Blackboard As An Online Learning Environment: What Do Teacher Education Students And Staff Think?

Ann Heirdsfield
Susan Walker
Mallihai Tambyah
Denise Beutel
Queensland University of Technology
a.heirdsfield@qut.edu.au

Abstract: As online learning environments now have an established presence in higher education we need to ask the question: How effective are these environments for student learning? Online environments can provide a different type of learning experience than traditional face-to-face contexts (for on-campus students) or print-based materials (for distance learners). This article identifies teacher education student and staff perceptions of teaching and learning using the online learning management system, Blackboard. Perceptions of staff and students are compared and implications for teacher education staff interested in providing high quality learning environments within an online space are discussed.

Background

Learning management systems such as Blackboard (Blackboard Learn™, 2009) are at the forefront of recent technological advances in Higher Education. Blackboard has been adopted by the Queensland University of Technology as an online learning management system for all students (both on-campus and distance learners). With such rapid growth in the use of these systems, it is important to understand how these technologies are being used and how they impact on users. Apart from providing resources for distance learners, learning management systems may add a virtual dimension to traditional campus-based study (Coates, 2007) and also facilitate hybrid or blended studies which combine online and on-campus components (Malikowski, Thompson, & Theis, 2007). The impact of learning management systems has been such that the boundaries between distance education and campus-based experiences have been blurred and are being replaced by hybrid modes or 'distributed learning' in which technology-mediated instruction is the norm (Masi & Winer, 2005).

New technologies have the potential to change the way teachers teach and learners learn (DeNeui & Dodge, 2006). They offer a highly interactive medium of learning that can be customised to meet the individual needs of students (Levine & Sun, 2003). These systems may influence the selection and development of online resources and affect traditional teaching practices, while also introducing a new layer of complexities into the management of teaching programs (Coates, 2007). Currently however, many of these technologies are tending to focus on the delivery of information rather than on improving the teaching itself (Davis, Lennox, Walker, & Walsh, 2007; Herrington, Reeves, & Oliver, 2005; Malikowski, Thompson, & Theis, 2007; Norton & Hathaway, 2008). Under this mode of operation, academics generate content that they deem appropriate, collect resources, section the

information into weekly modules or tasks and pass the information on to students (Norton & Hathaway, 2008). In this way, new technologies may help to perpetuate transmissive models of teaching rather than exploring more innovative pedagogic approaches to learning (Rogerson-Revell, 2007). However, it may be that instructors are more familiar with transmitting information and are less familiar with creating computer-based interactions such as synchronous or asynchronous discussions or creating quizzes with feedback for each answer (Malikowski et al., 2007) and may need time to develop different ways of working within technological systems.

The difficulty associated with learning how to use learning management systems such as Blackboard has been identified as a key limitation of these systems (Bradford, Porciello, Balkon, & Backus, 2006-2007). Teachers do not have the motivation or time to become expert users of online systems thus limiting their use of innovative pedagogies. According to Christie and Garrote Jurado (2009), the barriers to the use of innovations are understandable and teachers need to be convinced of the value of learning management systems if they are to realise their potential. Rogers (2003) asserts that adopters of new technologies need to move through five stages before the innovations become a routine part of the person's experience. As the users of technological innovations move towards sustained implementation, there appears to be a shift away from task-related concerns related to technical issues towards more pedagogical concerns. It is at this point that users focus further on thinking about more creative ways to use the innovation to improve teaching and learning (West, Waddoups, & Graham, 2007). It may be instructive to investigate how to transition users of these technologies through these stages to develop a repertoire or range of online pedagogies.

Both academic staff and students may benefit from using Blackboard. Potential benefits include increased availability, quick feedback, improved two-way interactions, tracking, and building skills such as organisation, time management and communication (Bradford et al., 2006-2007). In terms of availability, users can access Blackboard via the internet at anytime and anywhere (DeNeui & Dodge, 2006), so students can view and download course materials and other information as well as submitting assignments online as soon as they are complete. Previous research (e.g., Heirdsfield, Davis, Lennox, Walker, & Zhang, 2007) indicates that it is the increased availability that most appeals to students. While students may appreciate the convenience, students are generally less satisfied with online learning compared to traditional face-to-face learning (Pillay, Irving, & Tones, 2007). Students cite reasons such as the lack of a learning atmosphere in Blackboard, reduced opportunities for contact or discussions with other students and teachers, delayed feedback from instructors and a less efficient learning process with students required to dedicate more time to learning the content as the basis for their dissatisfaction (Liaw, 2008; Yang & Cornelius, 2004). In particular, when students have questions or concerns, lack of immediate clarification can slow down the leaning process (Belcheir & Cucek, 2001). Thus, it appears that student dissatisfaction with online learning experiences stems from pedagogical issues rather than logistical concerns (Summers, Waigandt, & Whittaker, 2005).

