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Information Literacy and Web Based Teaching: Teachers Untangle the Web with Online Learning and Information Literacy Skills

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Introduction

The Centre for Information Studies at Auckland College of Education has delivered a range of courses to primary, intermediate and secondary teachers throughout New Zealand since 1991 using distance delivery methods. The courses have focused on designing strategies, frameworks and learning experiences that enhance information literacy in classrooms. These papers credit to one of three specialist diplomas: the Diploma of Teacher Librarianship; the Diploma of Information Studies; or, the Diploma of Information Technology. The course referred to in this paper is called Telelearning. It was converted to web-based delivery in 1999. The main considerations in the conversion of the course were to maintain the original course aim and objectives, to ensure adequate support for the students in their use of the technology, and to make sure that the use of the technology actually added value to the learning process.

Literature Review

A review of the current literature in the field of web-based learning and teaching revealed several main themes. These were as follows:

- the importance of professional development for staff teaching in this mode.
- the effectiveness of web-based learning compared with more traditional environments
- the extent to which a paradigm shift in thinking is required to work in this delivery mode.
- problems with access for students to web-based learning.
- time management issues for staff and students.

Todd (1998) suggests that the Internet is a indiscriminate and ambiguous mix of factual, false, misleading, potentially dangerous, poorly organized and seemingly useless information. Yet it is posited as one of the primary mechanisms of access to information in the 21st century. If he is right, the need for teachers to upskill in accessing and using information is urgent. The Internet is now not only an information tool, but also a communication tool. Todd (1999) further highlights the urgency for teachers to adopt a pedagogical framework that does not leave learning in electronic environments to chance. There is much literature to suggest that to integrate new technology effectively, a grounding in information literacy is essential (Gawith, 1998; Probert, 1999; Todd, 1999; McKenzie, 1999).

Collis (1996) uses the term telelearning to mean, "making connections, between persons and stored resources, via communications technologies, for learning related purposes." She suggests that in order to engage in online learning, teachers and students must access and effectively use computer-mediated communication (CMC) that is email and Internet functions such as chat rooms, listserves and conferences either synchronistic or asynchronistic. The literature suggests that participation in online learning communities offers interesting possibilities for teachers. Online learning communities are formed when a group of like-minded people with similar aims form a group and communicate using the Internet. Selby and Ryba (1999) reported that the peer communities of practice, as described by Lave and Wenger (1991) provide a context for teachers, both newcomers and old timers, to share their knowledge and practices. They then gain knowledge and skills in using the Internet and other applications to create better conditions for learning. Williams (1997) also suggests through her work in Australia, that online communities of practice are becoming an important environment for modern teachers, and learning how to participate in and use such communities is important professional knowledge. McKenzie (1998) recognizes that the delivery system of choice for corporations, as well as schools, could well be the online mode.

Students participating in the Telelearning course not only had the opportunity to become competent users of email and the internet as part of their own professional development, but they also had to engage with their classes in web based projects.

The Course

Aim

The participants will gain an understanding of what constitutes telelearning and computer mediated communication (CMC) and how these can be used to enhance teaching and learning both in the classroom and as part of their own professional development.

Objectives

Participants will:

- become confident users of email, internet and the world wide web
- identify ways in which web-based learning projects can support their students' learning
- evaluate the use of CMC when used for teacher professional development
- involve their own students in a particular online learning project
- understand the meaning of telelearning and how it relates to learning in the classroom

Delivery

The environment for the delivery of Telelearning was provided through WebCT™. It was recommended as the best platform for web-based delivery by colleagues because it provided an environment that was conducive to good teaching practice. It provided a platform for delivering courses on the Internet, which did not require a high level of technical expertise from staff or students. It provided a range of environments for course delivery –at its simplest it provides for the co-ordination and management of learning and it can act as a point of communication for staff – at a sophisticated level it can provide a virtual learning environment that facilitates the entire

learning process. Within the WebCT™ platform, nine tools were selected as the most appropriate for this course. It was expected that these WebCT™ tools would provide easy access to allow the students to communicate and get course information and develop a successful online learning community. Because this was the first paper offered entirely on the web from our institution, it was considered important to conduct a major research project to measure the effectiveness of the WebCT™ teaching and learning environment. The purpose of this paper is to present the findings of that research and to make some recommendations for future web based teaching.

