PEL04252

Constructing Meaning for Online Learning: Messages from the Field

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Abstract

Online learning has been a powerful by-product of the 'network age', yet current education practices are still grappling with the most effective way to tap into this valuable resource. This paper reports on a series of investigations which aimed to provide a greater understanding of online learning through the eyes of higher education students in two very distinct courses (undergraduate and postgraduate). The study involved two stages of investigation. Survey instruments were designed specifically for each stage. Stage one focused ultimately on the student's reactions to online delivery, their rates and depths of participation in this environment, and their levels of engagement in the learning process. The aim of stage two was to identify their prior experience and perceptions of online learning environments. The findings revealed that students are entering the University as technically competent and confident people who expect to utilise technology in their learning environment. Students in both groups indicated that the most important feature of the opportunity to work online was the flexibility this approach allowed in terms of being able to study in their own time and in other environments such as home. They also identified that this mode of delivery enabled them to enhance their learning.

Background

Indeed, networks have become the backbone of modern society, the global and local infrastructure that allows us to function –the well-worn information highway (and back roads) metaphor. … we are just at the very beginning of the network age. The kinds of capabilities and forms of interaction possible with computer systems in the coming decades will make our current uses seem incredibly primitive. Yet even now we are having trouble understanding how to change our education system to take advantage of the simple capabilities we already have (Kearsley, G. 2000, pix).

Developments in information and communication technologies (ICT) have been rapid in recent years and have promised improved education and training to an increasingly diverse cohort of students. Many of the methods of online delivery while promising ease of access, enhanced learning opportunities for students and cost effectiveness for universities have not met these expectations. While it is increasingly important for universities to implement a growing array of online courses in order to remain economically competitive, questions remain regarding pedagogical issues, economic costs, philosophical issues (equity and access), policy issues and personal issues such as student preference for online versus face-to-face delivery.

The university that is the focus of this research has committed substantial funds towards the implementation of various modes of online learning. This ranges from delivering whole programs online to small numbers of units within programs utilising flexible approaches. The current research was conducted in two stages. Stage one involved a sample which comprised 108 students who were enrolled in both undergraduate and postgraduate programs in a Department of Education in a Western Australian university. These students represented a diverse group of young people who were engaged in pre-service teacher training as well as adult learners in the field of training and development. Both internal (face-to-face learners) and external students were part of stage one of the research. Stage two of the study involved a sample of new students (n = 62) who had enrolled in similar undergraduate and postgraduate programs in the Department of Education in semester one 2004. This group of students included those engaged in pre-service teacher education and adult learners in Training and Development and again this group were involved in both internal and external teaching and learning modes. This research chose to investigate student reaction to and reflections upon these various modes of delivery.

The Training and Development Program has been offered to students completely online since 1995. The initial decision to implement an online approach was influenced by the financial implications of continuing to offer face-to face teaching to what essentially was a small cohort of students (n=34). With the Training and Development Program delivering both undergraduate and postgraduate courses, the numbers of students enrolled in individual units were deemed too low to support staff employment and the allocation of physical space. As the program began to grow towards the late 1990s the delivery mode was sustained due to the fact that the student cohort had become quite diverse in the physical sense. Western Australia is geographically a vast state and students in remote and rural areas began to become attracted to the program due to the ease of access the distance and online delivery approach offered. Currently, the majority of students prefer the method of delivery, as they are largely adult learners who are engaged in full-time employment (many with additional family responsibilities) and the online nature of the program allows many of them to work at their own pace in between further ongoing commitments.

The students in the sample who were involved in the pre-service teacher training program were enrolled in the Bachelor of Education degree in the Department of Education. This is a four-year degree program which has largely followed a traditional model of delivery and has therefore typically included lectures, tutorials and workshops. During the late 1990s individual unit controllers began to experiment with the implementation of online components such as posting lectures within templates using WebCT, encouraging students to use discussion boards and mounting assessment protocols within flexible delivery formats. Although one of the strategic goals of the university is to increase the engagement with online teaching and learning, the program maintains an ad hoc approach to online delivery which relies ultimately upon the skill level and interest of individual lecturers within the department.

Literature Review

Government policies, changes in the post compulsory education sector and the availability of technologies are influencing the provision of education and training in Australia. Global and local trends are changing the nature of work and with that, the needs for education and training in the twenty first century. It appears that we may be moving towards an 'information economy' in which new knowledge-based industries will emerge. The 'knowledge worker' will be required to develop new skills and evolve these skills within a constantly changing work environment (Harper et al, 2000). According to Warner, Christie and Choy (1998), the term 'online' can be defined as the use of cyber systems such as the intranet and internet for the purpose of communicating and teaching and learning. Salmon (2000) sees the term as covering a range of technologies such as informatics, computer-assisted instruction and computer-mediated conferencing. Brennan (2000) defines it as requiring situations where computers support teaching and learning, there is a mixture of computer support and online delivery or computer technology alone delivers education and training.

