Introduction

In this paper I present how I have responded to the ubiquitous exhortations for computer based technologies in tertiary pedagogy. I reflect on three research projects emerging from my own online learning and teaching.

Importantly, the data used in this paper is current and the media is low-tech and accessible. This paper is not about the hardware and software of technology. Rather, it is about a teacher educator’s struggle to make sense of online pedagogy at a time when academics seem to be badgered to take their courses online.

This paper draws on data from the following projects:

(a) My involvement in the development and teaching of the ‘Education Studies Major Online Project’ for the last three years. I have been teaching undergraduate students doing their first year education studies program with the option of:

- Not attending university-based lectures or tutorials and doing all their work online;
- Attending face-to-face lectures and tutorials and
- A mixture of face-to-face and online.

(b) The Research in Computers in Education (RICE) group, 1995-2000 which involved primary, secondary and tertiary teachers exploring online learning and teaching in their practice.

(c) The Good Learning on the World Wide Web (GLOW) Project with a secondary college in which undergraduate teacher education students tutor year 9/10 students from a secondary college.

(d) Two Masters in Education units with particular reference to the compulsory online discussion component over the same time period.

(e) A new Faculty Research Group project entitled ‘The social and pedagogical implications of new learning technologies for learners and teachers’.

Literature

Academics don’t seem to have an option. We are told that learning environments must be created where the student is immersed in thoughtful interaction facilitated by access to ‘mindtools’ such as databases, hypermedia, and expert systems (Cooper, 1993). It is this premise upon which this paper is constructed.

This premise is illustrated in the literature more widely. For instance, Brabazon (2000) draws attention to the Australian Government's strategic framework for the information economy (1998) which frames the on-line environment as the social panacea to the now cliched tyranny of distance. Although education is mentioned throughout, this official document
focuses on the Internet's impact on students, rather than teachers. Computer-mediated education has become an expectation of the contemporary pedagogical environment. Put bluntly, 'the message is simple: we now have the technology to inform, entertain and educate. Miss it and you, your family and your school will be left behind' (Brabazon, 2000, p.1).

In this way, this paper contends that the hegemonic forces of IT in education are dressed-up to assume a progressivist ideology with a firm warning that others not on the band wagon will miss out. For example, a feature article in the Education Review (2000, p.10) cautions potential dissenters that most cries of protest are generated by academic professors who 'have been doing the same thing the same way for 20 years'. Quinn, (2000, p.11) reminds us ‘Coming up: the dot.com university’.

From this context I propose that without a space for thought, the assumptions of online education - both stated and hidden - are ignored. In my view the proliferation of digitisation can be overstated. This is exemplified in the studies which have found that inequalities, with regard to race, gender and class (Brabazon, 2000) are reified through internet usage. Moreover, while Vanderbilt (1999, p. 84) reports that students who spend more time on computers performed less well on tests than their peers, other studies have found that computer-based instruction has generated only a small improvement in student learning (Alessi & Trollip 1991:5). Yet my concern is that research projects such as these have been unable to slow the progressivist imperatives that link computers with the future of education.

Theoretical position on learning and teaching

This discussion of teaching in an electronic environment is framed as an ‘action research project’. I have actively researched my practice with the aim of improving the way I teach and with a view to understanding and working within the electronic environment in what I see as an appropriate way. My research has consisted of planning, action, observation and reflection on my own practice (Kemmis & McTaggart, 1998).

I have recorded observations, made notes on informal interviews with students and colleagues teaching in the same area, had discussions with students and conducted course evaluations.

The lens through which I see my own practice is influenced by the following theorists. Firstly, I agree with Ramsden (1988): ‘The aim of teaching is simple: it is to make student learning possible’. This is true of any learning environment with or without information and communication technologies. The ‘new’ computer based technologies need not send us ‘back to the drawing board’ to discover new theories of learning. The learning theories used well before can still be applied to teaching in the electronic learning environment.

Furthermore, I acknowledge what Biggs (1999) writes about learning and teaching applies also to the online environment: ‘...we need a framework to aid reflection: a theory of learning that is broad-based and empirically sound, and that easily translates into practice. For my money that means constructivism, although there is a lot in common between constructivist and phenomenological positions. The most basic commonality is that meaning is not imposed or transmitted by direct instruction, but is created by the students' learning activities, their approaches to learning’.