Examples of Student Projects

Course members were partnered with each other to plan, implement and evaluate an online project with their classes. They had to demonstrate that the planning of these projects contained underlying principles of interactivity, reflectivity, and scaffolded opportunities for students to turn information into knowledge. Some examples of the projects were:

The Travel Buddy Project. Two teachers who lived in Auckland and Dunedin involved their classes in a travel buddy project to find out about the main tourist attractions in their respective cities. A soft toy called George McHighlander traveled around the main attractions in Dunedin with the students who sent photos, emails, faxes, videos and web-based material to the Auckland students. The toy was then sent to the Auckland students who reciprocated. Both groups of students were also involved using the web for searching and displaying photos and information.

Antarctica Project. Two teachers took the same context and explored it through different curricula - one class studied landforms through the science curriculum while the other studied how living in Antarctica affected peoples' lives from a social studies perspective.

Designing a Toy Project. Two teachers in different parts of the country engaged their students in a joint project to design a toy. Each class drew up the specifications for the other class, checked their design progress and evaluated their final product.

Myths and Legends. Two teachers engaged their Year 2 & 3 students in a joint study of Maori myths and legends. The students studied a number of myths and legends sharing the reading, pictures and captions, using email, fax, phone and audio conferencing. They then made up their own legends to share with the other class.

Methodology

Data were collected from pre and post course questionnaires, from an analysis of web-based discussions and from an analysis of student responses to questions about the strengths and weaknesses of web-based learning. It was, therefore, a combination of quantitative and qualitative methodology.

Research Questions

The questions guiding the research were:

1. To what extent did the teachers taking the course use email and Internet to enhance their teaching practice?

2. How did teachers design, implement and evaluate effective web-based learning experiences for themselves and their own students?

3. In what ways was the online learning community successful in supporting teachers in this course?

The participants were fourteen currently practicing teachers from different parts of New Zealand. This cohort of learners had not only considerable strengths in classroom practice over many years (the average age group was 35-45 years), they also had some experience with other forms of distance education. Twelve of the fourteen students were women. They were all primary and intermediate level school teachers teaching the full range of age levels from new entrants to year eight.

Results

The Questionnaires

Email and Internet Use. A comparison of the data from the pre and post course questionnaires showed some significant differences. The group showed a significant increase in their use of email. Before the course started 64 per cent of the group used email. After the course 100 per cent of the group reported using email confidently. Most students preferred to access their email from home. At the beginning of the course students were using email less than twice a week and by the end of the course they were using email 2-4 times a day. A significant change occurred in how this group viewed their IT skills. Before the course they saw themselves with either none or very few skills in the use of IT, however, after the course they showed they felt extremely or very confident in their use of these functions.

Increased Confidence and Problem Solving Ability. Students were asked to rate their confidence on a 5 point scale before and after the course. The most significant improvement was noted in the respondents self rating of confidence and skill levels using email, listserves, forum discussions, the Internet, and web-based projects. In all areas they reported increased confidence in their ability to use the functions of the technology. They used words like "definitely" (5), "lots" (4), "100 per cent" (1). One respondent said she felt as though she had experienced "a crash course and gained heaps of confidence" while another observed that her confidence "had sprung from the increased skills and frequent use made of IT on the course." Students reported increased ability to solve problems. Significant differences were reported with regard to solving problems on their own by the end of the course.

Experience with Using Web-based Projects in the Classroom. Few of the respondents had been involved in any web-based projects so it was hardly surprising that all respondents answered this point positively in terms of their increased confidence and competency. Eighty per cent of the respondents stated that the ideas that they shared about specific web-based projects were invaluable while one respondent noted that it was "a kick start in finding out what was available." Another respondent observed that it was the context of working with a partner and having to communicate online that greatly contributed to her learning. Another saw the experience of working with a partner as an opportunity to try out ideas within a supportive framework and an informed community of professionals.

Enhanced Teaching and Learning for Themselves and Their Students. All respondents noted that they had gained lots of experience. One respondent recognized a direct correlation between her learning and that of her students. Another student focused on the improved ways she had found to manage the use of computers to enhance learning, while another felt she had a greater appreciation of how the internet and email could be used to support learning and teaching.

The use of the Internet and email were the most common responses to the question in the post-course questionnaire, "*What IT activities have you implemented in your teaching as a result of this course?*" Four respondents referred specifically to an increase in the use of email, while six respondents made reference to increasing their access to the Internet and web searching for information to support curriculum units. One respondent had followed up on her course experience by setting up email communication between her class and another class in a different town to compare activities and environments as part of a social studies unit. In response to the question, "*If you believe that your skills and understanding of CMC and IT have increased over the last 3 months to what extent has this been as a result of this course?*" nine respondents recognized that the necessity to use the technology to fulfill the requirements of the course was a large part of enabling them to learn so much in such a short time. One respondent said, "Assignments meant we had to learn by doing. It was one of the biggest learning curves of my life."