One of the major changes to the education sector which has developed in Australia since the mid 1990s is the move towards the commercialisation of teaching and learning. There has been continued growth in the 'user pays' philosophy and students are becoming more selective, demanding and discerning with regard to not only higher education but programs provided by the Technical and Further Education (TAFE) sector as well as schools. In its report, *A strategic framework for the information economy,* the Commonwealth Government highlighted the importance of 'access to lifelong learning opportunities to ensure that Australians can obtain the online skills required in both the workplace and the community' (Commonwealth of Australia 1998, p.10). The link between the principles of life-long learning and the use of information and communication technology (ICT) is reflected in the move by many educational organisations, including those involved in the provision of higher education, in adapting policies and practices which support a more flexible approach to learning. Rather than being a straight forward process, moving to online mode requires a re-conceptualisation of teaching and learning. Such a move necessitates the development of new skills on the part of both the teacher and the learner and impacts upon the resources, structure and practices of educational organisations (Harper et al, 2000).

Rapid advancements in current technology have meant that flexible delivery has advanced equally rapidly, offering students wide choices in learning methods. According to Choy, McNickle and Clayton (2002) the growth of online technologies has resulted in the development of online social networks and the ability to communicate with others on a regular basis. Students are able to overcome feelings of isolation and disengagement with the learning experience as they create their own communities both within the confines of the online material and beyond. Harper et al. (2000) see online technologies as attracting teachers and trainers to the delivery option because of the 'anytime', 'anywhere' philosophy that underpins much of this approach to learning. They warn however, that teachers working in this environment must be aware of the changing nature of student literacy with regard to online competency as this is seen to impact upon successful engagement with the learning materials and process.

Graham and Scarborough (1999) maintain that online learning environments have provided important contact between students and teachers and have therefore helped to overcome feelings of isolation previously characteristic of traditional distance education and training which consisted of primarily printed text resources and communication via post. Much of the literature supports the notion that students who tend to avoid communication with fellow students and teachers in face-to-face contexts tend to contribute much more in online learning situations (Bellman, Tindimubona & Arias Jr. 1993;

Goddard 1996; Harasim 1993; Ruberg, Taylor & Moore 1996). Teachers at all levels need to remember however, that teaching has value only if it promotes student learning. This learning needs to include conceptual growth, working collaboratively and communicating. The main focus of teaching and learning according to Craig (2001) must shift from content presentation to a combined, dynamic focus of how students approach learning, multiple styles of delivery and ongoing inquiry. Goodwin (1993) found that learners in higher education settings perceived the Internet as an appropriate delivery medium but warned that frustration with technical aspects could lower student satisfaction and ultimate achievement of learning outcomes. Online learning challenges learners to develop new skills and re-conceptualise learner requirements. According to Cornell and Martin (1997) challenges for facilitating online learning include the maintenance of learner motivation, the degree of acceptance by student and teacher, the prior knowledge of each participant, the students' attitudes towards technology, the level of content and the degree of interactivity. Cornell and Martin (1997) also included aspects such as ease or difficulty in using the system and basic communication skills as having an impact on the successful implementation of online learning. Similar issues were raised by Corrent-Agostinho and Hedberg (1998) in their implementation of online learning in a post-graduate educational technology course. Their research found that students involved in the program believed that the major problems to be overcome included lack of motivation to participate, procedural confusion and technical difficulties. Many universities have implemented education via computer-mediated communication (Goodwin, 1993; Jiang, 1998; Nnazor, 1998). Students perceived that they had attained comparable academic achievement via online course delivery and believed that teachers who were involved in flexible delivery of materials were more inclined to encourage student participation and teacher-student, student-student interaction than those teaching in more traditional modes. Educational approaches which are based on constructivist principles and findings from cognitive psychology have introduced new conceptualisations of learning and instruction (Brooks and Brooks, 1993; Marshall, 1996).

The importance of learner-directed environments is growing and computer technologies are given attention as tools for enabling the objectives of constructivist principles. Constructivism demands that the individual learner is active in the process of constructing knowledge (Dewey, 1916; Piaget, 1952). Importance is assigned to the way learners make sense of what they are learning in the social context (Luria, 1981; Salamon & Perkins, 1998; Vygotsky, 1978). Participants bring their own experiences and interpretations to the community and as a result, the community is enriched with a number of perspectives to review in relation to their own. Participants engage in processes of negotiation, augmentation and case building to resolve differences and these processes are crucial to individual development (Brown et al., 1992). Brook and Oliver (2002; 2003b) have defined community as 'a sense that members have a belonging, members matter to one another and to the group and a shared faith that members' needs will be met through their commitment to be together (McMillan & Chavis, 1986, p.9). Brook and Oliver (2003b) indicate that this sense of community is important to the achievement of learning outcomes and suggest that the most influential factors associated with it's development in online environments include a sense of purpose, the positive approach adopted by the instructor, and the increasing influence of small group work than whole class activity.