Technology-based, student-centred approaches foster effective online learning (Hallas, 2008). It is purported that quality learning is facilitated through more constructivist, interactive online learning environments (Liaw, 2008; Vovides, Sanchez-Alonso, Mitropoulou, & Nickmans, 2007). In this context, constructivism is defined as the co-construction of knowledge that develops from student-student and student-instructor interactions (Summers, Waigandt, & Whittaker, 2005). In constructivist approaches to learning, the role of the instructor is to provide rich learning environments, which often include extensive social interactions, self-assessment and independent work (Lane, 2008). In online settings, examples of these approaches include online discussions and debates,

simulations and interactive instructional strategies, individual learning projects and problem based learning (Brennan, 2003; Goddard, 2002).

A number of key 'best' practices have been identified as contributing to adult learning. These include: facilitating a cooperative learning environment and encouraging active learning; frequent communication between academic staff and students; staff communicating high expectations, providing prompt feedback to students and emphasising time on task; and respecting the diverse talents and ways of learning of students (Ballard, Stapleton, & Carroll, 2004; Bradford et al., 2006-2007; Harrington, Staffo, & Wright, 2006; Shea, Chun Sau, & Pickett, 2006). The interactive features of Blackboard provide the opportunity for enactment of many of these practices. Barretto, Piazzalunga, Ribeiro, Dalla, and Filho (2003) define interactivity as "...an activity and/or action between individuals and/or machines" (p. 272). Four types of interactivity may be evident using learning management systems such as Blackboard: learner-content, learner-instructor, learner-learner, and learner-interface (Ellis, Ginns, & Piggott, 2009). Further, Blackboard interactions may occur synchronously or asynchronously. Significantly, increased interactions with instructors and other learners provide opportunities for knowledge building as much of learning occurs within social contexts (Liaw, 2008). In fact, some research has indicated that passive online learning or "lurking" without participation produces poorer learning outcomes (Beaudoin, 2002; Rovai & Barnum, 2003).

Blackboard features that facilitate interactions include announcements, discussions, virtual classroom, chat and email (Bradford et al., 2006-2007). The *announcements* section on Blackboard homepages provides a simple, efficient way of relaying messages on to all students in the cohort without taking up valuable class time while the email facility provides students with the opportunity to communicate with instructors on an as-needed basis (Ballard et al., 2004). Some features of Blackboard encourage student-centred approaches to learning. In particular, the asynchronous online discussion function of Blackboard allows students to interact frequently with each other and with the instructor. Asynchronous discussions have the advantage of allowing students to take time to thoughtfully compose their responses before posting them online. However, the lack of immediacy in asynchronous discussions makes them unpopular for students who may want help instantaneously (Gorski, Caspi & Trumper, 2004). Synchronous discussions on the other hand, as evident in the virtual classroom facility, are in real time and have a stronger sense of social presence (Malikowski et al., 2007, p. 159). In both synchronous and asynchronous discussions, an environment of collegiality and support may be established within the student cohorts. These virtual interactions also allow students and instructors to talk and work with each other without having to schedule a suitable time for all parties to meet (Ballard et al., 2004) so are useful for time effectiveness for staff and students alike.

While the objective of many online learning initiatives may be to increase learning opportunities for spatially distant learners, the use of technology may lead to feelings of isolation and alienation (Dickey, 2004). It is ironic that technology may provide the means for supporting communication between geographically distant learners but it also has the potential to alienate and isolate some users who may feel disenfranchised or marginalised by the use of technology (Daviault & Coelho, 2003). However, the social interactions provided through the use of tools that are available in Blackboard may help to reduce the sense of isolation experienced by students who are geographically removed from the site of study. In particular, interaction with an instructor and a perceived "teaching presence" is an important factor in successful online learning (Jiang, Parent & Eastmond, 2006; Shea, 2006). While there is little evidence available about how these interactions affect learning goals, the resultant outcome could be related to reductions in attrition as social interaction is strongly linked to online learning enjoyment and effectiveness of learning online (Muilenburg &

Berge, 2005; Northup, 2002). Individual differences also play an important role in how students engage with online technologies. McLoughlin (2000) highlights the need to provide culturally inclusive online environments that recognise the diversity in students' social and cultural backgrounds. It is important to look for methods and technologies to facilitate learning for all learners. Understanding the current ways in which these technologies are being used by learners and instructors may be the first important step in achieving this aim.