McKenzie’s (2000a, p.20) emphasis on ‘The Fourth R = Research’ is relevant too. With computers in most classrooms and dozens of classrooms connected to extensive electronic information resources, schools are recognising the importance of reinventing the way they engage students in both questioning and research. McKenzie (2000b, p.67) points out that
often school activities direct students to ‘go find out about’ Hitler or Connecticut or Adelaide. These assignments turn students into simple ‘word movers’. New technologies make word moving – ‘cutting and pasting’ - quite ridiculous. McKenzie (2000b) urges teachers to emphasize research questions that require problem-solving or decision-making; questions that cause students to make up their own minds and fashion their own answers.

This emphasis has had a significant impact on how I teach and what I teach in teacher education. For example, the lesson plan model that I present to student teachers is drawn-up by the student. The overall plan is a work program written, kept and maintained by the student. As quoted earlier (Biggs, 1999) ‘… meaning is not imposed or transmitted by direct instruction, but is created by the students’ learning activities, their ‘approaches to learning’. Rather than the linchpin of the lesson plan being the ‘Learning Objective’ written by the teacher for the whole class, the core of the student learning program would be the ‘essential question’ and ‘subsidiary questions’ which they brainstorm and map. They then develop their research plan, gather information, sort and sift the information, synthesise and evaluate, which involves asking if more research is needed before moving on to the reporting stage. All of this procedure may be assisted by the technology.

This process is very much in harmony with Biggs’s view (1999, p.13) of learning being a way of interacting with the world. ‘As we learn, our conceptions of phenomena change, and we see the world differently. The acquisition of information in itself does not bring about such change, but the way we structure that information and think with it does. Thus, education is about conceptual change, not just the acquisition of information.’

When I examine my own pedagogy as a teacher in an electronic environment seeking to construct a learning environment where learning is made possible, I again refer back to Biggs (1999) for a lens through which I could look at my practice to examine whether the conditions are right for effective learning to be made possible.

(1) It is clear to students (and teachers) what is ‘appropriate’, what the objectives are, where all can see where they are supposed to be going.

(2) Students experience the felt need to get there. The art of good teaching is to communicate that need where it is initially lacking. ‘Motivation’ is a product of good teaching, not its prerequisite.

(3) Students feel free to focus on the task, not on watching their backs. Often, attempts to create a felt need to learn, particularly through ill conceived and urgent assessments, are counter-productive. The game then became a matter of dealing with the test, not with engaging the test deeply.

(4) Students can work collaboratively and in dialogue with others, both peers and teachers. Good dialogue elicits those activities that shape, elaborate, and deepen understanding.

**Reflections on online learning and teaching**

We cannot assume that we know how our students will respond to online learning and teaching simply through our past experience in teaching by analysing the face-to-face version of the course. We need to interview our students about their use of Internet based materials and get their critical responses. We also need to sit with them and go through a pilot version of the course online and note their responses. For example, I have found that students prefer not to scroll through screens of text. Each topic, section or segment of information should be presented in one ‘screen-grab’ on an average sized monitor. The Education Studies Major Online site (http://www.education.deakin.edu.au/eso) is a good
example of a teacher education course developed by academics, graphic artists, programmers, editors and web-dwellers working together and developing a course online. However, our individually busy schedules and budgetary constraints have taken an early toll in this development – having developed the course online, we have each returned to our previous professional responsibilities. A course developed for online use is never complete. The multi-skilled development team needs to keep meeting and developing the course. Changes need to be made, text graphics and content needs to be updated and in some cases replaced. An online course needs to be forever refreshed (Boshier et al, 1997).

The question that has been in the foreground of my teaching with my undergraduate teacher education students has been: How can I use the Education Studies Online web site as part of my pedagogy? I divide the two hours of my tutorial time to include one hour in a computer laboratory where the students and I address issues relating to the course using the online facilities. I have found that I cannot take for granted the skills of the students in using the computer. They often need help (from their peers or me) even with using the web browser.

However, one of the challenges we face is in fact to use the online facilities of the Education Studies Online site. The online course needs constant development and redevelopment and the question of how the facility can be used in learning and teaching needs also to be regularly discussed and acted upon through opportunities of professional development.