Oliver and Omari (1999) found that students believed the online environment required them to invest greater amounts of time in preparation for class activities and as such, added to their workload. Despite this however, the students reported a positive response to the new learning environment. Alexander and McKenzie (1998) in their report on the evaluation and implementation of technology-based learning systems in higher education claimed that while there were many successful online teaching implementations, careful project selection, re-training for teaching in this mode and support for learners using this mode were critical to achieve effective outcomes for online technologies. There is evidence in the literature to suggest that online learning is growing rapidly (Goodyear, Salmon, Spector, Steeples & Tickner, 2001) and according to Leonard and Guha (2001) online learning offers students and institutions great flexibility. As a result, online courses are increasing in number and scope. However, it remains to be seen whether this is translating into improved learning. Ongoing evidence from the literature suggests that the maturation of online delivery will be realised once innovators begin to develop realistic strategic, pedagogical and commercial models as we move further into the twenty first century.

Research Method

Interpretative research focuses on a specific social setting or phenomena. As noted by Erickson (1986), and by others such as Patton (1990) and Denzin & Lincoln (1994), within the interpretive approach there are many methods - however they all share the same philosophical assumption, which is that reality is constructed by individuals interacting with their social worlds (Merriam, 1998). In other words, qualitative researchers are concerned with how individuals make sense of their world and their experiences. In the present study, this interpretative approach was carried out using a case study approach, with groups of internal and external students within one Education Department as the case. Students were asked to complete a number of surveys which comprised open and closed items, checklists, multiple choice questions and a number of likert scales. The findings were analysed using a coded content analysis and frequency counts which revealed a number emerging factors that appear to have influenced the students' reactions to online learning. This method of describing and revealing what happens in the dynamic social environment of a class group, rather than more traditional and controlled quantitative approaches certainly appeared more appropriate. With such an approach the assumption is made that the findings of this study are not only pertinent to these student groups but also to other students studying in an online environment.

The Instruments

The survey instruments utilised in this study were originally designed to identify the needs of the online learners in two very distinct groups of students. Those students participating in the Bachelor of Education course who were classified as internal students and those enrolled in the Training and Development program classified as external students. Stage one of the research involved the administration of the survey titled *Meeting Individual Online Learning Needs*. This included a sample of 108 students and aimed to investigate their reactions to online delivery, their rates and depths of participation in this environment, and ultimately their levels of engagement with the learning process. The researchers were particularly interested to investigate the online experiences of these two cohorts to determine whether there were similar concerns and issues that were specific to online learning. The format consisted of checklists, multiple choice responses, several likert-type scales and open-ended questions. The survey was administered at the end of Semester two, 2003. Stage two of the research involved the administration of the survey titled *Online Investigation Survey (OIS)*. This included a sample of 62 students who were new to both the Bachelor of Education and the Training and Development programs. The survey format was consistent with stage one of the research but was also concerned with prior knowledge, reasons for enrolling in the particular course, what students were looking forward to, what they feared the most in terms of interacting in an online environment and expected levels and types of contact with the lecturer involved and fellow students. The *Online Investigation Survey (OIS)* was administered at the beginning of semester one 2004.

Results: Meeting individual online learning needs (stage one)

The results indicated that while the students involved in the pre-service Bachelor of Education program had no option other than to study particular units in mixed mode, the Training and Development students were largely attracted to the program because of the fact that all units are offered online and in distance mode. These students (32%) indicated that their physical distance from the university had firstly influenced their decision to enrol in the course followed closely by the influence of increasingly busy work schedules upon their ability to study on campus. When asked about issues concerned with flexibility and access students (43%) noted that the mode of delivery enabled them to access materials after hours and at their convenience. Eighteen percent of the sample indicated that the fluid time frame for their engagement with the unit attracted them to this mode of delivery.

It is clear that the majority of both the Bachelor of Education and the Training and Development students were highly competent in utilising the many technical aspects of online delivery. These included using the WebCT environment, sending an email, posting messages on discussion boards, involving themselves in synchronous and asynchronous discussion, downloading files from WebCT and searching the internet. This is interesting given the fact that the average age of the students enrolled in the Bachelor of Education is currently 22 years of age, while the average age of the Training and Development students is 40 years of age. This apparent technical skill level on the part of the Training and Development students could be due to a number of factors. Firstly, as these students are all

involved in full-time employment in the Training and Development field (some in management positions) they are involved in regular and ongoing professional development in not only technical skills but a wide range of associated professional areas. Secondly, these students have had exposure to step by step instructions regarding online access and this information is sent to them prior to the beginning of each semester in hardcopy.

