jacobsen's (1998) study were prepared to support their mainstream colleagues in making more use of IT in their teaching.

Mainstream faculty users resisted classroom use of computers because they failed to see the compelling reasons and advantages to using technology in teaching and learning. Mainstream faculty were willing to use technology if it was of proven value, if students wanted it and if they could see potential in using it (Jacobsen, 1998). Jacobsen also found that mainstream faculty had concerns about the lack of availability of just-in-time training and support. Where such training and support was available, it was often not in a form they could understand and use easily.

Jacobsen (1998) found that the most common incentives to integrate technology included:

- Providing enriched learning opportunities for students.
- Increasing student satisfaction.
- Making the change from being a lecturer to being a facilitator.
- Informal recognition and support from colleagues.
- Evidence of time saving and efficiency benefits of using technological tools for creating presentations, calculating grades, demonstrating complex content, and communicating with others.

On a disturbing note, Jacobsen (1998) reported that if change toward integrating technology in education delivery was fundamental, those who brought the message of change would not necessarily be welcome. Finally, Jacobsen (1998) recommended the following:

- Strategies should be developed to increase faculty awareness.
- The process of change should be observable.

- A culture of inquiry should be promoted.
- Research and information should be disseminated.
- Institutions should increase professional development opportunities
- Technical infrastructure should be improved.
- Ways to reward innovation should be found.
- Knowledge from early adopters should be leveraged.
- Both early adopters and mainstream faculty should be involved in decision-making processes.
- Autocracy should be resisted.
- Processes for iterative development should be developed, and reinvention avoided.

Schifter, C. C. (2000). Faculty participation in asynchronous learning networks: A case study of motivating and inhibiting factors select. *Journal of Asynchronous Learning Networks*, 4(1), 15-22.

Schifter (2000) used a survey to investigate faculty members' perceptions of the factors (both motivating and inhibiting) that influenced the adoption of online learning in distance teaching by faculty (both participators and non-participators in distance teaching) and administration staff. His results are presented in Table 1.

Schifter (2000) reported that the factors which inhibited the adoption of distance teaching showed more agreement between the three groups than opinions of motivating factors. He noted that faculty considered that intrinsic factors “..that come from within the individual or benefit the programme or students” (p. 20) were more important, whereas administrators thought extrinsic factors “...relating to university administration support and encouragement to faculty to participate, or that benefits only [the] individual faculty member” (p. 20) were more important to faculty.

Schifter (2000) recommended that management needs to make the most of the motivating factors revealed in this study and to provide support to and gain the trust of faculty who do not have the skills to teach online.

Participators	Non-participators	Senior Administrative staff
<i>Motivating factors</i>	<i>Motivating factors</i>	<i>Motivating factors</i>
Personal motivation to use technology The opportunity to develop new ideas To improve teaching To diversify programme offerings Greater flexibility for students	The opportunity to develop new ideas Technical support provided by the institution Personal motivation to use technology Intellectual challenge Overall job satisfaction	Personal motivation to use technology Monetary support for participation Intellectual challenge Credit towards promotion Tenure and release time
<i>Inhibiting factors</i>	<i>Inhibiting factors</i>	<i>Inhibiting factors</i>
Lack of institutional technical support Limited release time Availability of grants for materials/expenses Concern about workload Concern about quality of courses	Lack of institutional technical support Limited distance training provided by the institution Limited release time Concern about quality of courses Concern about workload	Lack of institutional technical support Limited release time Lack of merit pay Availability of grants for materials/ expenses Concern about workload

Table 1 – Motivating and inhibiting factors for adoption of online learning (Schifter, 2000)

Shannon, S. & Doube, L. (2004). Valuing and using web supported teaching: A staff development role in closing the gaps. Australasian Journal of Educational Technology, 20(1), 114-136.

In their review of the literature, Shannon and Doube (2004) suggested that the factors that influence the level of staff adoption of web-supported learning include:

- Inadequate access to staff development (SD) and training
- High workload
- Time constraints
- Lack of knowledge and skills
- Poor tools and infrastructure
- Lack of recognition and rewards
- Inadequate support from the institution

These authors surveyed their staff approximately one year after the introduction of Blackboard. Of the 156 surveys returned, 27% did not use computers in their teaching at all and 76.9% had or were using a web teaching tool. The predominant use of the web

was for communication and content delivery. On average respondents valued web teaching tools less than computers as teaching aids.

Shannon & Doube (2004) discussed how the gap between staff being interested in using web tools and actually using them might be narrowed. Their suggestions included making existing staff development more accessible, using institutional wide approaches, offering institution-wide support, emphasising the scholarly nature of the work required to develop and implement online teaching, and promoting research activity and the publication of research reports about their experiences of web-based learning.

Wilson, G. & E. Stacey (2004). Online interaction impacts on learning: Teaching the teachers to teach online. Australasian Journal of Educational Technology, 20(1), 33-48.

Wilson & Stacey (2004) have focused on the different characteristics of the early adopters versus the mainstream majority. They state that support strategies must be based on the needs and characteristics of the mainstream majority (Wilson & Stacey, 2004). In addition, they allude to the need to replace individualised staff development with institutional-wide approaches if mainstream staff are to be persuaded to use innovative technologies.

Wilson & Stacey (2004) present overwhelming evidence for the need for interaction in online teaching, and also recommend staff development that enables online teachers to be confident and competent. Examples of staff development cited in Wilson & Stacey (2004) include:

- Teaching competencies for online facilitation through the use of formal qualifications, for example the Graduate Certificate in Online Teaching and Learning (Edith Cowan University).
- Development of a competency framework (Royal Melbourne Institute of Technology).
- Accredited courses specific to institutional requirements for the introduction of technology, for example an Advanced Diploma in Information and Communication Technology
- Online staff development offerings of courses and website resources.
- Peer support through the use of mentoring programmes.
- Local 'experts' and teaching fellows.
- Customised support to match the levels of need and/or readiness levels (novice, advanced beginner, staff wanting to try new innovations but not quite competent, expert).

Through approaches which base staff development on the needs and characteristics of the mainstream majority, Wilson & Stacey, (2004) recommend a staged approach which utilises the following:

- Expertise of early adopters.
- A demonstration of innovations which have obvious benefits.
- Peer support methods.
- Emphasis on innovation not technology.
- Competency frameworks.
- Situated learning and accredited courses.

Summary

These six publications demonstrate very clearly the differences between early and late adopters in their use of eLearning (or computer based technologies) to support the learning of students. Many similarities are noted in the studies. Both Berge and Muilenburg (2000) and Burdett (2003) identified the key differences between the early and late adopters. Burdett (2003) was more specific about the different behaviours of early and late adopters in his study noting that early adopters fully utilised technology to aid their students learning, whereas late adopters used technology for information exchange - whether that be via email, or by providing web-based information. Jacobsen's (1998) study further helps to answer the question as to why there are differences. From a self-efficacy stance, it is clear in Jacobsen's work that early adopters have a different approach to utilising technology. Early adopters are problem solvers, exploring the possibilities of technology and being tenacious when confronting problems. In other words they have a strong sense of self-efficacy. Later adopters were less likely to engage in learning how to use technology stating that they needed compelling evidence before they would consider using technology to support their teaching. One could argue that these groups of people have lower motivation in that the investment of energy and time required to master the technology will not be made unless there is clear reason to do so. Whether this assumption is related to self-efficacy requires further investigation (Phelps, Graham & Kerr, 2004)

Wilson and Stacey (2004) clearly identified the ways in which late adopters' needs can be addressed. They have argued that the ways in which early adopters learn to utilise technology is different to that of late adopters. They suggest that support strategies cannot be based on the requirements of the early adopters, but must be based on the needs and characteristics of the mainstream majority (Wilson & Stacey, 2004). These authors suggest allude to the need to replace individualised staff development with institutional-wide approaches if mainstream staff are going to be persuaded to use innovative technologies.

Ways in which later adopters could be engaged in learning about eLearning was evidenced in the studies by Schifter (2000) and Shannon and Doube (2004). In both these studies, the barriers faced by academics were similar (i.e. time constraints, lack of institutional technical support, concern about the quality of learning achieved through technology and concern about increased workload) The difference between early adopters and later adopters was also highlighted in Schifter's (2000) study. While Burdett (2003) identified the different ways in which early and late adopters used technology to support

learning, Schifter (2000) identified differences that relate to self-efficacy with the motivators for the two groups being quite different. Interestingly in Schifter's study early adopters focused on what could be achieved for students by providing eLearning, while the later adopters were more focused on what they would gain by engaging in eLearning for example intellectual challenge and overall job satisfaction.

While there are differences between early and late adopters, the perspective of administrators differs again. Institutional influences will be discussed in depth in Chapter 4, but Schifter's (2000) study along with Berge and Muilenburg (2000) also draws attention to the differences between academics and senior administrators. This group identify external motivators that they believe would lead to an increase in academic staff taking up eLearning. From Schifter's (2000) study it is clear that in order to support staff in engaging in eLearning, administrators need to understand the motivators, as well as the barriers, and to plan to overcome the barriers in ways that support academics. Ways in which barriers can be overcome is made clearer in the work of Shannon and Doube (2004) who suggest that in research active universities, motivators that emphasis the scholarly aspect of engaging in eLearning are more likely to increase uptake of eLearning than external rewards. These authors suggest that academics will find time for activities that they value, therefore situating eLearning in a culture of research where the research provides the evidence base for adoption or extension of web supported teaching is likely to be more successful in increasing uptake of staff than other means.

Almost all these studies support the concept that to influence the way staff approach eLearning the major area to address is the institutional culture. Significant barriers as noted by Berge and Muilenburg (2000) include the lack of shared vision and strategic planning, along with organisational resistance to change. These issues will be addressed further in Chapter 4.

CHAPTER THREE: STAFF DEVELOPMENT MODELS

Introduction

While there does appear to be differences between the early adopters and late adopters of eLearning, other factors also influence academics' readiness to engage in eLearning. Wardca (2004) points out that teachers are generally trained pedagogues, but they are inadequately trained to use technology for educational purposes. Chapter Three contains the literature (25 publications) that consider the many ways that institutions organise and deliver their staff development for eLearning. The different models include from the more traditional face to face teaching in traditional workshops through to the provision of resources for self-paced learning, situated learning, case studies, mentoring or project-based learning.

Annotated Bibliography

Atkinson, S. (2004). "Heal Thyself" – Effective elearning. In Distance Education Association in New Zealand (DEANZ) and Commonwealth of Learning (COL), Building Learning Communities for our Millennium: Reaching Wider Audiences Through Innovative Approaches, Proceedings of the Third Pan-Commonwealth Forum on Open Learning (PCF3), Dunedin, New Zealand.