Online Learning In The Faculty Of Education, Queensland University Of Technology

The Faculty of Education offers a variety of education courses: undergraduate (on-campus and distance education), graduate entry (on-campus, distance education and mixed mode), and postgraduate (on-campus, distance education and mixed mode). Although some courses are offered only in distance education, others are offered in both modes and some courses are only offered on campus. Therefore, some students study in distance mode as a result of the course only being offered in that mode, while other students choose to study in distance mode because of family and/or work commitments, or because they live too far from the university. The Queensland University of Technology uses Blackboard (Version 9) as its online learning management system.

Blackboard sites contain material for both on-campus and distance education students, and some Blackboard sites do not distinguish between the two modes of study. At this point in time, all units (subjects) developed for distance study are delivered totally online. All education students (both on-campus and distance students) must access the Blackboard sites for unit materials, such as study guides, unit readings provided on the university's Course Materials Database (CMD), communication with staff and other students, and assessment tasks. Additional study materials such as lecture and tutorial notes are provided online. Audio and/or video-recordings of lectures are also placed online for all students. Both on-campus and distance students might also be expected to participate in online tutorials, group work, wikis, blogs, chat, and discussion forums.

The present study sought to identify the features of an online learning environment (Blackboard) that academic staff and students perceive as making a positive contribution to quality teaching and learning as well as identifying those features that might present difficulties or barriers to quality teaching and learning. In summary, this study was developed so that the teaching staff, who design learning experiences for both on-campus and distance education students, could have a better sense of students' perceptions and use of the online learning environment and could use this information to improve the student learning experience.

Method

Participants

All staff and students within the Faculty of Education at the Queensland University of Technology (QUT) were invited to participate in an online survey (see Appendix A) designed to elicit responses about teaching and learning using the online learning management system: Blackboard. Students and staff gave informed consent on participation and were advised that their involvement in the project was voluntary, they could withdraw from participation at any time without comment or penalty and that their decision to participate (or not) would not affect their current or future relationship with QUT. Students were completing three or four

year undergraduate bachelor degrees (*n* = 324), one year graduate diplomas (*n* = 96) or postgraduate coursework degrees (*n* = 39). Forty-three academic staff also completed the survey.

The majority of students who completed the survey were enrolled full time (71%) and 65% were enrolled in internal mode of study. The majority (86%) were female. Approximately 50% of the students were aged 24 years and under. Seventy-two percent of students resided in the metropolitan area. The majority of students (94%) in the current study had Broadband internet access at home.

Focus group discussions were also held with separate groups of students (n = 6) and staff (n = 9) to elicit additional qualitative data. Focus group meetings were conducted for distance education students (n = 2) via phone. Focus group questions focused on the features of Blackboard that were most and least effective and the ways in which specific features of Blackboard support student learning. The qualitative data comprised comments from surveys and focus groups from students and staff. Comments from each source of data for the participant groups were separated and categorised first, according to three criteria and second, grouped as positive or negative comments. The criteria were (1) teaching and learning features, (2) interactive tools and (3) general feedback on Blackboard. This approach to collating and analysing the large volume of qualitative data enabled a critical and consistent approach to identifying student and staff perceptions across common areas of concern such as the uptake and value of interactive features. The validity and reliability of the qualitative data was enhanced by the use of these criteria.

Results And Discussion

There were many commonalities between staff and student comments in relation to both positive and negative features of Blackboard. However, there were also points of difference between the two groups in the extent to which they believed specific aspects of Blackboard helped or hindered student learning. The following sections present the perceptions of Blackboard held by students and staff.

What Aspects Of Blackboard Do Students Favour And Perceive As Helpful For Their Learning?