The Education Studies Online course materials is also a good illustration of how an online course differs from a print-based course. Of course there is a significant difference between the online and print-based version of a course. A print-based course needs to be rewritten to be put online. It is fascinating to be involved at a time when both versions are currently and often concurrently being used. A question worth asking is: Has the pedagogy remained the same for both versions of the course?

Students have made it quite clear that while they like having access to online facilities, they have a preference for the online and face-to-face model of teaching. Even when they are engaged online and have very little face-to-face interaction they like to know that there is a human on the other side of the interaction. I agree with Walker (1997) who identified the question which comes to those who teach online or via email as: ‘Is anybody there?’ remains a reasonable query. As this seems a crucial point I quote Walker at length. He explains:

I take this voice to be (more often than not) a plea for the embodiment of the curriculum, a need on the part of the student to feel that they have some point of contact with their teacher …

If you accept this then I think that the challenge of online teaching is less a curriculum challenge than a need to reconstruct ourselves as teachers. The questions are not technological so much as questions about the mediation of human interaction. What does it mean to be an online teacher (or student)? How should we speak and how should we listen? How can we support students in their pursuit of intellectual autonomy? How can we create a critical academic community among people who never meet?

We learn, I believe, not from texts or other resources, but from someone. The best online resources take account of this: you have the feeling that there is somebody there, that the writers have taken care to put themselves into the production process at the level of some detail. … this has been produced by people who have a deep love for knowledge which is expressed not just intellectually but aesthetically. The choice of font, the layout of the pages, the use of graphics are all a consequence of a deep sense of purpose. This is
rare. Most pages I see are superficial, cluttered, gimmicky and not produced at all with the user in mind. The difference is that quality is marked by the fact that somebody is there, that they care about what they are doing and they are doing it with a deep sense of educational purpose and commitment. The pursuit of ‘low cost, low end’ quality online teaching is, I believe, a myth. Quality demands high level of commitment and risk and so comes at a cost.

Similarly Boshier et al. (1997) identify ‘Instructor Disclosure and Credibility’ as concerned with the extent to which those responsible for creating or teaching the course online disclosed the extent to which their credentials and background were congruent with the course content. The emphasis in this case was on the instructor:

… the purpose was to demonstrate that the quality or attractiveness of web courses is a composite of differentiated phenomena. This analysis suggests that, as well as the need to make web courses enjoyable and easy to navigate, there is a need to establish face validity or instructor credibility. (Boshier et al. 1997).

I have found that the most interactive and effective features of online learning and teaching spaces are the conferencing or discussion areas. The function of the mediator is very significant.

Through my own teaching I have examined several online discussion spaces which I discuss in the following section.

**GLOW (Good Learning on the World Wide Web)**

In this project teacher education students in their fourth year of study tutor secondary school students in writing. School students and university students work in small groups. The school students write and the university students look at their text and discuss ways in which they may improve their writing to a point where it may be published in a classroom newspaper. The only contact the students have with each other is online. All the writing is overseen by the classroom teacher and the university teacher. However, I do not write in the space. The purpose of the project was to have school and university students interact in the space. If I had anything to say to my students I did so via email. The key features of the discussion space is that it is web based, so the space can be accessed from anywhere where there is web access. You can access your writing and several people can access and edit the same piece of writing. It was most appropriate for the GLOW project.

In my face-to-face university tutorials it is a great compliment when a student feels free enough to ask: "What did you mean by that?" Such a facility needs to exist online. I get that question when I use words that students cannot understand or when the branches and sub-branches of my thinking get a bit difficult to follow. In the online version, students need to have access to online dictionaries, thesauruses and a selection of ‘jargon explainers’. They also need access to the teacher via email and access to the teacher and colleagues in a discussion space that is active.

In my face-to-face tutorials I try to cater for the different needs and learning styles of the students. In this project, I have been trying to do the same. So, in the project outline I ask: How can I cater for the different needs of students? Online teaching is an opportunity to present 'layered learning opportunities' so that students could identify and pursue the activities that suite them.

Online learning is only one of the options; it is not the only option. Students enjoy the opportunity to attend face-to-face sessions as well as to access online material. I started this
project by having a number of face-to-face sessions where they became familiar with the online project environment. I encourage face-to-face meetings and we arrange meetings each semester between the student teachers and the school pupils.