Atkinson (2004) recommends that institutions provide their own eLearning professional development on the grounds that context is very important, particularly if the intent is to progress organisational change. Atkinson suggests that

“An institution wishing to adopt eLearning, even or the laudable intention of enhancing the quality of the learning experience, must consider the impact on exiting academic practice, quality enhancement processes, accreditation systems and indeed the very culture of the organisation” (p. 2).

Because of the varying context and its importance for actual eLearning practice, Atkinson (2004) suggests scenario-based learning as a particularly effective tool for professional development. There are several reasons for this. Firstly, the use of authentic scenarios can assist learners to maintain a balance between content knowledge and the processes required to build on that knowledge. Additionally, case studies promote the use of group work, peer interaction, problem-solving activities and engagement with authentic experiences – the ideal environment for reflective learning.

Atkinson (2004) provides four questions that are foundational for curriculum design:

- What purpose (educational) does the course serve?
- Which learning experiences need to be provided to serve that purpose?
- How should these experiences be managed and organised?
- How might these purposes be deemed to have been attained? (p. 5.)

The key to success appears to be the use of a carefully designed professional development programme which re-educates staff as part of the change process in the institution (Atkinson, 2004).

Aviles, K., & Ferguson, B. Sharkey, J., & Truman-Davis, B.(2000). How the wild wide web was won: online web developer training. World Conference on the WWW and Internet 2000(1), p642- 643. Retrieved from <http://dl.aace.org/121>

Aviles, Ferguson, Sharkey, and Truman-Davis (2000) give details of online staff training used at the University of Central Florida where an innovative staff development method was introduced. Rather than expecting all staff to become skilled in developing online teaching and learning resources, UCF recruited and trained some of its students to serve as ‘Techrangers’. The training utilised a sequence of modules involving scenarios and simulations which enabled self-paced use by groups or individuals working towards certification. Under the supervision of full time academic staff, qualified Techrangers built online courses and assisted students with using the online facilities (Aviles et al, 2000).

Baty, D., & Moir, R. (2000). Networked software support of staff development (Electronic version). Society for Information Technology and Teacher Education International Conference 2000(1), 500-501.

Providing shared resources is a common theme in the literature describing staff development for the online environment. Baty (2000) argues that to address the lack of knowledge of the pedagogical and technological changes that computers bring to education, staff need to be able to access information about computer-aided teaching from their desktop. Baty (2000) suggests the WWW would not be useful as a basis for providing this information for several reasons: the unstructured composition of the web makes it too time-consuming to develop web-based resources, interactive software needs to be demonstrated in a locally appropriate way rather than globally, and the web doesn’t facilitate the sharing of resources. Baty was part of a team that developed software to capture the best features of the WWW in the form of a server based database with a simple interface. The server provides a gateway to external websites, interactive computer aided learning examples, and resources not bound by copyright restrictions. This facility allows easy sharing of the resources that the authors and other staff members have found. The collated resources on a specific topic are immediately available to all staff and the database also enables communication with the resource developers, thus

facilitating learning and sharing of resources. Baty's (2000) work illustrates a workable solution for the issues surrounding the capture and use of Internet-based resources.

Binns, F., & Bradley, J. (2004). Staff development in distance education: the evolution of one approach. In Distance Education Association in New Zealand (DEANZ) and Commonwealth of Learning (COL), Building Learning Communities for our Millennium: Reaching Wider Audiences Through Innovative Approaches, Proceedings of the Third Pan-Commonwealth Forum on Open Learning (PCF3), Dunedin, New Zealand.

Binns and Bradley (2004) describe an innovative model of staff development in their report about the success of a collaboratively-designed open, distance learning (ODL) staff development course that makes use of distance learning techniques and which was delivered into Uganda from the United Kingdom. According to Binns and Bradley (2004), one of the main advantages of using flexible techniques in the programme was that the staff developed a much better understanding of the needs of their students therefore they were more likely to create better quality learning experiences for them. "The course was designed so that participants would be in a position to put what they had learned into practice immediately" (p.6). This was done through the use of activities which helped the participants situate their teaching experiences within the content presented in the course. The staff development package included paper-based resources and residential sessions. The course had a very high success rate, and post-evaluations confirmed the effectiveness of the course. The course was regarded as influential in promoting significant changes to teaching practice in open and distance learning, and one outcome from the evaluation was to pursue the option of offering the course as an accredited certificate qualification (Binns and Bradley, 2004).

Buss, A., & McClurg P. (2000). teachers implementing gis in 5th-12th grade classrooms: An investigation of the necessary staff development experiences and support (Electronic version). International Conference on Mathematics /Science Education and Technology, 95-100. Retrieved from <http://dl.aace.org/337>.

Buss and McClurg (2000) report on a study that investigated the provision needed for the integration of Geographic Information Systems (GIS) into teachers' teaching. The researchers aimed to develop effective professional development experiences for teachers to learn how to use GIS resources in their classrooms to increase and enhance student achievement in areas of geography, science, math, technology and art. Buss and McClurg (2000) evaluated a week long workshop which was used to teach the use of a GIS. Follow-up support was provided in the form of personal visits, email and telephone conversations. The teachers who attended the class were interviewed and observed in the classroom. The feedback was incorporated into a second workshop run a year later, also with follow-up available. Assessment measures for the attendees of this course included classroom observations, interviews, demonstrations by teachers of their use of GIS, and an analysis of several activities. Included in the assessment measures were other artefacts such as a web-based discussion, lesson plans, and projects by the teachers' students.

Teachers also rated themselves on a 14 item Likert scale at the beginning and end of the workshop to indicate their confidence and attitudes towards GIS.

Buss and McClurg (2000) report that only three of the 15 teachers from the first cohort felt satisfied with their use of GIS. The authors felt that a stronger incentive to participate fully was needed; subsequently participation the following year was in return for graduate credit. Other enhancements suggested in the feedback included creating a non-computer introduction to GIS, allowing participants to create their own data, spending more time discussing databases and database searching, learning how to customise the lesson plan and integrating other content areas. The second course was run over a six-month period rather than in one intensive block to give participants a chance to consolidate skills between sessions, and participants were given homework assignments to be completed. Despite these changes, Buss and McClurg (2000) found that less than half of the teachers who took part in the second workshop were able to implement and evaluate the lesson plan they developed. Barriers to using GIS were technical problems, a lack of a support for administrative tasks and lack of time. Significant increases were made in the participant's confidence in their ability to use GIS in their teaching. The authors ended by stating that the participant's attitude to GIS at the end of the course was positive and that further work would be conducted

Cavanaugh, C. (2000). Sharing IT staff development through a statewide web resource. World Conference on the WWW and Internet, 2000(1), 665-666. Retrieved from: <http://dl.aace.org/132>.

Cavanaugh (2000) gives an overview of the development and use of a web database initially set up to give schools access to up-to-date resources. Funding was made available for technology and staff training on how to use the database. Three instructional technology centres and a network of centres for educational enhancement were set up to provide workshops and resources as needed. The idea was that a centralised state-wide resource database could help schools with few resources, and recognise those who developed useful materials. One of the instructional technology centres developed the website and associated database, and individuals submitted resources for storage on the database. Resources were also gathered from existing databases in the district. The searchable database has since been utilised by staff development trainers, educators, district technology leaders and professors. Cavanaugh (2000) concludes that as the database is constantly added to it will become an increasingly powerful tool.

Christie, A. A., Rillero, P., Cleland, J.V., Wetzel, K.A., Zambo, R., & Buss, R.R. (2001). Enhancing motivation and teaching efficacy through web page publishing. Electronic Journal of Science Education, 5(4). Retrieved September 14, 2004 from <http://unr.edu/homepage/crowther/ejse/christie/christieetal.html>

Christie, Rillero, Cleland, Wetzel, Zambo and Buss (2001) describe a technique involving web-based publishing with the potential to increase motivation, promote reflection, and enhance development. Their project had elementary school teachers attend a two week staff development workshop, which facilitated collaboration in the creation of resources

to be published on the Internet. Christie et al (2001) report that working in pairs, sharing resources and meetings throughout the year to reflect on teaching experiences were used to encourage collaboration. A questionnaire administered at the end of the project, used open ended questions to find out about the teachers' self-efficacy, and their beliefs about producing web-based materials. It was found that the course had increased self-efficacy in the teachers with regard to teaching maths and science, and their belief that these resources were effective also increased. Eighty nine percent of the participants felt that knowing their work would be published on the Internet increased their motivation to produce quality resources. The authors also felt that the collaborative peer review process helped to increase the quality of work produced. Overall, Christie et al (2001) found that professional development processes were enhanced if teachers were offered the opportunity to master tasks and to network.

Collins, M. (2000). Leading faculty gently by the hand. Retrieved from <http://globaled.com/articles/CollinsMauri2000.pdf>

Collins (2000) states that there are many ways to help faculty gain confidence and ability in online teaching environments, and to reduce the socio-emotional transitions experienced when adopting technology. She believes those now being asked to transfer their teaching online are mainstream faculty members as opposed to early adopters; such people termed “settlers” (p 2) need to be provided with help that might be in the form of templates and someone to guide them. Many institutions have people to teach software training, or instructional designers to build courses for web delivery; however, Collins (2002) believes this is not an adequate way to support staff who are asked to transfer their teaching online. Faculty members will feel an unease that is difficult to define about online teaching; an unease that stems from fear that they will need to learn how to teach again, fear of losing their existing role and fear of compromising on education quality. The change to eLearning needs to be managed well and the solution, according to Collins (2000), is to teach faculty how to adjust their personal teaching style to new delivery techniques, and how to articulate and deal with their fears. It is also important to show faculty that they don't need to source all the resources for online courses; they can give examples and let the students find some themselves. Collins (2000) concludes that it is worth helping those who find it a little more difficult to adopt online teaching, as these people often encourage and help their peers and become strong advocates for online learning.

Ellis, A., & Phelps, R. (1999). Staff Development for online delivery: A collaborative team-based action learning model (Electronic Version). ASCILITE 99. Responding to Diversity, 5 – 8 December 1999.

Ellis and Phelps (1999) demonstrate how collaborative team-based action learning for staff development was used successfully at Southern Cross University, Australia, to support a major project – the transformation of an entire Bachelor of Social Sciences degree into an online format. All staff participated in four types of workshops: pedagogical, technical, administrative and team building. These workshops encouraged collaboration, technological up-skilling, policy development and networking. Ellis and

Phelps (1999) recommended nominal time release for staff, professional development opportunities that were timely and appropriate, and the necessity for staff to be involved in decision-making throughout the project. The researchers discovered that the staff development approach taken throughout the development phase was very valuable, and informed subsequent phases of the development project, including managerial issues regarding lecturer time.