The access to all types of unit materials and unit information appeared to be the most valued feature of Blackboard for the majority of students. As one student commented:

> *Yeah I love it, it's really easy to access, like I like to print off the front page and have my reference list of all the stuff that I might need to access and know where to go to get it and stuff. I like it.*

Students commented on the importance of having lecture notes available both before the lecture and whenever they were subsequently needed. Students liked being able to access unit materials, access library databases and other materials such as homework and workshop tasks posted by the lecturer at any time of the day or night. Access to contacts with the teaching team, other students in the unit and other university staff created opportunities for collaboration through Blackboard. The value of having unit information such as what readings were needed every week, assessment tasks and due dates in the one place was seen as a major benefit by 70% of students. One student commented that as less time was spent looking for material there was more time to actually read the material. The accessibility and flexibility associated with Blackboard made learning less daunting and helped with revision before exams for some students.

> *Oh yeah, definitely, especially if it's one that you...one of my maths lectures, what on earth did that mean? You go and do some reading and you come back and listen to it again and it makes a lot more sense.*

Closely associated with issues of access was the perception that using Blackboard saved students some time in terms of less need for travel to university and minimised the need for face-to-face contact. The ease of access helped students to meet deadlines and be more time efficient.

The use of wikis developed group work skills and the ability to work in teams for the purposes of assessment. As one student commented:

> *We had to do one for SOSE* [Study of Society and the Environment] *last semester and I actually found it really useful in, in as far as knowing who was actually engaging in the group and who we needed to bring more into the fold and build relationships with because it had a list of who has actually contributed.*

Thirty percent of students indicated that wikis were especially valued as learning was shared during group tasks. The ability to see what peers were doing in their wikis was useful for students engaged in similar tasks and contributed to their bank of learning resources that could be used in the future for teaching.

> *And so being able to see how other people develop their work and you know, whether you are a drafter or whether you just like to have all your ideas, just put it out there and I've been able to learn from the way other people work to enhance the way I work.*

Students appreciated explicit instructions on how to proceed with a wiki and suggested it be used as part of the design of a unit as it can enhance teaching and learning.

The access to different students' ideas on discussion forums was valued by over 40% of the students. Discussion forums made student think. Forums helped students when they did not understand something as they could seek collaboration and assistance from their peers. The availability of a free, on-line space to discuss with peers was appreciated by a number of students however, several students noted that the lecturer's input and involvement was important in stimulating and directing discussion on the discussion forum. A number of students indicated that group discussion assisted while on field experience and leading up to exams. The discussion forums on Blackboard were generally seen as helpful to learning and increased students' interest and involvement as they could share knowledge with and learn from peers. Forums on different topics, with trigger questions posted by the lecturer, and linked to assessment increased students' motivation and desire to participate. Forums can be used to discuss assessment issues including the answers to a multiple choice practice test. In one student's experience, involvement in a discussion forum enhanced interest in learning the content more than during a tutorial. The freedom to express ideas without interruption or in front of others through a forum engendered the confidence that such ideas could then be expressed in class as well.

The interactive tools were valued by both on-campus and distance education students, however distance students commented that the use of Blackboard interactive features such as the discussion forum gave them more contact with other students and thus helped them to feel part of a learning community:

> *Of course it's our main resource, it is where we access our resources, communicate with QUT and also with our peer students. And I find that the communication, the discussion boards and so on – they're fantastic.*

The interactive tools were seen as alleviating isolation for distance students and an essential facility in undertaking study in internet mode. However, others noted isolation from peers and teaching staff. Some questioned the use of discussions forums and boards as they were perceived as unwieldy, time-consuming and poorly subscribed, while wikis were criticised by one student as a "dreadful" tool for group assessment.

While students' perceptions of Blackboard were generally favourable, there were negative views centred on the cost of access, printing costs and use of time. Printing from Blackboard was perceived as time-consuming and expensive as documents had to be copied and pasted into Word for cost-effective printing. Students were concerned about the lack of consistency in how materials were organised on different Blackboard sites. Further, because Blackboard did not integrate well with other university administration systems, it meant having to re-enter passwords and log in and out. Students were aware of the advantages of accessibility and flexibility of Blackboard but the costs in terms of time, printing and value for learning were questioned.

What Aspects Of Blackboard Do Staff Favour And Perceive As Helpful For Their Learning?