Other comments revealed that the context of the course provided an element of compulsion for participants to use and apply their skills and to build on them. One admitted that she could not have come so far without the obligation of having to use the IT ("Mostly due to the course I had to know what to do and then to use the skills on the course - the course provided the opportunity to practice the skills before using them with students.").

In answer to the question, "*What advice would you give to teachers enrolling on this course next year?*" the majority of the respondents (eight of the ten) emphasized that having Internet access at home as well as at school was crucial for the successful participation on this course. Issues concerning the management of time were the next most mentioned. Again eight respondents advised that the course needed a considerable amount of time, one student suggested that no other course should be taken at the same time, on top of a full time teaching load. One student described the time factor as being "a heavy commitment." Another suggested that although the course was short and intensive she wondered if there was not a case to be made for the course to be longer "giving the online community more time to develop and mature." Four respondents pointed out that using the Internet could be an extra cost on the household accounts although no one gave specific amounts. Other respondents gave advice related to the active participation in the online learning community. They advised that this was done most successfully if students logged on regularly to the course site and maintained communication with their partner. There were some idiosyncratic comments regarding access to technical assistance and the possibility of feeling lonely in this new learning environment.

The Forum Discussions

Use of the Course Web Site. The WebCT ™ system provided the environment for the teachers to learn from each other and be supported by the web-based learning community. They found the forum discussions extremely valuable. As in a traditional classroom, the group introduced themselves in the welcome forum. They exchanged information about their families, hobbies, holidays, teaching situation and favorite sports. They asked questions about colleagues and made connections with people when they

exchanged the location of where lived. They asked questions about the use of the technology. Because all questions were answered promptly and taken seriously they quickly realized that there was no such thing as a dumb question. Some examples of the questions raised:

> *I know this may sound a bit dumb but how do you get into the using web based projects forum? Or am I in it?*
>
> *Can anyone tell me how to make the site address turn blue? I think that is a hot link?*
>
> *Can you tell me how to get into other search engines?*

Sometimes one of the students would ask a question and be affirmed by someone else admitting they wanted to ask the same question: "How do you download a PDF file? Sorry if this is a silly question!" ; "I don't think this is a silly question at all. I would like to know too please."

They shared useful websites, listserves, tools, and resources. Even the most inexperienced Internet user was making recommendations and suggestions by four weeks into the course. The lecturers used the forums to facilitate discussions on the specific chapters of the set text for the course. They also used the forum discussions to share their delights in their own children's learning. This is illustrated by the following quotes:

> *What has staggered me is that although we have officially finished our project the children are continuing to research their interests.*
>
> *We found the children quickly gained confidence in using IT and valued the opportunities made available to them.*
>
> *As for the knowledge gained, it was not so much through using the technologies but in the supporting activities like reading, discussions and reporting back to the class members.*
>
> *I guess the main benefit is that it has made the children aware of a world outside their classroom.*

Integrating IT with very young children's programmes was a challenge especially using email and the Internet. The teachers working in the junior school were delighted with their experience and some of the strategies they put in place to ensure success as illustrated here:

> *With very young children the more real you can make it the better. One of the first things we did was exchange photos of the children they were communicating with. This gave them a visual point of contact. They used the photos to make connections when they were writing. We also used drawings, cartoons and illustrations to highlight our own learning.*

Access to ICT. Students commented about the difficulties concerned with access to the appropriate technology. Whether the problem was at home or at school there were similar issues. Some of the students had easy access at home and at school both for themselves and their students while others worked in very difficult circumstances. However, in general, the students overcame barriers of access both for their own participation in the course and for their students participating in web-based learning.

Some of the following quotes indicate the nature of the problems:

The students I was working with had no computer in their classroom.

We only have one computer in the whole school with email access and that is in the Principal's office.

Internet access is only in the library and is very difficult to get past timetabled classes.

I cannot find a computer that can read the message when it does arrive.

The computer in the library is not equipped with a printer.

Competing with other members of my family also needing to use the home computing for their own study has been a difficulty.

Emails can only be accessed at certain times of the day because of the computer being in the school office.

Competing with other classes needing the Internet is a huge problem.

Not having a computer at home and with only two computers at school with Internet access it has been hectic for me and the children.

Time Management. Because all the participants in this study were full time practicing teachers, time was the greatest enemy. Everyone in the course expressed the frustration of "never having enough time." Many students mentioned the competing elements on their time and the difficulties of learning at the same time as teaching. Following are some typical examples:

Many of us did not recognize the huge amount of time commitment involved. This is not only working with our classes but also searching on the net for information and trying to get a handle on everything.

I love to read our discussions but do not get much time with meetings after school, student teachers etc.