Hartman, J. L., & Truman-Davis, B. (2001). Institutionalising support for faculty use of technology at the University of Central Florida. In R. M. Epper & A. W. Bates, Teaching Faculty how to Use Technology: Best Practice from Leading Institutions (pp 39-58). Connecticut: Oryx Press.

Hartman and Truman-Davis (2001) suggest that staff feel well supported to integrate technology into their teaching if consideration is given to a four step process that starts with access, increased awareness, mastery, and finally application. Using case study research, the authors identified a number of support systems, which encouraged mainstream faculty to make use of technology at the University of Central Florida. These were:

- A lead consultant.
- Coordination of people and support units.
- A clear mission and vision in the institution.
- A sound technology infrastructure.
- Universal connectivity via a network and email

Using a distributed learning initiative, staff (early adopters, innovators and mainstream faculty) learnt the skills they needed to provide interactive learning environments through consultations, specific classes (many in a just-in-time or self-paced format), and an eight week programme specifically designed to assist staff to learn the skills they needed to provide interactive learning environments for their students. Additionally, staff had year round access to courses and support through the Computer Services Learning Centre, the library (database and Internet use) and other sources (such as 'Techrangers' - students recruited to support staff in their IT use). Incentives included paying staff to complete courses, providing new equipment, and encouragement to present at conferences.

According to Hartman & Truman-Davis (2001), the evaluation of the distributed learning initiative suggests the following factors contribute to the satisfaction of faculty:

- Online interaction with students.
- Reliable IT infrastructure.
- High-quality faculty development.
- Extensive faculty support.
- Faculty recognition and incentives.
- Using an interdisciplinary approach.
- Experienced Web mentors.
- Student support.
- Assessing online initiatives.

- Institutionalisation of online learning.
- A continuous improvement bias.

The authors conclude that to sustain momentum in integrating technology into teaching there must be continuous institution wide commitment to that goal (Hartman & Truman-Davis, 2001).

Hofer, M. (2001). Effective technology staff development: A grass-roots approach. Society for Information Technology and Teacher Education International Conference 2001(1), 687-688. Retrieved from <http://dl.aace.org/3601>

Hofer (2003) describes a just-in-time project-based learning programme developed to help US teachers integrate technology into their teaching. The approach taken by the staff leading the project encouraged teachers to work with their peers in a collaborative and flexible manner. Groups of teachers interested in learning about innovative teaching methods met for six workshops spread over a year. The teachers learnt how to use the software in the workshops, and were also given the time and opportunities to practice the skills. At the end of each workshop, participants were provided with the resources they needed to help other teachers to implement technology in their lessons. Hofer (2003) argues that this type of staff development is more effective because the pedagogical model is based on Knowles' (1984) principles of adult learning. Online methods (a discussion forum and mailing list) were used for communication and feedback throughout the course. Hofer (2003) reported a significant improvement in teacher attitudes towards technology in the classroom, and the skills they achieved during the course. Additionally, the peer relationships that developed as a result of the staff development were greatly appreciated.

Hutchinson, K. R. (2001). Developing faculty use of technology: The Bellevue Community College experience. In R. M. Epper. A. W. Bates, Teaching Faculty how to Use Technology: Best Practices from Leading Institutions. (pp 93-114). Connecticut: Oryx Press.

The case of Bellevue Community College in the US is presented by Hutchinson (2001). The College, which has been recognised as a leader in using electronic instruction in education, is situated in an industrial area with large demand for technologically competent workers. Instructors used tools such as email, slide presentations, web-based information, threaded discussion groups and chat rooms in their courses. College administrators decided to concentrate on providing IT training, and decided the entire staff needed to be as competent in IT as the students they were educating. Accordingly, as early as 1996 all staff were provided with computers, the campus was fully networked and rewards were set in place for innovators. Electronic lecturing podiums were also supplied, and support for faculty who were willing to develop online courses was put in place.

Hutchinson (2001) explains that staff were encouraged to experiment and to question the effectiveness of technology in teaching as part of their professional development. Support

structures were put in place, two days' paid professional development leave for each staff member was offered, and a sum of money made available to each staff member for professional development of their division's choice. There were incentives such as summer research grants to develop and research online courses. A student internship program gave staff access to students, who helped with tasks such as web-site design. Bellevue Community College had a strategic plan for the implementation of technology; the College's plan included centralisation and standardisation of technology use, efforts to secure outside funding, and a critical thinking and information programme designed to ensure critical use of Internet material.

Hutchinson (2001) reports that the main impact of technology has been an increase in choices of delivery mode for staff. The College has implemented a bottom-up approach, led by staff impetus but slow spread. The College expects more of its courses to be available online in the future, and anticipates having to compete more with businesses to attract staff. Other initiatives include conserving costs and encouraging collaboration; there are also plans to make resources which have been developed for one course available to all staff (Hutchinson, 2001).

Kidney, G. W. (2004). When the cows come home: A proven path of professional development for faculty pursuing eLearning. T.H.E. Journal, 31(11), 12-15.

Kidney (2004) describes a successful and creative staff development approach. A four day workshop featuring theory and practical examples has been offered annually to academic staff, both on-site and at a distance. Staff participating in the workshop received a financial reward and time release, as well as support and direction to design and develop their courses for online delivery. Staff have also been given priority access to the information technology support team. Approximately six months after the course, the class reunited to show each other what they had developed. According to Kidney (2004), the programme is consistently evaluated by participants as 'excellent' or 'good'; it has never received a 'satisfactory' or 'unsatisfactory' rating. A meta-analysis of ways in which the workshop has exceeded participants' expectations showed the following aggregation of responses:

- Networking time.
- Sharing.
- Balanced theory and practice.
- Hands on work with tools.
- Non-threatening atmosphere.

Feedback also offered ways to improve the course; students suggested there needed to be more influence on course focused activities, more question time, advanced workshops, discipline-based workshops, and online interaction. Kidney (2004) also outlines plans to run an advanced course.

Laga, E., & Elen, J. (2001). Characteristics of support initiatives to stimulate professional development on ICT. Society for Information Technology and Teacher Education International Conference 2001(1), 692-697. Retrieved from <http://dl.aace.org/3603>.

According to Laga & Elen (2001), the best features of professional development initiatives include characteristics such as:

- Giving staff time and opportunities to engage in professional development in ICT.
- Requiring participation in PD only when the relevance to the individual's teaching is clear.
- Ensuring that the relationship between educational context and training elements is as close as possible to facilitate transfer of skills.
- Provision of just-in-time coaching.

Successful initiatives proposed by these authors included, an annual conference showcasing educational innovations, training sessions and workshops for new staff, informative and training sessions about the educational and technological issues, proactive and intensive training over 10 days, project-based coaching and training for using ICT, demonstrations, individual and just-in-time support and helpdesk facilities. Laga and Elen (2001) suggested that a combination of strategies worked best. Their recommendation was that informative sessions, demonstrations and training which provided ideas and knowledge should be combined with individual support and coaching opportunities to help staff to carry out their design and development ideas in a supportive environment.

Lally, V.M., & McConnell, D. (2004). Networked professional development: A review of current practice. Retrieved 18 November 2004, from <http://www.shef.ac.uk/education/research/RTPLandMc.shtml>

Lally & McConnell (2004) have examined the role of networking in professional development. Their review of the international literature revealed a number of initiatives. For example, a report from the Talisman Project (Herriot-Watt University, Edinburgh), about a survey of staff development practices in Scottish higher education institutions, indicated that in general, staff were supported to use web tools such as chat rooms and web browsers, and that staff developers worked with academics to raise awareness of different technologies and their possible uses. There was, however, a gap in support for pedagogical applications of technology, and a need for forums where practitioners could share teaching and learning experiences. Lally & McConnell (2004) discovered several examples of group learning such as:

- Using guest experts in online events such as conferences, discussion lists and virtual seminars.
- Mixed mode opportunities, that is, face to face activities and online discussions.
- Archived discussions, used as a resource.
- Case studies.

- Paired online presentations.
- Collaborative projects.

Problem-based action research projects, mentoring, assessment-focussed activities and online conferences were also incorporated into professional development opportunities. Lally and McConnell (2004) also found that staff developers needed to ensure that their skills in the use of computers for teaching and learning were ahead of the staff they were supporting.

Lefoe, G. (2000). Professional development through flexible delivery. World Conference on Educational Multimedia, Hypermedia and Telecommunications 2000(1) 581-585, Retrieved from <http://dl.aace.org/1309>.

An example of a team-based approach is given by Lefoe (2000) from the University of Wollongong, Australia. The university offers flexible learning across New South Wales and in Dubai. The shift to flexible teaching necessitated a shift to team-based support for staff. A staff development package was developed that included a case study video and a website that linked teaching staff to support staff and other resources. The web site provides information about flexible delivery at different levels. The resource can be used by individuals at any time, or as part of formal staff development programmes. Lefoe (2000) comments that staff developers need to practice what they preach by offering staff development initiatives like this one.

Litchfield, A. (2000). e.learning@mq staff development to integrate online media into learning and teaching at Macquarie University. World Conference on Educational Multimedia, Hypermedia and Telecommunications 2000 (1), 612-617. Retrieved from <http://dl.aace.org/1314>.

A project involving the integration of online technologies into teaching and learning is described by Litchfield (2000), who describes the e.learning@mq project at Macquarie University, Australia. In the project, a range of staff development activities were offered consisting of local-area peer development projects, university-wide activities and adjunct activities. In local-area peer development projects departments were encouraged to submit proposals to a funding body for projects investigating the use of IT in teaching and learning. Those who were selected to develop their projects attended mini-conferences three times a year to discuss their progress and any issues. All objectives set by the peer development projects were met, and there was a high level of participation. University-wide activities speakers, workshops, showcase, short courses, and information sessions were held for academic and general staff to attend. In adjunct activities, an e.studio was developed in the library with free resources for staff and students, and a website with online resources for staff was developed.

E.learning@mq was designed to attract staff with different abilities and subjects through a range of activities and entry levels. A group of IT and staff development personnel were involved with running the project. A total of 409 (out of 1550) staff took place in the

eLearning activities, and some 81% of the respondents felt the project had a positive impact. The project raised staff awareness and was successful in developing skills for creating and applying multimedia in teaching and learning, but was not as successful in helping staff evaluate and plan their use of IT. Litchfield (2000) concludes that the project fulfilled the intended purpose, and suggests that the provision of well-resourced and well-developed professional development does lead to a better understanding and practice of eLearning. The authors concluded that although the project led to better communication and collaboration between information technology services (ITS) and staff; staff support, staff incentives, policy and quality assurance processes for the use of multimedia in teaching and learning were still outstanding.