One of the items in the questionnaire required the students to indicate the level of their average weekly access of their online learning environment associated with the unit. Interestingly, the students who were enrolled in the Bachelor of Education program and who therefore enjoyed the additional face-to-face components of the program were more likely to access this environment. Table 1 identifies the average weekly online access by students.

Table 1: The Average Weekly Online Access by Students.

	Bachelor of Education (n=74)	**Training & Development (n=34)**
Never	0%	0%
Once	10.8%	24.5%
Twice	24.3%	29.4%
3 – 5	44.6%	29.4%
More than 6	20.3%	14.7%

It may be that students working in face to face mode are more frequently encouraged by both their lecturers involved and their peers to regularly engage in the online process. The Bachelor of Education students commented that having access to regularly updated information regarding the structure, content and assessment protocols for the unit influenced their high level of use. The level of access on a weekly basis of the Training and Development of students while not as high is understandable given that they are all engaged in full-time employment and study part-time.

When the sample was asked to comment upon the online environment features and resources that they used on a regular basis the majority of the Bachelor of Education students (74%) and the Training and Development students (88%) indicated that they preferred to participate in the online discussion element within each unit. The Training and Development students were required to engage in the online discussion in a very structured manner due to the assessment components of the unit. In order to complete the unit successfully these students were asked to post their critical analyses of three distinct readings. It became clear in the early stages of the semester that once these students had overcome their reticence in responding publicly they were more inclined to utilise the online discussion component in order to interact in other less structured and more supportive ways. This resulted in the creation of sub-sets of students who were interested in developing ongoing communication and support networks. When asked whether they found the discussion board tasks of benefit 74% responded in a positive way. The majority of Bachelor of Education students also responded positively to this item even though in these units it was not linked directly to assessment. The discussion component may have been perceived as simply an extension of their ongoing communication that occurred in the classroom. Seventy eight percent of the Bachelor of Education students indicated that they were likely to use the email function that had been embedded within the unit on a regular basis and only 58% of the Training and Development students were inclined to do so. This may be due to the fact that the Training and Development students had thoroughly used the discussion component and as a result they may not have perceived a strong need to contact either the lecturer or each other privately. Table 2 reveals the modes of communication between the students and the lecturer for both of the cohorts.

Table 2: Modes of communication between the students and the lecturer.

	Bachelor of Education (n=74)	**Training and Development (n=34)**
Face to Face	93%	18%
Discussion Board	16%	97%
Email	82%	44%
Telephone	11%	47%

Even though the majority of Bachelor of Education students clearly used face-to-face communication processes it is interesting to note that 82% of the sample also used the email facility to communicate with the unit lecturer. It appears that these students were seeking additional feedback and direction in weekly tutorials. It may be that regardless of the issue at hand the students expected a fairly immediate response to any enquiry and this reflects changing trends in the workplace in general.

The Training and Development students may have begun to perceive the lecturer as part of their own cohort as this would explain the high percentage (97%) of preference for the use of the discussion board to communicate with the lecturer. These students were still inclined however to communicate through the email function and telephone particularly when discussing private matters, or issues which did not concern the remainder of the group. Table 3 shows the public and private responses to questions posted on the discussion board.

Table 3: Public or private response to questions posted on the discussion board

Responses	Bachelor of Education (n=74)	Training and Development (n=34)
No response	9%	20%
Privately	43%	6%
Publicly	19%	47%
Both	16%	24%
Haven't Used	11%	0%

When asked whether they replied privately or publicly to questions posted on the discussion board the majority of the Bachelor of Education students indicated that they preferred to reply privately. The reasons given included that they felt more comfortable and confident responding privately, they felt the interaction was relevant to only one participant and ultimately the choice of interaction was dependent upon the nature of the question itself. It was interesting to note that 11% of these students either felt uncomfortable in public discussion and or did not feel compelled to participate.

The majority of the Training and the Development students appeared to be comfortable with publicly responding to various questions through out the semester. This may be due to the fact that firstly they were required to and as the program is only offered online their expectation of communicating in this manner may have been higher.