Staff regularly used and valued the same features of Blackboard that students used—announcements, emails from announcements, CMD, learning resources and activities and links to other websites. However, while 76% of students used video recorded lectures, 64% of staff indicated they did not use or seldom used video recorded lectures and rarely or did not use audio streamed lectures (72%) or quizzes (77%). Students noted the value of video/audio streaming of lectures because it was another way to be involved in the learning process. For some it saved time because they did not need to be at university to hear the lecture and for others it was a way to be more involved in the learning process when watching the PowerPoint slides:

> *Some lecturers have the philosophy of not putting out before the lectures because they think it encourages you not the come to the lecture. I prefer they did because I print them off with notes and then just make notes against what's actually there, oh that's what they meant about that.*

From the students' perspective, video/audio streaming enhanced their learning because it provided an experience that was more like attending university. However, staff expressed ambivalence about video/audio streaming lectures because it meant that students did not attend the lectures, they felt it was impersonal, time consuming and needed technical support. Staff focus groups identified an emerging problem of low lecture attendance amongst on-campus students because students preferred to watch online and others promising themselves that they would access the lecture online. Staff were aware, however, that for distance students the use of interactive features of Blackboard was their primary way of learning. The implication for engaging students is that video/audio streaming lectures promises to enhance students' learning but it may not do so for those who neither attend nor access it online, indicating a disjuncture between students' perception of being able to be involved in the online learning process and that of staff.

Despite the ambivalence surrounding use of video/audio streaming of lectures, the majority of staff valued other teaching and learning features of Blackboard. Staff commented on the ease of developing quizzes to ensure students were regularly reviewing their work and 23% of staff considered the use of flash and media files as one of the best features of Blackboard. In terms of the interactive features of Blackboard, nearly half the staff felt that the use of group spaces was especially useful for virtual learners and could be used to discuss tutorial topics and ask questions but noted that few students used the opportunity or selected

this option to enhance their learning. Staff were aware of the potential of discussion forums, particularly in terms of enhancing learning by creating a social learning space and supporting an online community. However, staff noted the need to learn how to use these features and identified the difficulty in following the discussion because of the confusion in adding new threads, collecting and reading posts and the inability to see the name of previous post when responding:

> *Yeah, they're horrible that means someone has to post then you have to read, and then you've got to...it's all disjointed.*

These difficulties led some staff to the view that discussion forums were not user-friendly, hard to follow and clunky to use and 30% of staff used discussion forms seldom or not at all.

The use of wikis, AV chat and blogs as interactive learning tools on Blackboard were considered by staff as one of the best features. As with students, staff valued wikis as a collaborative tool and nearly 30% of staff used them on a weekly basis for class discussions. Wikis were perceived by staff to work well. It was perceived to have the potential to be an interactive learning tool with the possibility of using it for formative assessment. Its value as a way of teaching distance students was perceived to be significant as it provided a storage space for virtual teams. One staff member commented that it was *"a fundamental part of how I teach and how I use blackboard to teach, particularly for external students"*. However, some staff needed to learn how to use wikis; others found them time consuming and were frustrated by the difficulty of navigating them leading to 40% of staff not using wikis at all. Staff noted that it was difficult to educate students who were less computer literate on how to use wikis, indicating that the use of wikis as an interactive learning tool was dependent on students' own ICT literacy. Staff also held the view that wikis were a collaborative learning tool where students rather than staff were perceived to be more knowledgeable. In focus groups a staff member commented:

> *What we need to do is encourage students to build knowledge together from all the things they have to access, because it's not like the teacher has the knowledge now*.

With regard to AV chat, survey results from staff indicated it offered great immediacy and human interaction, ability to keep in touch with virtual teams and for gauging the emerging concerns and feelings amongst groups of students. Similarly, blogs were perceived by 30% of staff to work well, promote interactive and social learning and could be used for weekly class discussions. However, some staff also held the negative perception that AV chat was clumsy and that blogs were outdated, difficult to use and navigate. Staff were aware of problems in streaming and dropping out in AV chat. They noted that students had problems getting in and staying in AV chat. Staff focus groups demonstrated considerable negativity to AV chat, ranging from complaints about being unable to leave AV chat open so that students can drop in and out, being unable to see who was online to a lack of understanding of why students used it or what they liked about the process:

> *It doesn't allow you to see who's online. You can't sort of leave it open so that students can drop in and out. Obviously those people are there too, they're working on something else, no one is keen to tell me who is there, like Joan's there or something like that...again it's just this basic-ness of it.*

> *I don't really have an idea of how the students use it or why they do or what they like about it or anything really.*

While staff perceptions of blogs were more positive, staff stated that it was difficult to maintain student interaction in blogs unless it was linked to assessment, yet doing so made

for a lot of work which led one staff member to scrap the use of blogs for assessment purposes. Another used blogs *"in a very low-level way – students respond to a reading and I don't actually let them see each others'"*.