Littlejohn, A. H. (2002). Improving continuing professional development in the use of ICT. *Journal of Computer Assisted Learning*, 18(2), 166-174.

Littlejohn (2002) reports on a study in which experienced ICT users were asked about their recommendations for computer professional development (CPD). Littlejohn's (2002) contention is that CPD has generally focused on IT skills rather than course design issues, resulting in the following:

- A focus on course content and not outcome.
- Insufficient dialogue and feedback for students.
- An absence of current educational theories being incorporated into course design.
- The medium for delivery being decided before the learning resources.

Based on interviews of five academics from five different faculties, combined with investigation of the literature, Littlejohn (2002) gives four key recommendations for institutions planning staff development. These are to:

1. Focus primarily on outcomes that can be evaluated to promote gradual change.
2. Offer practical examples, based on educational theory, in how to incorporate communication methods and feedback in the design of courses.
3. Provide project-based CPD which assists staff to plan students' activities before choosing the medium for delivery.
4. Support staff with just-in-time IT training.

Littlejohn (2002) implemented these recommendations into a four month CPD programme, and participants were generally positive about the programme and the four recommendations.

Marra, R., Howland, J., Wedman, J. & Diggs, L. (2003). A little TLC (Technology Learning Cycle) as a means to technology integration. *Techtrends* 47(2), 15-19.

Marra, Howland, Wedman and Diggs (2003) report on the use and success of a professional development (PD) model called TLC, which used a five phase process to help teachers become "lifelong learners of educational technology" rather than

“technocentric” (p. 16). During the five phases teachers were informed of available tools, given the opportunity to explore the tools and determine their usefulness, expected to acquire skills in using the tools, become able to apply the technology in teaching and learning, and encouraged to collaborate through sharing their ideas and reflecting on them. The phase at which they entered the professional development depended on their level of skill. The TLC model involved one-on-one goal planning with a technology specialist, workshops on learning theory and integrating technology, and funding for hardware and software and time release. Data collected from interviews, log entries and self-assessment surveys demonstrated that the entire cohort increased their technology integration and reflection on the use of technology after one year of using their PT3 grant (Marra et al, 2003).

Mosseeva, M., & Krivoschokov, V. (2001). Academic staff development course for coordinators of distance education. Russian experience. Society for Information Technology and Teacher Education International Conference 2001(1), 257-262. Retrieved from <http://dl.aace.org/3503>.

Mosseeva and Krivoschokov (2001) also indicate that there is a need to prepare staff to provide flexible options for education using technology. In Russia, they found that 26% of university and college freshmen are ready to study on the Internet, 50% wanted to take distance courses at leading universities and 24% planned to attend a foreign virtual university. Most Russian Universities have distance education faculties and departments and there is a national distance education plan. This has resulted in most universities being equipped with modern computer suites. However, the following problems have been encountered:

- Most of the distance courses are just ordinary correspondence courses.
- There are no trained specialists among faculty members to provide flexible courses; people who understand the development, theory and delivery of distance education are needed.
- There is difficulty integrating the Russia distance education system with that of the rest of the world.

Mosseeva and Krivoschokov (2001) state that despite the over arching need to accelerate integration of distance education, there is a lack of staff able to do so. At the time the authors began their work there was no-one training people about the methods, psychology management or evaluation of Internet-based learning in Russia. To help meet this need academic staff at two Russian universities developed a pilot project, consisting of an Internet-based course for distance education coordinators. The course aimed to give Internet-based training to prepare academic and secondary school teachers to coordinate distance learning by introducing concepts and methods for active teaching and learning in distance education, helping staff develop effective communication skills, and identifying the skills and abilities of learners that can influence their work as coordinators of a distance learning course (Mosseeva & Krivoschokov, 2001). The course included a web text book and links to useful web-sites. Particular course material depended on the course’s objectives and was arranged in a modular structure. The course lasted for three months and included assignments and ongoing feedback. Interaction with other people in

the form of emails, chat rooms, pair and group work was included, and although the authors felt this was important some participants found it difficult. Mosseeva & Krivoschokov (2001) state that the advantages of the course included the adoption of the new technology and methods, opportunities for making new contacts, and the development of exercises for pedagogical and psychological self-assessment.

Oliver, M. (2004). Effective support for eLearning within institutions. JISC (Joint Information Systems Committee). Available from:
<http://www.cetis.ac.uk:8080/pedagogy/>.

Oliver (2004) reports on one of the projects conducted for the JISC (Joint Information Systems committee) eLearning and pedagogy strand. An empirical review was undertaken of a series of case studies to determine which of the interventions available to practitioners of eLearning were effective. For example, academics associated with curriculum design or academics re-designing their courses and programmes, developed their capability through formal qualifications and workshops, mentoring and working with learning technologists in project teams. The reviewer found there was a need to both integrate eLearning practices with teaching and learning, and at the same time give eLearning a high profile. He also reports on the importance of ensuring a strategic and coordinated approach to support for eLearning across institutional management structures so that staff development opportunities could be fully supported. No one approach to building staff capability for eLearning was found to be commonly successful. The influence of each approach depended on several factors:

- Motivation of staff and the situation they were in.
- Approaches which mirrored the values staff connected with.
- The variety of other types of support available.
- Perceived need for change.
- Incentives and rewards and time to reflect.
- One-on-one support (e.g. learning technologists, early adopters).
- Support which provided personal service.
- Short-term specialist support for resource development at a level which enabled sufficient involvement in the process to ensure long-term development of staff capability.

Finally, Oliver (2004) states it was not the effectiveness and types of interventions which were important, rather how they could be used in different situations and under varying circumstances.

Naidu, S. (2004). Learning design as an indicator of quality in teacher education. In Distance Education Association in New Zealand (DEANZ) and Commonwealth of Learning (COL), Building Learning Communities for our Millennium: Reaching Wider Audiences Through Innovative Approaches, Proceedings of the Third Pan-Commonwealth Forum on Open Learning (PCF3), Dunedin, New Zealand.

Naidu (2004) outlines how situated learning can be used to educate eLearning professionals. Naidu argues that quality standards in education tend to be based on academic staff qualifications and the support they get, rather than the learning experience and administrative functions students interact with. This, he suggests, means that learning design tends to go unmeasured resulting in predictable and linear content-centred approaches to education. As an alternative Naidu (2004) describes the benefits of situated learning, which he describes as “an authentic scenario such as one that [students] might encounter in their workplace” (p.2). Described simply, authentic scenarios place students in the context of their anticipated employment situation and require different learning skills from the student, such as critical reflection and problem-solving. Assessment in this model is ongoing and is seamless, a part of the learning environment.

Naidu (2004) describes an example of a Master’s in Education offered at Carnegie Mellon University in the USA where a situated approach was used to educate “eLearning professionals” (p. 7) in the corporate and school sectors. Active learning in the form of role play and projects were used to cover aspects of eLearning such as course design, evaluation of products, infrastructure issues and considerations, mixed and distance approaches and appropriate technologies. There are barriers to the use of situated learning, including increased workloads during development and the attitudes of the teachers and students.

Pearson, E., & Koppi, T. (2003). Developing inclusive practices: Evaluation of a staff development course in assessibility. Australian Journal of Educational Technology, 19(3), 275-292.

Pearson & Koppi (2003) report on a course at the University of South Wales where a mixed mode course in accessible course design was offered as part of its staff development programme to specifically teach principles of online design. The course was developed as part of the university strategy to increase inclusive practices; was offered to academic, technical and librarian staff; and involved a six month programme during which staff were released from other commitments. Classes of fifteen engaged in group topics, project development, project groups and online activities (in which they were online students). The course started off as face-to-face and then became mixed mode. Course participants saw how experts did it, had experience doing it themselves, and applied what they learned while evaluating an online learning environment. Pearson and Koppi (2003) evaluated the course using a variety of methods. An online survey addressed pedagogies, resources and delivery strategies. Participants were also emailed after the course to see if what they had learned made a difference to the design of their online courses and if it had any lasting effect on their practice. Feedback was generally positive although issues were raised about lack of time to complete tasks and the

perceived irrelevance of some of the content. Pearson and Koppi (2003) make the following recommendations about the design of online courses and staff development:

- Choose one medium for communication and stay with this.
- Precise and clear communication is essential.
- Provide learning checklists.
- Hands on experience and early introduction of accessibility issues help the development of inclusive practices.
- Provide an inductive session before the module to allow some practice.
- Offer follow-up and revision sessions, and allow access to the online resources after the course finishes.

Overall, Pearson & Koppi (2003) found that staff who undertook the course did go on to apply the concepts at a minimum level, and did acknowledge the issues associated with flexible approaches for students.

Sims, R., & Jones, D. (2002). Continuous improvement through shared understanding: Reconceptualising instructional design for online learning. In A. Williamson, C. Gunn, A. Young and T. Clear, Winds of Change in the Sea of Learning. Proceedings of the 19th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE). Retrieved from <http://www.ascilite.org.au/conferences/auckland02/proceedings/papers/162.pdf>

Sims and Jones (2002) also advocate a situated approach for course design. The authors describe their “three-phase design model” (p. 625) and the team approach they use in their own staff development activities at two Australian universities. In phase one staff members (content specialists) were supported by a designer, an “Interactive Architect”, an “Information Analyst” (p. 627), and technical specialists in order to build a learning environment. In phase two (enhancement), the product was evaluated and altered as necessary. Phase three (maintenance) involved ongoing improvements and staff training and guidance. This staff development approach fostered the development of communities of practice with a collaborative focus where ideas and products were shared throughout the process of development and implementation (Sims and Jones, 2002).

Taylor, J. A. (2003). Managing staff development for online education: a situated learning model. Journal of Higher Education Policy and Management, 25(1), 75-87.

Taylor (2003) reported on the implementation of an online education staff development programme at the University of Queensland (QUT). Taylor (2003) states that learning will only occur if it takes place in the social and physical context in which it is to be used, and presents the characteristics of an environment that meets situational learning need. These include:

- Authenticity of content and activities and their relationship to the real world.
- Expert support and modelling.
- Reflection and articulation to bring intuitive knowledge to the fore and opportunities for collaboration.

The wide range of distance education courses offered by QUT necessitated a multidisciplinary team approach for resource development, and this approach was also used as part of a staff development initiative to assist staff as they developed courses for online delivery. Academic staff were given access to a team (multimedia developer, instructional designer, student support specialist, experienced teachers) for one-on-one staff development and mentoring specific to their professional discipline and educational area (Taylor, 2003). The challenge for QUT was to shift from a situation where a minority (pioneers) were using online tools, to one where academic staff across the university were using online teaching and learning methods. A planned approach was taken in multiple stages. The first stage was an informational session for all staff from senior management. The second stage was an analysis to see where gaps existed in the staffs' knowledge and skills and the development of a follow up plan. Following this, support centres for curriculum development were created and an online staff development package was developed, supported by an online discussion forum.