Finally the Bachelor of Education students were asked to comment on changes they would like to make to the WebCT environment. Overwhelmingly the sample (41%) indicated they preferred to maintain the current level of delivery. In addition, 18% of the students believed that other units in the program should adopt the WebCT environment. The positive responses seemed to suggest that students believed that this approach aided communication, allowed them ready access to relevant course details and updated course information. This group also acknowledged that the WebCT environment was easy to use and a perceived bonus was that the online resource was able to be accessed from home. Training and Development students were asked to comment on components of the unit which were useful. Responses indicated that these students had found the direct link between online delivery and assessment to be beneficial. They also felt that the unit content and method of delivery encouraged deeper thinking and increased personal reflection of the new learning. When asked what they would like to change about the unit the majority (35%) of the Training and Development students suggested that the unit should remain in its current form and surprisingly 12% asked for more online contact.

Conclusion: Stage one

The findings reflect Harper's et al., (2000) view that moving to an online mode requires a re-conceptualisation of teaching and learning. The students involved in a mixture of face-to-face and online learning have high expectations of continual and ongoing communication with and feedback from their lecturer. In this way academics embarking on a mixed mode approach need be aware that this increased interaction can extend the working day. The philosophy of "user pays" has become embedded in the university culture and the technology within the structure of various units has facilitated this.

The sample believed that the current approach to WebCT in the University assisted communication and allowed them ease of access to constantly changing course details and updated information. They also indicated that due to the fact that their level of technical skills was quite high that their frustration levels while interacting with WebCT were low. Over time students studying totally in an online mode were more likely to develop their own social networks. This enhanced their learning opportunities as these students were inclined to mentor each other with regard to assessment and general progress through the unit content. The findings of this study reflect those of Graham and Scarborough (1999) in that the online learning environments provided in both the Bachelor of Education and Training and

Development programs seem to have provided additional opportunities for student interaction and as such reduce the potential isolation of students in both face-to-face and totally online environments. One of the key benefits of implementing online approaches in the Bachelor of Education and Training and Development program appears to have been the ease of access to a multitude of resources. These resources varied from gathering information from the World Wide Web, and course materials but more importantly accessing other individuals both globally and within the program itself. In this way the enhanced interaction afforded by the online approaches facilitated improved teaching, deep learning and reflective practice.

Results: Online investigation survey (stage two)

As identified earlier the survey was administered in the first week of the semester to a sample of new students to the course (Training and Development n=20; Bachelor of Education n=42) in order to determine their familiarity with and perceptions of online learning.

The survey revealed that the majority of the students in the Training and Development (75%) and the Bachelor of Education (71.5%) programs felt competent to very competent in using the WebCT online learning environment even at such an early stage of the semester. This is interesting given the difference in age between the internal and the external students. The average age of the internal (B.Ed) students in the sample is 22 years and the average age of the external students (Training and Development) is 40 years. Younger students usually begin their university study with a reasonably sound knowledge of engagement with technology and therefore their level of technical competence would be expected to be high. The Training and Development students may have developed similar skills in their work environment as a means of remaining competitive. These students possibly selected this particular method of delivery (as opposed to similar courses in other universities delivered in more traditional modes) due to the fact that they felt they had already developed the skills necessary to interact successfully in the online environment.

One of the early questions within the survey was designed to establish the participant's rationale for enrolling in their particular unit. Table 4 identifies the coded responses to question four of the survey – 'Why did you enrol in this particular unit?' Table 4 also details the response for each group as well as the percentage of participants who responded in a particular way. It is important to note that some participants identified more than one reason for enrolling.

Table 4: Rationale for enrolment in the unit.

Training and Development	n=20 % of sample	Bachelor of Education	n=42 % of sample
Increase career options	50%	Enhance professional life	57%
Further skills and knowledge	45%	Course requirement	31%
Improve the workplace	20%	Enjoyment	11%
Professional development	20%	Improve skills and knowledge	4%
To be challenged	5%	Overcome fear	2%

The Training and Development students indicated a clear relationship between their choice of enrolment and the workplace. These students view the course as professional development which has the possibility of either improving their career options such as promotional opportunities or advancing their skills and knowledge in order to add value to their respective work environments. As these students are all in full time employment, they are attracted to study programs that are linked to the enhancement of the workplace culture and their place within it. The internal students appeared to look ahead to their professional lives as teachers in schools with the realisation that technology will play an ever-increasing role in the teaching and learning process in the classroom. Their desire to build on their current skills in order to advance the development of appropriate curriculum was of importance as indicated in Table 4. A number of these students however were also enrolled in the unit in order to satisfy basic course requirements.

The Training and Development students were asked to explain what had attracted them to the external mode of delivery in item 2 of the survey. Responses were content analysed and the frequency of comments for each category were tabulated. Table 5 displays the percentage of participants whose

response fell into the category. A number of examples for each content category is also provided along with the ID which refers to the participant's identification.