The pedagogical skill to mediate an online discussion is especially crucial. While the electronic environment is significantly different to the face-to-face, what is common is that there are no easy answers that will work for all students and in all environments. The skills called for are at the very least vigilance, timing, involvement, appreciating silences, listening, understanding and respecting the participants.

Additionally, there are several questions that need to be considered. Should the mediator take an active role in the discussion? Should the mediator direct the discussion? Should the mediator adopt a pseudonym and not reveal her/his own identity?

It is easy to misconstrue the written word - you can't see the face of the author and you can't hear the tone. You read into a message your own expressions and tone, and often totally misunderstand. For this reason, making jokes on e-mail and being sarcastic online are dangerous! There were several comments about the online relationship being 'quite demanding'. ‘You have to engage with what the student has written’ and ‘you have to get to know someone through their writing’.

Asynchronous communication such as we use in the GLOW project gives you the opportunity to see what you think before someone else sees what you said. Students for instance have commented about the advantages of being able to reflect on what you say before you publish it. Most students also commented on the significant difference between writing on the screen and writing on a page. Many have said 'it takes getting used to'.

The most common response was that all teacher education students should have the opportunity to have a GLOW experience.

**Online discussions with WebCrossing**

*WebCrossing* is the software used on the Research in Computers in Education (RICE) site([Error! Hyperlink reference not valid.](#)). A great deal of thought went into choosing the software that would create the type of discussion environment required. Anyone with access to the Internet can enter this discussion space. In a project such as RICE where students nationally and internationally needed to have access to the site a Web based conferencing system was appropriate. Participants from anywhere in the world needed to be able to access the site and make a seamless entry into the conferencing area without having to make a payment or enter an institution controlled password. Participants also needed to be able to open their own discussion areas.

I used the RICE discussion space for two of my Masters in Education units where students (mostly practising teachers with some were from overseas) are required to take part and submit about 3000 words to an online discussion. In the RICE discussion space the full text of all the discussions is visible but participants are not able to edit the text of messages that they have not authored.

I have conducted these discussions as part of the M.Ed. Units for two years and each discussion has been a significant success. I make it clear that I want to encourage teachers to talk to each other and discuss issues that are important to them. The line that prompt me to try a compulsory discussion in the first place was the principle: *teachers learn best from other teachers*. I have heard this said by practitioners in relation to successful professional
development strategies for teachers and in my own research, it was shown to be true in the Computers and Learning in Primary Schools (CLIPS) project (Johnson, 1995).

Most people write well over 3000 words (the average was 4500 words) and the course evaluations highlight the discussions as most enjoyable and instructive. Teachers discuss their professional reading, their classroom practices and problems, their professional development and exchange ideas about 'what worked'. Many comment that it was difficult to start and the compulsory requirement of the unit forced them into it, but once there they forget about the word-count and just enjoyed talking. Here is an example of what was said:

Re: Compulsory element of the discussion

I don’t think the success of the discussion had much to do with it being part of the assessment. This is one of the last two units I’m doing and while taking part in the conference has been a part of the assessment of every one of them, only two others have led to anything like as much discussion as in this one. I agree that it has been the quality of the exchanges that has led to the overall success.

Part of the success of the discussion space I think was due to making the contributions part of the assessment. It was some of the motivation behind my contributions. However, this is a good thing. It makes planning the work load of the unit easier as it is spaced out and not left until the last minute as I’m prone to do. The focus is not completely on the one topic, ie the project being undertaken, so you need to do other reading, think about other issues and be involved in discussions. I don’t think this would necessarily happen if you didn’t have to do it. Being ‘made’ to contribute wasn’t the only reason for the success though. If so, we would have written the required 3000 words and left it at that. People contributed more than was necessary and I think more frequently.

I agree with [R] that the assessment did form a part of "Making" me log on a few times a week. …

I am a primary teacher currently at home with a new baby, so this type of course structure suits me well. I am in my 2nd year of the masters course, at the moment just managing one subject a semester. I was very pleased to see this unit set up in the same way as last semesters as I found reading and contributing to the chat line really interesting and a better way to manage my study time.

Online discussion mediator

Which brings me to my next point: Richard’s part in the discussion. I think he took the right line by not getting too involved - I agree that if a supervisor writes too much then the tendency is for students to only respond to that and do little else.