The final phase was the creation of a Staff Development Gateway where information about initiatives could be accessed. Taylor (2003) found that developing the online staff development package was the most involved step, as it had to be flexible enough for both beginners and experienced users to utilise it, and for them to be able to choose their entry point and the best path to suit their needs. Options for staff development included face-to-face awareness sessions, face-to-face training in computer labs, peer mentoring, online reflection and discussion and online resources. In the five years to 2001, the university had 160 subjects in 36 courses available online. Almost 40% of staff had participated in the face-to-face sessions and the online staff development programme. An independent evaluation reported positive feedback about the sessions. Taylor (2003) concluded that the staff development initiative was a success, primarily due to the situated nature of the programme, the involvement of several staff from across the institution acting as a support and development team and the alignment of the programme with strategic goals.

Wardca, C. (2004) eLearning training: Catching up with the future. In Distance Education Association in New Zealand (DEANZ) and Commonwealth of Learning (COL), Building Learning Communities for our Millennium: Reaching Wider Audiences Through Innovative Approaches, Proceedings of the Third Pan-Commonwealth Forum on Open Learning (PCF3), Dunedin, New Zealand.

Wardca (2004) points out that teachers are trained pedagogues however they are not adequately trained to use technology or, if they are, they are not trained to apply it for educational purposes. After pointing out the 'digital immigrant' and 'digital native' divide (as per Marc Prensky), Wardca points out that the average age of teachers in Australia is climbing, widening the divide between teacher and student.

After establishing the potential for eLearning in the areas of synchronous and asynchronous communications, self-paced learning and reflection, collaborative and interactive work and access to worldwide resources, Wardca points out that the advantages are seldom realised because teachers are not adequately trained to use the tools themselves. Training in educational use of technology is the afterthought of IT implementation.

The professional development opportunities teachers are most often offered focuses on the use of computer applications (such as MS PowerPoint); Wardca argues that the important issues of eLearning pedagogies, the eLearning environment, planning, the development of eLearning teaching strategies and student expectations are neglected. As Wardca notes, “effective eLearning teaching involves much more than simply being able to manipulate the technology” (p.7).

Results of an Electronic Training Village survey (www.etv.gr) in 2001 suggest that most teacher PD activities are informal and are rated “poor” to “fair”; further, most staff were required to bear the costs of the PD themselves. Wardca suggests that eLearning training for teachers should include pedagogy and business strategy in addition to training for using the technology itself.

Wills, S. (2000). Flexible learning at the crossroads: Are our teachers ready? TEND 2000. Retrieved from <http://crm.hct.ac.ae/events/archive/tend/SandWP.html>TEND 2000.

Wills (2000) in a report prepared for the Australian government called “Managing the introduction of technology in the delivery and administration of higher education” highlights five factors that are key in the successful implementation of IT:

1. Strategy.
2. Structures.
3. Management processes.
4. Roles and skills.
5. Technology.

Wills (2001) states that staff who engage with IT professional development are disadvantaged in terms of research and personal time, and that the development, therefore, had a negative impact on promotion and tenure. The author also lists the characteristics of specific projects that failed to achieve their learning outcomes. A further report suggests that staff development opportunities be provided in project management, teamwork, and the evaluation, and legal issues associated with IT projects; good teaching practice; and the sharing of experiences. Wills (2001) further notes that “staff development is not only about the provision of workshops and seminars but also about provision of information, resources and rewards” (¶16) Wills (2001) concludes that experience as flexible learners is vital for learning to educate flexibly.

Summary

Wardca (2004) believes that the advantages of eLearning are seldom realised because teachers are not adequately trained to use the available tools and opportunities such as reflection, collaborative and interactive activities and access to worldwide resources. Training in educational use of technology tends to be an afterthought of IT implementation rather than a preparatory exercise. Wardca also believes that the professional development opportunities teachers are most often offered focuses on the use of computer applications (such as MS PowerPoint) rather than the more important areas of eLearning pedagogies, the eLearning environment, planning, the development of eLearning teaching strategies and student expectations. As Wardca notes, “effective eLearning teaching involves much more than simply being able to manipulate the technology” (p.7). From the twenty-five publications reviewed for this section of the annotated bibliography, a different practice to that referred to by Wardca is suggested.

A number of the publications (Atkinson, 2004; Binns & Bradley, 2004; Naidu, 2004; Sims and Jones, 2002; Taylor, 2003) have applied the principles of ‘situated learning’ in designing their staff development. Situated learning is grounded in the belief that “learning is most efficient and effective when it takes place within the context of realistic settings in which learners are clear about the reasons for learning” (Naidu, 2004, p. 3). A similar term is scenario-based learning. Binns and Bradley (2004) delivered their course in another country, using paper-based resources and residential sessions. Naidu’s (2004) learning experiences included projects and role plays. On the other hand Sims and Jones (2002) describe a three step process where staff developed a specific learning environment for their own courses. This was similar to the approach taken by Taylor (2003) where a clear process was put in place for staff who needed to develop the online content of their courses. Taylor (2003) outlines a range of learning strategies that included face-to-face awareness sessions, face-to-face training in computer labs, peer mentoring, online reflections and discussion, and online resources. Finally Kidney (2004) outlines a staff development course that appeared congruent with the principles of situated learning. Learning strategies in this course included face to face teaching, as well as support and direction and support from the IT team. Evaluations of courses using situated learning suggested that situated learning was successful in achieving the goal of promoting significant changes to academics’ teaching practices (Atkinson, 2004; Naidu, 2004, Taylor, 2003). Atkinson suggests that learning in this way contributes to success because the learning activities allow for reflective learning.

Two of the publications focus on project-based learning, which is aligned with ‘situated learning’ or ‘scenario-based learning’. In project-based learning groups of people work together on a structured process to address a specific issue in their workplace. In Hofer’s (2001) publication, individual teachers attended class, gained specific skills, then took away the resources to work with other teachers in their school to apply the learning gained. Ellis and Phelps describe a more intensive project-based approach to the redevelopment of a bachelors degree into an online format. In both situations, learners were exposed to a range of teaching strategies that enabled them work on a specific project and to have a concrete outcome at the end.

Cognitive apprenticeship also has some similarities with ‘situated learning’ or ‘scenario based learning’ in that the learner learns in contexts that reflect how the knowledge will be used in real life situations. Pearson & Koppi’s (2003) staff development programme started with the academic studying how an expert approaches the problem, followed by the academic experiencing the carrying out of the task themselves, and applying the learning in their own online environment. As for scenario-based learning, overall feedback was positive about the learning experiences offered with staff going onto apply the concepts at a minimum level.

Hartman and Truman-Davis (2001) have taken a distributed learning initiative in addressing the needs of their institution. Distributed learning has been defined as means by which academics use a wide range of computing and communications technology to provide learning opportunities beyond the time and place constraints of the traditional classroom (Centre for Distributed Learning, n.d.) This approach is clear in their description of learning activities that range from consultation, through to specific classes (self-paced or just-in-time), along with eight week programmes and support from a range of resources. An evaluation of their initiative showed high levels of satisfaction by academics.

Several of the publications (Laga & Elen, 2001; Litchfield, 2000; Littlejohn, 2002) are examples of where tertiary institutions have used a range of learning strategies to raise awareness, develop skills, and build the knowledge of academic staff. These staff development programmes do not have a clear pedagogical theory underpinning the choice of learning activities, rather the authors suggest that a combination of strategies work best. Laga and Elen (2001) suggest that informative sessions, demonstrations and training which provide ideas and knowledge should be combined with individual support and coaching opportunities.

Marra’s et al (2003) staff development model also outlines a similar process, although this is more structured with staff entering one of five phases, from receiving of information, through to skill acquisition, application of learning, and then collaboration with others. Collaboration or networking is also important in Lally and McConnell’s (2004) approach to professional development. They identify the need for forums where practitioners could share teaching and learning experiences and suggest a range of ways that group learning could be managed.

Others (Baty & Moir, 2000; Cavanaugh, 2000; Lefoe, 2000) identify resource sharing as the key learning strategy for their organisations. These included electronic databases of resources, or case study videos and a website with related links and resources. Although not formally evaluated, Baty and Moir (2000) suggest that their programme enables both easy finding of resources and easy access to others resources. Cavanaugh’s (2002) website was well utilised by a number of teaching personnel while Lefoe’s (2000) example could be used by individuals or as part of formal staff development programmes. Moseeva and Krivoschokov (2001) give a further example of a fully online course which provides access to online resources and useful websites. Interaction occurred electronically as well. The notion of having forums through which to share learning is also key in Lally and McConnell’s (2004) publication.

Collin's (2000) approach to staff development is unique in that this author specifically identified behaviours related to self-efficacy. While Collins did not outline ways in which she had addressed staff fears, she did note that it was worth investing time with staff who found technology difficult, as it was often these type of academics who move on to become strong advocates for online learning.

Overall, no one model or teaching strategy emerges as being the most effective in addressing the needs of academics who are planning to move, or are required to move to eLearning, rather a range of models and strategies are utilised (Oliver, 2004). However, there does appear to be evidence of real benefits in using staff development methods which assist staff to apply their learning to real situations, therefore, enabling them to provide good quality learning environments for their students

CHAPTER FOUR: SELF-EFFICACY AND ELEARNING

Introduction

Chapter Three provided an overview of staff development models and learning strategies utilised by academics. Only one study clearly points to the need to address self-efficacy (Collins, 2000). In the process of reviewing the literature, self-efficacy of academic staff and the influence of their beliefs on their uptake of eLearning stands out and is addressed in Chapter Four. Self-efficacy is defined by Decker (1998) as an “individual’s belief in their ability to perform a particular task” (p. 2). Bandura (1994) who has written extensively on self-efficacy notes that people with a high belief in their capabilities approach difficult tasks with confidence in their abilities to master the challenges posed. Those with a less strong sense of self-efficacy expect failure and give up easily in the face of adversity. Hogarth & Dawson (2004) indicate that it can be the attitudes and beliefs of staff more than anything else which determines how successful a staff development experience is in helping them to teach online. Fourteen studies are reviewed on this topic

Annotated Bibliography

Compeau, D. R., & Higgins, C. A. (1995). Application of social cognitive theory to training for computer skills. *Information Systems Research*, 6(2), 118-143.