The interactive learning tools of Blackboard were perceived by staff to have considerable potential for enhancing and extending the learning process. However, 65% of staff were uncertain about actual use of video/audio streaming of lectures which was the interactive learning tool particularly valued by all students. Staff perceived that video/audio streaming reduced the engagement of on-campus students through poor lecture attendance, thus diminishing internal students' overall learning experience:

> *They use it so much that some of them, though they're undergraduates decided that they'd become internet undergraduates. So this year I see a marked decrease in the number of students who turned up to all the lectures, probably down to a third for most of the semester.*

Staff perceived Blackboard learning tools such as discussion forums, AV chat, wikis, blogs and announcements to enhance the learning experience because it created human interaction, social learning, and possibilities for collaboration and ways for keeping in touch with students. Staff appeared to value wikis as a learning tool over AV chat and blogs because it could be used for a range of activities including discussion, collaboration and formative assessment:

> *Yeah, I think a wiki that I used with my summer-school students, we had real time discussion and they developed in their thinking and argued with each other and I thought that was valuable.*

In terms of assessment, a minority of staff (20%) used the quiz feature of Blackboard to ensure students reviewed their work. Staff noted the potential of wikis, discussion forum and blogs for formative assessment. However, staff appeared to use Blackboard learning tools for formative rather than summative assessment. Such online assessment activities were perceived to enhance the overall learning experience and appeared to replicate traditional assessment formats.

Conclusions And Implications For Practice

As a group, students viewed Blackboard favourably particularly in terms of accessibility of unit materials. Having learning resources available in a central location and accessible 24 hours a day was perceived as valuable in terms of efficient use of time and also valued as a resource for revision and examination preparation. These results support previous research which has indicated that increased accessibility and availability of resources is a key feature of online environments appreciated by students (DeNeui & Dodge, 2006; Heirdsfield et al., 2007). Students also valued the connections made with other students and the sharing of ideas made possible via the use of discussion forums and AV chat. The potential for interactivity and the opportunity to access a variety of opinions has been previously identified as an important aspect of learning in online discussion forums (see e.g., Jahnke, 2010). Hrastinski (2009) has proposed a theory of online learning which advances the proposition that online participation underlies online learning in a powerful way. From this perspective, online learning is richest when there is participation and collaboration amongst learners. Our results indicate that students certainly perceived the opportunity to engage with other students as a benefit of the online environment and felt that the online interactions enhanced their learning experience. Similarly, staff identified the interactive features of Blackboard as

having the potential to enhance the learning experience but commented frequently on the time consuming nature of working with features such as wikis, blogs and AV chat.

In general, although staff acknowledged the possibilities for human interaction and collaborative learning inherent in the more interactive features, they viewed their use more negatively than did the student body. In many ways, staff still viewed face-to-face interactions and modelling provided in class as being the most valuable learning experience for teacher education students. Staff were reluctant to promote video/audio streaming of lectures as viable alternatives for students. Given the increasing reliance on online technologies in higher education, particularly for remote students, and the value placed on online interactions by students, staff need to view web based learning management systems such as Blackboard as more than simply a repository of learning resources. As Hrastinski (2009) notes, "if we want to enhance online learning, we need to enhance online learning participation" (p. 81). Although providing access to learning materials is certainly an important aspect of working with remote learners, it is clear that online technologies offer much more potential for interaction than is currently being realised by academic staff. The findings support the view that educators could use learning management systems more creatively and consistently as part of their pedagogy (West, Waddoups, & Graham, 2007). Staff need training, support and encouragement if they are to move towards more interactive and innovative pedagogies online.

References

Ballard, S., Stapleton, J., & Carroll, E. (2004). Students' perceptions of course websites used in face-to-face instruction. *Journal of Interactive Learning Research, 15*(3), 197-211.

Barretto, S. F. A., Piazzalunga, R., Ribeiro, V. G., Dalla, M. B. C., & Filho, R. M. L. (2003). Combining interactivity and improved layout while creating educational software from the Web. *Computers and Education, 40,* 271-284.

Beaudoin, M.F. (2002). Learning or lurking? Tracking the "invisible" online student. *Internet and Higher Education, 5*(2), 147-155.