All I need now is a few days of peace and quiet to have the time to get through it all. I am finding the time commitment huge.

One of my main issues with browsing the net is TIME. But the holidays are coming up so hopefully there will be some time there.

It is quite daunting given our already full workloads and no release time components to our day.

There are a lot of apprehensive teachers out there who need the opportunity to do this sort of staff development. Many are scared away by the perceived workload and their concerns about a lack of technical support.

The Portfolio Assignment

Strengths of Web-based Learning and Teaching. The students' comments were about the user friendly nature of the WebCT _ environment, the opportunities that the environment provided for student centred learning, the importance of active participation in the discussion forums and the opportunities for collaboration with colleagues. Students also reported that not having to travel distances to attend courses was a huge advantage. They liked being able to work at their own pace and have control over their own learning.

Weaknesses in Web-based Learning and Teaching. The weaknesses as reported by the respondents were concerns about classroom management issues with students working on web-based projects, technical and access issues, the cost of working online, and the difficulties of time management.

Discussion

The results of the research project show that by linking information literacy and web-based teaching it is possible to create and sustain an online community of learners. Lecturers and course participants discovered that web-based courses, underpinned with information literacy theory and practice, have great potential for improved student participation and interaction in the learning process. They can provide opportunities for the development of critical reflective thinking and practice and the opportunity to actually change and improve the way we teach. There were three questions that underpinned this study, but it was the second question that provided the most information about the role of information literacy skills. This question was: "How did participants design, implement and evaluate online learning for themselves and their students?" For the participants to design, implement and evaluate online learning they had to up skill in their technical skills and confidence and also in their application of information literacy skills.

The Action Learning model (Gawith, 1987) provided a framework in six stages for the students to pursue an online project scaffolded by the information literacy skills inherent in this model for learning. Students were able to acquire new knowledge from information while maintaining a student centred, teacher guided and question driven approach. This cohort of students had experience with information literacy skills using this model with their children through other courses provided by the Centre for Information Studies at Auckland College of Education. Infolink: Information literacy skills is the foundation course for all diplomas. In this course students learn to apply the Action Learning model (Gawith, 1987) with their classes. They therefore knew and understood the importance of information literacy skills and the relevance of the learning process when integrating technology. As McKenzie (1999) points out, information literacy is mainly about developing understanding and insight and about the interpretation of information guide decisions, solving problems and steering through uncertain, complex futures.

As Probert (1999) suggests, students become information literate when they have sufficient authentic opportunities to work through the whole process using various information skills and ICT and then to come up with decisions, answers, options, reports or recommendations. The teachers who participated in the Telelearning course worked alongside their students prompting them to think, analyze, question, synthesize, and learn from the information they were studying. They used an authentic context - their classroom programme and student learning needs - to source suitable websites and relevant strategies for learning. In doing so they experienced and shared the joys and

success of collaborating not only with their partners and their children but also with the community online. They also experienced the frustrations of trying to implement an online learning project in their classrooms where the systems and procedures impeded the easy access and effective use of the technology with their students. There was wide variability in accessibility to the technology. The stress this caused in expended energy to circumvent such difficulties took its toll on teachers.

Just as Gawith (1997) had reported on her experience on the previous course, the success was not dependent on the teachers' skills with technology, but their ability to plan, coach and manage this type of learning with and through information literacy skills. Telelearning offered the opportunity to work with the technology and the information skills so that the process drove the need to learn and to use the various technical applications as tools to enhance the learning.

Todd (1999) emphasised the need for students to practise the learning process to improve their own self efficacy. He highlighted the urgency for teachers to adopt pedagogical frameworks and strategies that did not leave learning in electronic information environments to chance. He went on to suggest a constructivist approach was needed to underpin the learning. This course was based on constructivist theories of learning in terms of interactivity of students and teachers, transforming information into knowledge and an emphasis on reflectivity, all key components for creating a successful online learning community.

Conclusion

The *Telelearning* course has all the hallmarks of a successful professional development experience for teachers in which they not only became successful users of the technology, but they were able to transfer their knowledge and skills into classroom practice. Participants were dropped into the new technology but they were able to gain support in the technical aspects of getting connected, and they could feel supported in an environment of colleagues who had all at some stage started at the periphery and moved toward the centre of the learning activities. Another key factor was that this all took place in a meaningful and practical context, for example, researching useful web-based projects that added value to students learning experiences and email discussion groups that meant instant answers were available for problems teachers were experiencing. The web-based community of teachers became at times a vibrant and active meeting place in which students could be assisted in their learning by communication and involvement with more skilled members of the group. The results of this research project shows that web-based courses, underpinned by information theory and practice offer great potential for improved student participation and interaction in the learning process.

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