Table 5: Student attraction to external mode of delivery

Content Category	n=20 % of sample	Example
Flexibility	75%	*Because I am working FT, I prefer to work through this mode of delivery. In my own time and at a time convenient. (ID 18)* *Flexibility - I work difficult hours and don't have the time/energy for night classes. (ID 2)*
No other choice – geographical distance	20%	*I live in a Rural area so can't access classes. (ID 14)*
The challenge – requires self discipline	15%	*I was also keen to challenge myself by tackling a mode of learning that requires a lot of self discipline. (ID 11)*
Ease of use	5%	*Ease of use. (ID12)*
Learning at individual pace	5%	*I am a mature aged student with a heavy workload and family commitments. The flexible delivery allows me to learn at my own pace. (ID 5)*

The Bachelor of Education students were also asked to comment on the benefit of the online component of the unit they were involved in. Once again, the responses were content analysed and the frequency of comments for each category were tabulated. Table 6 displays the percentage of participants whose response fell into the category, examples for each content category is also provided.

Table 6: Student perception of benefit of online component.

Content Category	n=42 % of sample	Example
Flexible/convenient	52%	*Having this unit online makes it more convenient to study. Students are able to review work and complete work at home. (ID 3)* *I think it is a great idea and easy for us as we can work from home. (ID21)*
Increase computer literacy	38%	*Opportunity for more practice using technology as a part of learning and teaching. (ID 18)* *It will widen my ability of using the Net. (ID8)*
Access to resources	9%	*I feel this is a much better way as being online we are able to access all information from our home computers, as well as communicate much easier with fellow classmates and the lecturer. (ID 19)*
Remain up-to-date without attending classes	4%	*It is great because if you cannot make it to a class you can catch up at home. Technology is becoming a huge aspect of schools and learning as much as possible in a hands on method is fab. (ID 11)* *If for whatever reason someone cannot make a class, they are able to stay on top of their studies if the course is available online and thus at home. (ID 3)*

Students in both groups indicated that the most important feature of the opportunity to work online was the flexibility this approach allowed in terms of being able to study in their own time and in other environments such as home. Students also commented that this style of interaction was more convenient and that learning could take place in more fluid timeframes that could be arranged around the demands of offspring and family in general. Comments suggested that this approach to teaching and learning increased the possibility for communication between students and lecturers and improved technical skills which are becoming increasingly essential in professional life. The Training and Development students were also attracted to the fact that studying in this mode requires self-discipline. Their comments indicated that as professional people they have minimum time to engage in learning activities and that they enjoyed the sense of personal control studying online afforded them. Most students agreed that flexible delivery allowed them to learn at their own pace and increased the opportunities for reflective practice.

Both the Training and Development and the Bachelor of Education students were asked to reflect upon their fear about interacting in the online environment. Table 7 displays the percentage of participants in each sample who responded in relation to the content categories identified from the data. Interestingly, the Bachelor of Education students indicated that 40% of the sample had experienced no fear, yet 20% of the Training and Development students felt the same way. The Training and Development students were more concerned with the possibility of encountering technical problems along with appearing foolish as a result of making mistakes. These students suggested that as their work lives were extremely demanding the possibility of technical difficulty due to either inadequate equipment or connection failure was of concern to them. Making mistakes included factors such as missing out on online discussions due to technical failure and concern regarding the opinion of peers while reading their reflections on new learning in print. They also indicated that they lacked confidence due to issues related to the potential misinterpretation of their written comments and that this would impact on the openness of their interactions in the online environment. A number of comments suggested that words and discussions may be taken out of context and they were concerned that they would not be able to rely on verbal and visual cues when seeking feedback. The Bachelor of Education students appeared to be more pragmatic and concerned with the potential loss of data and the overall security of the system. A few of these students also noted their concern regarding the potential reduction of personal contact.

Table 7: Student fears regarding online interaction

Training and Development	n=20 % of sample	Bachelor of Education	n=42 % of sample
Technical problems	25%	No Fear	40%
Making mistakes & looking foolish	25%	Potential lose of data	23%
No Fear	20%	Security/Viruses	19%
Lack of confidence	20%	Reduction of personal contact	11%
Long discussion postings	10%	Doubting the reality of the communication	5%
Lack of immediate feedback and visual cues	10%	Pace too fast	5%
Feeling disconnected	5%	Other	5%

The sample was clearly satisfied with the flexible delivery of the learning materials. Seventy five percent of the Training and Development students preferred the online nature of the program and sixty four percent of the Bachelor of Education students indicated that they were satisfied with the mixed-mode delivery of the unit they had been involved in. All students in both groups clearly recognise the ubiquitous nature of technology in their everyday lives and how it does and will continue to influence and shape education – not only their own personal teaching and learning but also education systems. The sample was asked to comment on the role technology currently plays in their education and indicated that they believed it to be substantial. They believed that an increase in accessible technology compliments the processes involved in education such as research and the location of resources. When asked to predict the typical delivery mode for education over the next five to ten years the sample suggested that the increased use of online technologies would not only affect the individual learner but also learning systems such as schools. The students believed that learning would become multi-modal, giving everyone the opportunity to work in their preferred manner and that the traditional role of the teacher would be altered to one of facilitator of learning. They suggested that there would be a much reduced reliance on paper-based assessment and that lectures would occur online and allow for immediate and ongoing electronic interaction and feedback. Table 8 (on the following page) shows a number of examples from students in both groups regarding the future role of technology in education.