A research study by Compeau and Higgins (1995) used an experimental approach based on behaviour modelling training to determine how perceptions of self-efficacy, expectations and performance affect computer use. Literature findings supported the belief that training has a positive effect on computer success however the efficacy of different types of training programs was disputed. It appears that although proponents of methods such as class-room, self-paced tutorials and computer assisted learning all argue that their method is best, there is little evidence to support these claims.

Compeau and Higgin’s (1995) experiment compared two groups training with different applications, each of which was exposed to a pre-training questionnaire, a lecture, a demonstration of the software, a post-training questionnaire, a two hour hands-on session, and a test of performance with the software. It was found that self-efficacy to performance outcome expectation, and self-efficacy to performance, were not significant (and several were negative). The authors concluded that self-efficacy does influence computing performance and as a result is an important aspect to consider when developing training packages. An additional finding was that behaviour modelling can alter self-efficacy and performance in some circumstances because it enabled recipients of the modelling technique to see how others reacted to and problem-solved situations similar to their own, boosting the observer’s opinion about their own capability. The

authors also refer to techniques such as “guided mastery” (p. 137) being used to develop self-efficacy. Compeau and Higgins (1995) also observed that where experts were used to fix technical problems this had a negative impact on individual self-efficacy. One area that Compeau and Higgins (1995) recommend for further research is the question of whether self-expectation improves over time when positive outcomes with software are experienced.

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*, 23(2), 145-158.

In a follow-up to their 1995 research, Compeau, Higgins and Huff broadened their scope and the scale of their work in a longitudinal study, comparing 394 surveys between one year and the next. Computer self-efficacy and outcome expectations were measured in the first survey, and affect, anxiety and usage were measured in the second. Overall, Compeau et al (1999) found that:

- Self-efficacy positively influences IT use.
- Self-efficacy positively influences performance-related expectations.
- Self-efficacy has a negative effect on anxiety.
- Performance outcome expectations have a positive effect on affect and use.
- There are no positive relationships between personal outcome expectations and affect, or between personal outcome expectations and use.
- The path from anxiety to use is not significant.

Compeau et al (1999) suggest some of the implications of their study for managers to consider:

- Low self-efficacy needs to be managed, as it affects the individual negatively for prolonged time periods.
- Computer training that increases self-efficacy should be provided where needed.

Compeau et al (1999) conclude that their study shows that performance-related expectations and self-efficacy can be used to predict computer use one year on. This supported their emerging theory that an individual’s response to computing is a product of set beliefs about technology and a set of affective responses to these behaviours.

Decker, C. A. (1998). Training transfer: perceptions of computer use self-efficacy among university employees. *Journal of Vocational and Technical Education*, 14(2).

Decker (1998) argues that the role of self-efficacy has often been overlooked in determining the performance of staff as a contributor to an organisation’s success, and believes that low self-efficacy hinders willingness and thus ability to learn computer technologies; she investigated the relationship between factors such as job type, on the

job training, and the effect of time since undertaking a computer training course, and self-efficacy in the use of computer technology. The overall aim of Decker's (1998) study was to demonstrate how positive self-efficacy with computing enables users to transfer skills learned in training to work situations. She also aimed to determine the usefulness of the training by identifying how self-efficacy is affected after training and how long a raised level lasts. The results indicated that there were significant differences between participants' computer self-efficacy based on the job they did, their previous training, the type of computer use they were required to be involved in, regularity of using computers, and the training they were responsible for in their workplace. There were also significant differences in computer technology self-efficacy between participants with different training and those with different workplace computer use, those who varied in their use of computers on a daily basis, and those who trained others. The job type and the time between training and assessment of performance in the workplace did not affect computer technology self-efficacy. Decker (1998) recommends that employers base programmes for computer training on an assessment of an employees' computing skills and that students in computing programmes are given responsibility to train others, the reason being that self-efficacy increases when assisting others to learn.

Delcourt, M. A. B., & Kinzie, M. B. (1993). Computer technologies in teacher education: the measurement of attitudes and self-efficacy. *Journal of Research and Development in Education*, 27(1), 35-41.

Delcourt and Kinzie (1993) believed that to embrace new technologies people needed to have positive attitudes about them; this included feeling self-efficacious or confident about their use. To investigate their beliefs the authors constructed two assessment tools. The authors also believed that it was important to measure self-efficacy in relation to specific tasks, rather than using a global self-efficacy measure. Delcourt and Kinzie administered their survey to 328 teacher trainees. The authors used hierarchical regression to show that learner characteristics could predict self-efficacy. These included for example; education level, age and use of computer technologies. They concluded that strategies to increase computer technology experiences could result in increased self-efficacy, and suggested that further studies were needed to explore how training or familiarisation through use affects self-efficacy in this area.

deMontigny, F., Cloutier, L., Oullet, N., Courville, F., & Rondeau, G. (2001). Teachers' perceptions of self-efficacy and beliefs regarding information and communications technology (ICT). *Society for Information Technology and Teacher Education International Conference 2001(1)*, 2302-2306. Retrieved from <http://dl.aace.org/3981>

deMontigny, Cloutier, Oullet, Courville, and Rondeau (2001) claim that an assessment of existing skills is important when planning a programme of professional development for ICT use in teaching. Apparently previous experiences, including successes and failures, can have an impact on an individual's willingness to try new technologies. deMontigny et al (2001) aimed to identify nursing teachers' self efficacy and beliefs with regard to ICT use in an online Masters of Nursing programme. The respondents felt they had mastered

all basic ICT, with the exception of anti-virus software and participation in group discussions. They felt that their self-efficacy in using library websites was limited, and also felt they could use only a limited number of advanced applications (for example webpage software). Respondents' motivation to learn new skills was unusually high, particularly when the introduction of new innovations for teaching and learning was generally regarded by educators elsewhere as a burden. deMontigny et al (2001) attributed their results to the likelihood that the nursing educators were a self-efficacious group and understood how important it was to use technology in the Masters programme. deMontigny et al. (2001) conclude that teacher ICT self-efficacy, ICT skills, and learning requirements should be pre-assessed so that appropriate training can be provided. They also suggest that follow up with regard to self-efficacy take place.

Dinev, T. (2002). Internet user anxiety – model, measurement, factorial validity.

Retrieved 31 March 2005 from

<http://itom.fau.edu/dinev/publications/anx.pdf>

Dinev (2002) examined both self-efficacy and Internet use, including the possible precursors to Internet user anxiety. The author discussed how anxieties that are developed about Internet use can cause aversion using the Internet in general, and especially in using it for unfamiliar applications. According to Dinev's (2002) survey of literature, factors that contribute to computer and Internet anxiety include self-efficacy, competency using a computer, physiological responses and emotional feelings about computers, and beliefs about both the benefits and implications of computer use in society. Dinev (2002) hypothesised that self-efficacy is an important determinant of Internet anxiety. Factor analysis of Dinev's survey of 70 undergraduate students showed that items could be divided into two categories for Internet self-efficacy and use; general (e.g. surfing and emailing) and advanced (e.g. making web pages and discussion boards). There were strong correlations between Internet anxiety factors, self-efficacy factors and the Internet specific factors. There were also significant correlations between Internet anxiety and Internet specific factors such as technical, intrusion and security concerns.

Eastin, M. S., & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. *Journal of Computer Mediated Communication*, 6(1)

Retrieved 5 November, 2004, from

<http://www.ascusc.org/jcmc/vol6/issue1/eastin.html>

Eastin and LaRose (2000) tested whether previous experience with technology was linked to self-efficacy. Their study measured Internet self-efficacy in a sample of students studying at a university in the USA. Eastin and LaRose tested various hypotheses, each of which were validated. The first was that self-efficacy using the Internet correlated positively with prior Internet experience and usage. The authors stated that there was a connection between anxiety using the Internet (Internet stress), lack of confidence (self-disparagement), factors such as "depression, loneliness, perceived social support and life stress" (p. 6) and low Internet self-efficacy. Prior experience with the Internet was the strongest indicator of Internet self-efficacy. At least two years experience was required to gain sufficient self-efficacy.

While Eastin and LaRose (2000) did recommend a longitudinal study and comparative analysis using multiple measures to gain a fuller picture of the barriers preventing high Internet use, their initial findings do add significantly to our understanding of self-efficacy with online tools.

Gravill, J. I., Compeau, D., & Marcolin. B.L. (2002). Metacognition and IT: the influence of self-efficacy and self-awareness. Eighth Americas Conference on Information Systems 2002. Retrieved from <http://aisel.isworld.org/Publications/AMCIS/2002/021808.pdf>

Gravill, Compeau, & Marcolin (2002) examined metacognitive strategies for self-managed learning about information technologies (IT). Of particular interest was how self-efficacy and self-awareness influence self-managed learning in IT. To self-manage learning effectively, individuals need to be aware of their abilities and weaknesses, however research data suggests that people tend to under or over estimate their abilities in IT skills. Over-estimation of knowledge can result in employees failing to sign up for courses and help that they need. Gravill et al (2002) sought relationships between three variables - self-assessed knowledge (self-reporting); declarative knowledge (what is known), and procedural knowledge (how it is known). The results of their work show that participants with high CSE were more accurate in their self-assessments based on their procedural knowledge. However, for self-reported knowledge the low CSE group was more accurate. Conversely, low CSE participants under-estimated both declarative and procedural knowledge. Further analysis showed that social bias did not account for these results. The authors suggest that over-estimation of ability is linked to better self-managed learning; under-estimation of skills and low confidence appear to be related to lower levels of self-awareness. They conclude with directions for future research which should further explore the effectiveness of metacognitive strategies such as “goal setting, attribution, self-monitoring, resourcefulness, self-motivation and strategic choice” (Gravill et al, 2002, p. 1063 for learning in the IT context.

Hu, H., & Ryu, J. (2004). Interactive effects of goal setting and self-efficacy in computer skill acquisition of preservice teachers. Society for Information Technology and Teacher Education International Conference 2004 (1), 4116-4123. Retrieved from <http://dl.aace.org/15090>

Hu and Ryu (2004) examined the interaction of different types of goal setting and self-efficacy in a computing class using pre and post self-efficacy tests. Students were first determined as being either high or low self-efficacy and were then randomly assigned to either the process group (with twelve instructional objectives) or the product group (with the objective of developing something with a computer application). According to Hu and Ryu (2004), self-efficacy did not influence performance in the process group. In the product group those with high self-efficacy outperformed those with low self-efficacy. Participants with high self-efficacy in both the process and the product group had higher post-test self efficacy than those with low self-efficacy, and also scored higher in the self-evaluation than those with initial low self-efficacy. The authors conclude there is an interaction between goal type, initial self-efficacy and self-evaluation. However, Hu and

Ryu (2004) did not show that the process of setting goals and the use of self-evaluation actually enhanced performance and self-efficacy as suggested elsewhere in literature.