Face-to-face vs online discussion

I also agree that we wouldn’t have got such a rich discussion face-to-face. I think this is because, no matter how much people claim that their contributions are spontaneous and written as though they were racing off an email, there’s no doubt that when we write we have more time to consider the
content. Face-to-face discussion is the only forum that can really provide that spontaneity, but it can also lack depth and stifle those who are more introverted.

It is so difficult to get a variety of perspectives from one's own system and immediate colleagues.

I'm a distant student at Deakin. I'm from Malaysia and in my second semester for the M.Ed course. This on-line conference idea is kind of new to me. I really hope that I can contribute as well as gain as much information as possible from other participants. [This student contributed 7373 words to the discussion.]

An international perspective

From Malaysia:

I agree with K's comments. In fact we face the same problem in Malaysian education system. Smart Schools, one of the flagship applications in the Multimedia Super Highway (MSC) project is aimed to support Malaysia's drive to fulfill vision 2020. Smart schools objectives are to use technology to radically transform and improve teaching practices, school organisations and student performance. It is also meant to accelerate development of student learning, critical thinking and creativity and enhance IT literacy and penetration into the nation. Though sounds fascinating, yet how many percentage of smart schools basic requirement is being met. …

It is apparent that teachers in Malaysia are heavily loaded with academic and non academic activities. In addition to preparing their lesson, there are several other task to be accomplished by teachers in one academic year such as conducting extra curricular activities, annual school sport event, additional teaching classes prior to the examination, meetings, educational programs planning and etc which results in time constraint. Some teachers perceive computers as a more complex tool than earlier technologies and showed anxiety and feelings of inadequacy because of the need to master a new and complex area of technology and about the amount of commitment required in terms of time and energy to feel confident in this area. Thus can be concluded that in order to fairly implement IT into education, teachers should be willing to spend their own time to become competent in this field. But how many are prepared to do that? …

If I were to talk in Malaysian context, it has been surveyed that students from rural schools are academically poor compared to students from urban schools. So can we utilise the potential of computer in promoting this poor performers learning ability. Socially these students (rural school) hail from low income group (parents are mostly farmers and odd job workers). Some of the rural schools especially in the State of Sarawak and Sabah (East Malaysia) faces infra structure
constraints (no power supply, improper school building and classroom). Integration of computer in the classroom in these schools would be treated as expecting the moon to fall. When Malaysian government came up with the vision of transforming the educational system in order to prepare children for the information age, were these rural schools considered in their master plan? Providing a proper school environment and proper mode of transport (students in rural schools in Sarawak and Sabah travel to school by boat. During Monsoon, schools will closed down because rivers will be flooded and poses danger for the students) is the best that can be given to them. We are approaching the next millenium and there are students who are deprived of a basic education environment.

From Japan:

Hey guys, being a teacher in one of the Universities here in Japan, I too see the increasing demands on IT to be used in educational settings. However, as [K] and [M] mentioned, there ain’t enough budget and training out there! We all know how expensive those softwares are. In Japan, many schools just don’t have enough money to develop their own foreign language programs. According to Prof. Kitao (1998), once the computer laboratories are established, it’s not possible to re-equip them for several years. So who’s gonna take care the hardware and software developments during those years?

From Brunei:

My project for this unit will focus on setting up for and implementing computer technology into a foreign language classroom. I work in Brunei, which is slotted between Sabah and Sarawak that [M] talked about in her last entry. In Brunei there is also a vast difference in the facilities available in the International schools and local schools attended by the elite students compared to the majority of local schools where I work. However, the ‘fairy tale’ as [M] called it seems only a ‘chapter’ away from becoming a reality in at least 50 local schools. My school is one chosen to be furnished with two computer labs housing 25 PC’s each.

Conclusion

There is a discussion taking place in the academy about the IT competencies that academics in teacher education need to have. I find this quite disturbing as I feel it will result in a ‘check-list’ of competencies that will further threaten academic staff. Staff need the encouragement and support to explore technologies in the context of their pedagogies. In my own journey through the IT maze it has been the hardware and software that has contributed to the feeling of ‘entrapment’. My most successful experiences of teaching, learning, research and development has been through working in a team with a range of IT
specialists, a librarian, a graphic artist, an editor and students. IT research and development can best happen in a collaborative work environment.

References