Table 8: Predicted future delivery mode for education over 5 to 10 years

Training and Development	n=20 % of sample	Example
Online delivery – immediate feedback, communication, virtual classroom	80%	*Mostly online to the workplace or school with teachers only required 'in the flesh' to assess practical skills. Computers, simulators and video links will be used to a greater extent. (ID 20)* *Online - lectures online where you have immediate feedback/communication with your lecturer .(ID 2)*
Multi-modal	10%	*I hope it will be multi-modal, giving everyone the opportunity to work in their preferred manner at some stage, face to face interaction will occur, however you may not all be in the same room. (ID 16)*
People accessing chunks of information	5%	*I hope we will still have classes and human interaction but I think remote classes and people accessing chunks of learning as it suits may be the way of the future. (ID 3)*
Reliant more on technology	5%	*Reliant on technology even more than now. (ID 19)*
Other	10%	*Less paper assignments and less 'on-campus' time. (ID 1)*
Bachelor of Education	**n=42 % of sample**	**Example**
Increased computer access (resources)	33%	*I can imagine every student will eventually have their own laptop on their desk. (ID 36)* *In schools: Students will each have their own lap tops at their desks. (ID 19)* *All students will be working from their own laptops using a variety of software as their main form of resource. Lessons may be conducted through the internet. (ID 27)*
Flexible delivery	23%	*We are leaning towards a technological delivery, teachers now use powerpoints, webquests, the internet, education software, overheads etc to help teach their students. (ID 42).* *There will be a lot more on-line learning and technology will grow to play a huge role in students learning and be a major part of many peoples learning environments. (ID 22)* *A lot more of the courses will become online and easily done at your leisure. (ID 20)*
Mixed mode	14%	*Still very interactive and personal but with a greater use of technology for performing classroom activities and learning. (ID 18)* *Pretty much the same as it is now, with a lot of online learning, but with the lecturer being next to you when you use it for easy reference. (ID 37)*
Schools will contain a major online component (i.e. WebCT)	11%	*I think that all schools will have a comprehensive technology area from which all students will have to access at least 2-3 times a week. Students will also have some a program similar to WebCT in which they can access homework/assessment details as well as a list of resources to use. (ID 1)*
Shift in teacher role - facilitator	4%	*Teacher as a facilitator and students constructing their own knowledge. Teacher's role becoming more one of a guide with the aid of technology become more prominent. (ID 11)* *I think the teacher will become to a certain extent obsolete with the increasing technology in the classroom. (ID 27)*
More sophisticated technology	2.4%	*No typing, voice command, one touch to retrieve information. (ID 23)*

The sample was asked to comment on their preferred method for interaction throughout the units. It is clear from the results displayed in Tables 9 that the majority of the students prefer to interact not only with the materials but also with the lecturer and fellow students. Twenty percent of the Training and Development students suggested that they preferred to interact directly with the lecturer and the materials as they were not interested in 'wading through pages of online discussion at the end of a busy work day'. These responses may be reflected in their preference to work on their own in the first instance.

Table 9: Preferred method of interaction throughout the unit
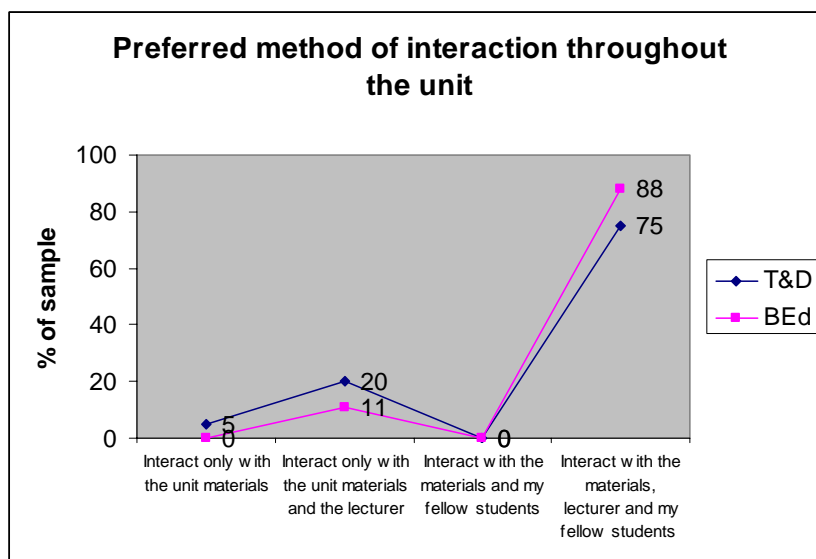