Kelley, H., Compeau, D., & Higgins, C. (1999). Attribution analysis of computer self-efficacy. Association for Information Systems: Proceedings of the Twenty-Fifth International Conference on Information Systems, 12-15 December, 2004. Retrieved from <http://aisel.isworld.org/pdf.asp?Vpath=AMCIS/1999&PDFpath=270.pdf>

Kelley, Compeau and Higgins (1999) examined the connection between performance using a computer and computer self-efficacy (CSE), and the attributions of individuals (that is, beliefs about causal factors responsible for success or failure) influencing CSE. In their survey, Kelley et al (1999) found that the three primary attributions of success in a particular training module were the respondents' willingness to change to new computer applications, the effort they put in, and persistence. For unsuccessful outcomes the reasons were a lack of general computer training, lack of computer support, and 'difficult to use' computer applications. People who presented with undesirable attributions were more likely to have an external locus of control. The authors conclude that desirable and undesirable attributions are important contributors to CSE.

McLoughlin, C., Baird, J., Pigdon, K. & Wooley, M. (2000)."Fostering teacher inquiry and reflective learning processes through technology enhanced scaffolding in a multimedia environment." World Conference on Educational Multimedia, Hypermedia and Telecommunications 2000(1), 185-190. Retrieved from <http://dl.aace.org/1240>

McLoughlin, Baird, Pigdon and Wooley (2000) have used metacognitive tools for professional development obtaining positive results with a group of student teachers in their QuILT (Quality in Learning and Teaching) project. An interactive CD ROM programme was introduced as a professional development initiative in the Faculty of Education, University of Melbourne, Australia, to promote critical inquiry and reflection in student teachers. The CD-ROM portrayed authentic scenarios in the form of virtual classrooms that aimed to engage the students in problem-solving activities and case-based learning. Structured reflection activities were carried out using an electronic notepad. In the project, student teachers recorded their thoughts and analyses of the scenarios on the notepad, and then discussed them in workshop sessions. The purpose of the workshops was to help the teachers develop skills of reflection, analysis and synthesis so they could build new knowledge (McLoughlin et al, 2000).

Milbrath, Y., & Kinzie, M. (2000). Computer technology training for prospective teachers: computer attitudes and perceived self-efficacy. *Journal of Technology and Teacher Education*, 8(4), 373-396.

Milbrath and Kinzie (2002) state that computers are underused by teachers as a learning tool, and suggest that one reason for this is that computers were not a part of teacher's training. Computer anxiety can be a big deterrent to computer adoption for educators, as can perceived self-efficacy (PSE). Unlike attitudes, PSE is identified with a set of clearly defined skills or behaviours, for example it is positively related to computer training. The authors noted that computing affect is related to training experienced, in that it appears to increase with training. In their study, Milbrath & Kinzie looked at the relationship between computer training, computer affect, computer perceived self-efficacy (PSE) and computer use over time (that is, over three training sessions). Their findings suggest that as frequency of use stops increasing so does PSE. Increases in PSE were not apparent until the second training session, and increases in computer usefulness was not seen until the third. These results show that frequent exposure to applications is important. Further, Milbrath & Kinzie suggest that the same principle applies to distance and online learning with technology.

Phelps, R., & Ellis, A. (2002). Overcoming computer anxiety through reflection on attribution (Electronic version). ASCILITE 02. Winds of change in the sea of learning: Charting the course of Digital Education, 8-11 December, 2002.

Phelps and Ellis (2002) found that metacognitive approaches could be used to alleviate computer anxiety. Based on an action research project that involved pre-service teachers, they were able to identify that through helping students to raise their self-awareness about their attributional beliefs, suitable learning strategies for computing could be adopted. Attribution was defined as the explanation an individual makes for their success or lack of success. An individual's attributional style influences behaviours such as "motivation, performance and affective reactions" (p 516) to life events. Metacognitive strategies such as self-assessment and reflection with surveys and journaling were used to assist students in the implementation of problem-solving tactics for different computing situations. The researchers concluded that metacognitive approaches (reflective engagement with the learning process) to learning helped reduce computing anxiety.

Phelps, R., Graham, A. and Kerr, B. (2004). Teachers and ICT: Exploring a metacognitive approach to professional development. *AJET*, 20(1), 49-68.

The use of metacognitive strategies for teacher professional development was also successful for Phelps, Graham and Kerr (2004), who worked with secondary school teachers Australia. To extend their ICT skills, teachers attended two workshops and underwent self-paced learning (print, CD-ROM, web-based resources, online communication). The teachers were encouraged to set their own professional development goals for using ICT in teaching, and asked to examine their "initial feelings, motivations and beliefs" (p. 52) about computing. They were also required to explore learning strategies which were appropriate for them individually, selecting from

mentoring and reflective journaling as a way to engage in metacognitive learning. Activities and self-paced resources encouraged them to revisit their goals. Participants were encouraged to set up their own networks for support, so they could get outside assistance to problem-solve at a practical classroom level. The approaches used allowed participants to work at their own level and to explore, depending on their existing computing proficiency. The researchers believed that the metacognitive approach used in their project could be transferred to any number of contexts, and that there was a need for further research in the area (Phelps et al, 2004).

Summary

Research findings indicate that the link between computing self-efficacy and computer use is a particularly tight one (Compeau & Higgins, 1995; Compeau et al, 1999; Decker, 1998; Dinev, 2002; Kelley et al, 1999). Kelley et al's (1999) research points to the behaviours that lead to developing self-efficacy in relation to technology. These include both attitudes such as effort and persistence, and external factors such as lack of general computer training or lack of computer support. Interestingly and fitting with the notions of Bandura (1994), success was attributed to internal factors, and lack of success to external factors. Further Compeau and Higgins (1995) point out that where experts are used to 'fix' problems, then this has a negative impact on an individual's self-efficacy. There is also a firm relationship between perceived self-efficacy and the frequency with which computers are used (Compeau et al, 1999; Eastin & LaRose, 2000; Milbrath & Kinzie, 2002).

While Delcourt and Kinzie (1993) note that the use of strategies can result in increased self-efficacy, others have been more specific investigating the use of metacognitive strategies to help staff develop their self-efficacy (McLoughlin et al, 2000; Ellis & Phelps, 1999; Phelps et al, 2004). McLoughlin et al (2002) used structured reflection activities recorded on an electronic notepad, following this up with discussion. Ellis and Phelps (1999) clearly noted that reflective engagement with the learning process did reduce computing anxiety. They used reflective sheets to enable research participants to reflect on their experiences of being involved in staff development. In a later study, Phelps et al (2004) directed academics to examine their feelings, motivations and beliefs, and also provided academics with the opportunity to select learning strategies that were congruent with their learning style. Decker (1998) also proposed that students in computing programmes are given responsibility to train others. The outcome of such a learning strategy can lead to increased self-efficacy.

A number of researchers have alluded to the importance of assessing existing skills when designing computer training (Decker, 1998; Eastin & LaRose, 2000; deMontigny et al, 2001). deMontigny states that previous experiences can have an effect on an individual's willingness to engage with new technologies. The need to assess existing skills is supported by the research of Compeau et al (1999) where they stated that an individual's response to computing is product of set beliefs about technology and a set of affective responses to these behaviours.

The review of the publications also suggested that there is evidence to support the use of self-assessment strategies to improve computing self-efficacy (Gravill et al, 2002; Gravill et al's work suggests that while over-estimation of ability is linked to better self-managed learning, underestimation of skills is linked to lower levels of self-awareness. Hu and Ryu's (2004) experience was not as conclusive. Although their research showed an interaction between goals set, initial self-efficacy and self-evaluation, the process of setting goals and the use of self-evaluation did not necessarily enhance performance and self-efficacy as was originally hoped. These findings would suggest that a good self-assessment will not only identify the computer skills that are lacking, but should include questions to identify academics' beliefs and affective responses to technology. Greater awareness could lead to better learning.

CHAPTER FIVE: EFFICACY IN THE INSTITUTIONAL CONTEXT

Introduction

In Chapters Two, Three and Four the topics of early and late adopters, staff development models and strategies, and ways in which self-efficacy may be fostered were discussed. In the process of reviewing the literature on these topics it was evident that many of the publications also identified the impact that institutional culture has on shaping the adoption of eLearning. A number of factors have been identified, and the nine articles selected for this chapter provide an overview of these factors. Overall, the literature indicates that the provision of timely and appropriate staff development within a supportive and strategic institutional culture has an extremely important influence on the adoption of eLearning.

Annotated Bibliography

Burnett, D. (2002). Perceived organizational climate and internet self-efficacy: Identifying the best climate to promote eLearning. World Conference on ELearning in Corp., Govt., Health., & Higher Ed. 2002(1) 162-167, Retrieved from <http://dl.aace.org/9358>

Burnett, (2002) suggest that there is a strong relationship between perceived organisational culture and Internet self-efficacy and utilisation. The author developed a model which demonstrates that there are three dimensions to consider, control and stability versus flexibility, internal versus external focus, and means versus ends emphasis. Using two surveys for 20 staff, the researcher was able to determine that several correlations existed. The first correlation was between respondents' perception of the institution and of their online skills. This correlation indicated a strong positive relationship between working in a clan/employer focussed culture and having learnt to use course management software. There was an equally strong negative relationship between being in a market/results culture and learning to use course management tools. There was also a positive relationship between high Internet self-efficacy and a clan/employer focus culture. The researcher concluded that a supportive environment is important for staff innovation, which in turn affects the overall effectiveness of the institution.

Forbes (2004). Leadership as capacity building in online teaching and learning. In Distance Education Association in New Zealand (DEANZ) and Commonwealth of Learning (COL), Building Learning Communities for our Millennium: Reaching Wider Audiences Through Innovative Approaches, Proceedings of the Third Pan-Commonwealth Forum on Open Learning (PCF3), Dunedin, New Zealand.

Forbes (2004) suggests that developing online teaching and learning leadership within institutions is key to generating institutional change and increasing capacity for online development. These aspects, Forbes (2004) asserts, cannot be left to chance. Forbes argues that the concepts of leadership, learning and change are key ingredients for institutional success, and demonstrates how these relate to eLearning. She states that:

“Paradoxically, online teaching and learning may hold the solution to its own dilemma, as the key to learning to learn and lead in online teaching and learning lies within the online settings: one builds capacity for leadership in online teaching and learning by engaging in learning and leading with a mentor or team within these settings” (p.1).

eLearning leadership, Forbes suggests, is best distributed throughout an organisation to create the momentum required for “self-renewal” (p.4). She goes on to say that the sort of leadership required is that which is continuously inquiring, collaborating and reflecting.