Table 10 elaborates on the data in Table 9 further and identifies the student's rationale for their preferred interaction. It would appear that most students perceived the opportunity to interact with fellow students as beneficial in terms of giving and receiving feedback. The sample expressed an interest in more opportunities for collaborative learning experiences as they believed these would further advance the learning process and allow for more creative means of problem solving. While the Training and Development students viewed these online exchanges as being able to enhance the provision of feedback, the Bachelor of Education students welcomed the potential relationship building aspects of such an interchange. They sought to make friends, help each other with assignments and develop improved relationships with others in the unit.

Table 10: Rationale for preferred interaction

Training and Development	n=20 % of sample	Bachelor of Education	n=42 % of sample
Feedback	60%	Access to more resources	50%
Sharing	50%	Enhances learning	30%
Time	25%	Prefer to work on my own	21%
Enjoy working on my own	15%	Sharing	16%
Belonging	5%	Enjoy working with others	14%

Conclusion: Stage two

The University which is the focus of this research has been in the process of implementing online approaches to teaching and learning over the past decade and as a result has invested substantial funds in developing structure and content across programs which match online learning modes. The results of the study clearly show that students have a raised awareness of methods of flexible delivery. Student expectations of studying in this manner are high. The current sample in this study indicated that they were content to work in this environment and that they were keen for other units within their program to utilise elements of online learning.

The new students appeared to feel equally confident in using online technologies as those in stage one of the research. The Training and Development students were clearly motivated by the professional development opportunities and the enhancement of career opportunities as a result of their engagement with the course. The Bachelor of Education students were already looking ahead to their professional lives as teachers in the school system and were highly aware of the increasing role this type of delivery will have on the development of their technical skills. The sample was attracted by the opportunities to enhance their computer literacy through the flexibility and convenience of being able to study and reflect on their learning in their own time. Ease of communication was also cited as one of the attracting factors with regard to studying online. The students felt they could gain easy access to lecturers and fellow students as well as resources and could remain up to date with the requirements of

the units without having to attend classes. According to these results it would appear that the Training and Development as well as the Bachelor of Education programs under study have successfully met the challenges for facilitating online learning identified by Cornell and Martin (1997). They noted that the degree of acceptance by students, the maintenance of learner motivation, the prior knowledge of each participant and the student's attitude towards technology are all critical factors in the successful implementation of online learning.

The Training and Development students were naturally more fearful initially of interacting online as they are more mature adult learners working as professionals in their fields without prior training in technology. They expressed concern regarding technical problems and also appearing foolish and making mistakes with their printed responses to discussions. Both groups expressed doubts related to the reality of the communication due to the lack of visual and verbal cues when communicating. This reflects the findings of Graham & Misanchuk (2004) who discovered that communicating the unseen can prove to be problematic for adult learners in online environments and that not knowing how to interpret silence by certain individuals after ideas were presented to the group caused the group some anxiety. They also found that when using asynchronous communication such as that used in both the units in this current study, it is often difficult for the group members to know if their fellow students have read or received their communications. It may be that future development of the online components of both the Training and Development and the Bachelor of Education programs will require more attention to establishing protocols for interaction and interpretation of online communication in general. However, much of these concerns will be overcome as web-based delivery systems become more sophisticated and enable students to determine whether communication has been received and read. Further to this, the Bachelor of Education course under study provides clear guidelines for the appropriate use of online learning communication systems, perhaps this needs to be introduced to the Training and Development program.

Further research

Rather than limiting the potential for interaction and collaborative group work, the sample perceived the online environment to enhance the opportunities for such experiences. Online technologies not only supplement learning but transform education from both a personal and a systemic position. The challenge for universities and therefore instructional designers is how to increase the level and depth of interactivity within the online space in order to further empower students to truly become independent learners. In this way they can move further towards developing what Harper et al., (2000) describe as "knowledge workers" whereby they develop and evolve critical thinking skills which will equip them for a constantly changing work environment. Stages one and two of this study have established the perceived strengths and weaknesses, preferences and dislikes of students in both sample groups towards flexible and online learning. Stage three of this research will investigate and test the factors which impact on the successful transfer of learning in online environments in order to develop a model for the implementation of online technologies in educational settings.

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