Foster, J., Bowskill, N., Lally, V., McConnell, D. (1999). Preparing for networked collaborative learning: An institutional view. European Conference on Educational Research, Lahti, Finland, Education Line, Retrieved from <http://www.leeds.ac.uk/educol/documents/00001335.htm>.

Foster, Bowskill, Lally and McConnell (1999) reported on an action research investigation into the readiness of a university for implementing ICT-based learning and teaching. The researchers examined the factors required to support networked, collaborative learning as part of a national project. Key stakeholders in academic, management, support services and a networked learning strategy group were interviewed about their perceptions of online/networked learning. Participants were asked about their role in supporting the development of networked learning, what they regarded as enabling and constraining factors, both internally and externally, and what they believed was needed to support the university’s readiness for networked learning (Foster et al, 1999). The researchers found there was a need for the following:

- A clearly articulated vision.
- Implementation strategies in the areas of IT, learning and teaching, staff development and curriculum development to coordinate the expertise already within the organisation
- Financial resources.
- A culture shift which recognised and rewarded quality improvement.

The researchers concluded that another advantage of networked learning was the opportunity for external collaboration, which would have both economic benefits and advantages for learning (Foster et al, 1999, p. 2).

Lewis, R. (1998). Staff development in conventional institutions Moving towards open learning. In C. L. F. Lockwood, Staff Development in Open and Flexible Learning (pp 23-32). London: Routledge

Conventional institutions are beginning to adopt more and more learning programmes that allow students more open access and give them more responsibility for their own learning (Lewis, 1998). Staff will need to make changes to anticipate the challenges that will arise from the way students are required to learn in such an environment. These challenges are made more difficult in the current environment of funding cuts and reductions in staffing. Lewis believes that, while staff development has a role, it should be only as part of a multifaceted strategy. He suggests other parts of the strategy should include several measures such as:

- Increasing individuals' access to education.
- Helping students take responsibility for their learning.
- Developing quality curriculum.
- Applying technology where relevant.
- Using learning material appropriately.
- Defining and supporting the role of the student. He also suggests strategic changes that need to be made in current climate, staff development and staff roles.

Lewis (1998) describes how staff at one UK university were cautionary in their approach toward adopting open learning. Staff questioned the motives for the changes and predicted a second-class distance education system. Lewis states that in this type of climate it may be tempting to turn to staff development as a panacea, but that this should only be done along with the steps suggested above.

McNaught, C. (2003). Development and support for the global eTeacher, Retrieved from <http://globaled.com/articles/McNaughtCarmel2003.pdf>

According to McNaught (2003), strategic support is very important in preparing university teachers to work with new technologies and conditions. In her discussion about the role of academic staff developers, McNaught defines a global e-teacher as an educator who can work across time and cultural zones. Her work indicates there are many factors influencing the adoption of eLearning, and argues that staff development in universities needs to be supported financially and strategically. McNaught concludes with a list of factors she sees as being important to adoption of eLearning at all universities regardless of cultural setting:

- Inclusive and meaningful conversations about the direction of change.
- Establishment of local projects rather than just university-wide training.
- Realistic expectations of staff members.
- Methods to motivate staff to use e-teaching.

McNaught, C., Phillips, R., Rossiter, D. & Winn, J. (2000). Developing a framework for a useable and useful inventory of computer-facilitated learning and support materials in Australian universities. Evaluations and Investigations Programme, Department of Education, Training and Youth Affairs.

A study of computer-facilitated Learning (CFL) across the higher education sector of Australia was conducted using online surveys across 28 universities, and a range of data collection methods such as interviews, case studies and an examination of institutional documentation. The authors (McNaught, Phillips, Rossiter and Winn, 2000) reveal that institutional vision, supported by policy and culture was part of a range of factors associated with the adoption of eLearning in universities.

McNaught, et al (2000) state that along with incentives, reward systems and a cohesive infrastructure, there was a the need for integrated and flexible staff support within mentoring systems, and timely professional development i.e. the provision of training and support as the need arises. The researchers also found there was a need to include release time for eLearning professional development in workload planning. The authors conclude with a list of recommendations for not only institutional policy, culture and infrastructure, but also for ways to manage intellectual property, collaboration and the use of databases for resource sharing so that eLearning can be managed in a more cost effective manner.

Pollock, C., Fasciano, D., Gervais-Guy, L., Gingras, D., Guy, R., & Halle, R. (2001). The evolution of faculty instructional development in the use of technology at College Boreal, Ontario. In R. M. Epper & A. W. Bates, Teaching Faculty How to Use Technology: Best Practices from Leading Institutions (pp 59- 78). Connecticut: Oryx Press

Educational leadership in the area of online teaching and learning is regarded as very important. Pollock, Fasciano, Gervais-Guy, Gingras, Guy and Halle (2001) conclude that

a clear vision for online learning and the use of technology is one important factor for successful adoption by staff. Pollock et al (2001) outline the experience of a Canadian college in implementing videoconferencing, mobile computing and more recently, online learning. The authors report that to support the new technologies, a group of pioneers from within each of the faculties was identified and used as trainers for the rest of the faculty. Staff received three hours per week (or 48 hours in total) of training per semester. Other measures to support staff included the creation of a resource centre and a multimedia applications course. The college assembled a team to develop an online strategy during 1999-2000. This team researched and defined best practices and directions in online learning as well as investigating possibilities of corporate partnerships. This resulted in a team being formed for multimedia productions and faculty support and a centre being launched for eLearning. The team was responsible for:

- Aiding course planning and development.
- Standardising online course development and management through the selection of online tools.
- Providing training and support to faculty in selection and use of online tools.
- Participating in strategic planning for learner and faculty support.
- Researching market opportunities and establishing partnerships.

Pollock et al (2001) report that the lessons the college have learned include: a clear vision for development is important, staff development is vital and a strong planning process and faculty buy-in are essential. Although future directions for the college would be determined by evaluation of present initiatives, a redefinition of the professional development plan would be included.

Prendergast, G. A. (2000). Successful introduction of computer mediated learning,
Retrieved from <http://globaled.com/articles/PrendergastGerard2000.pdf>

Prendergast (2000) states that organisations need to be willing to strategically invest resources to get the benefit of change. He believes that one of the first and most important steps in implementing online learning-related change is to identify the people who will be affected within the organisation, and develop strategies to gain their cooperation. The author suggests that the following groups might be affected, and outlines ways to deal with the likely issues they may raise:

- Policy makers – consider the main issues the policy makers are dealing with and convince them of the benefits. For example, in the case of computer-mediated learning it can be argued that it saves money, allows part time students to study at home, enhances inter-organisational collaboration, and increases an organisation's reputation as an innovative user of technology.
- Practicing educators – this group may be afraid of redundancy due to the introduction of technology, and fear they will be replaced. It is important to work with them and demonstrate the benefits of computer-mediated learning.
- Students – need to be considered as end users of the product.

- IT professionals – need to know what is needed from them, and must be kept informed about the use of their products.

Souleles, N. (2004) A prescriptive study of early trends in implementing e-learning in the UK Higher Education sector. University of Georgia: Instructional Technology Forum. Retrieved from <http://it.coe.uga.edu/itforum/paper78/paper78.htm>

A study was undertaken by Souleles (2004), focussing on the use of VLE (Virtual Learning Environment) systems in ten UK universities. Through the use of a questionnaire, the author found that the degree of eLearning experience in each of the institutions varied, as did the number of staff and students utilising learning technologies. Interestingly enough, all but one institution provided staff development support, and those that did provide support made it optional. A link was discovered between a low key approach to staff development and incentives, and poor up-take by staff. This was also related to the level of strategic policy making in the ten institutions, none of which had adopted VLEs and eLearning to compete globally. Three institutions alone had increased their geographical range of students, even though all were offering flexible study options. Souleles (2004) found that overall, flexible delivery and eLearning was practised at a basic level, and recommended some form of organisational change if progress was to be made in the UK. Specifically, Souleles (2004) recommended the provision and presence of the following:

- Institutional ICT (Information and Communications Technologies) policies.
- Evaluation procedures.
- Staff development support and incentives.
- Sharing between departments.
- Effective systems for critique and sharing of information.
- Dynamic teaching and learning processes.

Summary

This chapter was included as it is clear from the selected sample of literature reviewed, that institutional productivity in eLearning cannot be solely related to staff development. This point is clearly made in the work of Lewis (1998), Forbes (2004), Foster et al (1999), McNaught (2003) and Pollock et al (2001).

Lewis (1998) states that while staff development can lead to change in the individual academic; it is not the only answer to the issue of up-take of eLearning by academics. Indeed it is only part of a multifaceted strategy. Lewis suggests that institutions should also address the learning needs of the student. Foster (1999) and Pollock et al (2001) take this one step earlier by suggesting that the institution must lead the change in very specific ways. In other words, institutions should not rely on the work of early adopters to create change in the institution. The development of a vision, along with financial

resources to enable staff to work towards that vision is vital in creating change (McNaught et al, 2000). To enable change, strong leadership is required. Forbes (2004) highlights the need for a style of leadership that is focused on inquiring, collaborating and reflecting, and leaders who have the ability to manage change. Leadership as seen by Forbes (2004) does not stay with a small group of people but is distributed through the organisation in order to create and maintain a momentum.

Strategic investment in the change process is highlighted by McNaught (2003), McNaught et al (2000) and Prendergast (2000). This investment is not necessarily financial, (although all authors in this section highlight the importance of financial support) but is instead about the need to carefully consider who will be affected by the changes and how their co-operation or buy-in can be enlisted. Souleles (2004) recommends the development of ICT policies which can assist in supporting organisational change. But policies will not work without a strong planning process (Pollock et al, 2001). Where this planning process does not happen, Souleles (2004) was able to show that there was a poor up-take by staff in eLearning. Prendergast (2000) reminds the reader that each stakeholder (policy makers, academics, students and IT professionals) view the change differently and therefore different approaches may be required. Together these perspectives create an institutional culture. Burnett et al (2002) demonstrated a link between academic self-efficacy in the use of the internet and the institution. In this study the institutions approach to eLearning had a direct effect on how the individual academic felt about their ability to be innovative.

There appear to be many aspects associated with the success of introducing and using eLearning methods in educational institutions. Factors such as institutional culture, effective leadership and strategic vision, staff and student support and buy-in, staff development, curriculum change and financial backing are frequently mentioned. It is clear that if an institution is going to meaningfully adopt online learning it must have a well communicated strategic intent, accompanied with actual investment in well-conceived staff development and change management processes. Key stakeholders should also be persuaded of the role for online learning, and potential leaders of change within the staff body identified. If there is no real institutional commitment to online learning, the evidence in the literature suggests that change will not be forthcoming.

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