Belcheir, M. J., & Cucek, M. (2001). *Student perceptions of their distance education courses* (Research Report. No. 2001-04). Idaho: Office of Institutional Assessment.

Blackboard Learn™ (2009). Blackboard Inc. New York: McGraw Hill.

Bradford, P., Porciello, M., Balkon, N., & Backus, D. (2006-2007). The Blackboard learning system: The be all and end all in educational instruction? *Journal of Educational Technology Systems, 35*(3), 301-314.

Brennan, R. (2003). *One Size doesn't fit all. Pedagogy in the online environment* (No. 1). Leabrook: Australian National Training Authority.

Christie, M., & Garrote Jurado, R. (2009). Barriers to innovation in online pedagogy. *European Journal of Engineering Education, 34*(3), 273-279.

Coates, H. (2007). A model of online and general campus-based student engagement. *Assessment & Evaluation in Higher Education, 32*(2), 121-141.

Daviault, C., & Coelho, M. (2003) Forum: a new approach to the production of educational content, paper presented at the 30th Annual Conference on Computer Graphics and Interactive Techniques, San Diego, CA, 27–31 July.

Davis, J., Lennox, S., Walker, S., & Walsh, K. (2007). Exploring staff perceptions: Early childhood teacher educators examine online teaching and learning challenges and dilemmas. *International Journal for the Scholarship of Teaching and Learning, 1*(2), 1-15.

DeNeui, D. L., & Dodge, T. (2006). Asynchronous learning networks and student outcomes: The utility of online learning components in hybrid courses. *Journal of Instructional Psychology, 33*(4), 256-259.

Dickey, M. D. (2004). The impact of web-logs (blogs) on student perceptions of isolation and alienation in a web-based distance-learning environment. *Open Learning, 19*(3), 279-291.

Ellis, R. A., Ginns, P., & Piggott, L. (2009). E-learning in higher education: Some key aspects and their relationship to approaches to study. *Higher Education Research and Development, 28*(3), 303-318.

Goddard, M. (2002). What do we do with these computers? Reflections on technology in the classroom. *Journal of Research on Technology in Education, 35*(1), 19.

Gorsky, P., Caspi, A., & Trumper, R. (2004). Dialogue in a distance education physics course. *Open Learning*, *19*(3), 265-277.

Hallas, J. (2008). Rethinking teaching and assessment strategies for flexible learning environments**.** In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*. http://www.ascilite.org.au/conferences/melbourne08/procs/hallas.pdf

Harrington, T., Staffo, M., & Wright, V. H. (2006). Faculty uses of and attitudes toward a course management system in improving instruction. *Journal of Interactive Online Learning, 5*(2), 178-190.

Heirdsfield, A., Davis, J., Lennox, S., Walker, S., & Zhang, W. (2007). Online learning environments: What early childhood teacher education students say. *Journal of Early Childhood Teacher Education, 28*, 115-126.

Herrington, J., Reeves, T. C., & Oliver, R. (2005). Online learning as information delivery: Digital Myopia. *Journal of Interactive Learning Research, 16*(4), 353–367.

Hrastinski, S. (2009). A theory of online learning as online participation. *Computers and Education, 52,* 78-82.

Jahnke, J. (2010). Student perceptions of the impact of online discussion forum participation on learning outcomes. *Journal of Learning Design, 3*(2), 27-34.

Jiang, M., Parent, S., & Eastmond, D. (2006). Effectiveness of web-based learning opportunities in a competency-based program. *International Journal on ELearning, 5*(3), 535-543.

Lane, L. M. (2008). Toolbox or trap? Course management systems and pedagogy. *Educause,* 2, 4-7.

Levine, A., & Sun, J. C. (2003). *Distributed education: Summary of a six-part series.* Washington, DC: American Council on Education.

Liaw, S-S. (2008). Investigating students' perceived satisfaction, behavioural intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers and Education, 51*, 864-873.

Malikowski, S. R., Thompson, S. R., & Theis, J. G. (2007). A model for research into course management systems: Bridging technology and learning theory. *Journal of Educational Computing Research, 36*(2), 149-173.

Masi, A., & Winer, L. (2005). A university-wide vision of teaching and learning with information technologies. *Innovations in Education and Teaching International, 42*(2), 147-155.

McLoughlin, C. (2000). Designing learning environments for cultural inclusivity: A case study of indigenous online learning at tertiary level. *Australian Journal of Educational Technology, 16*(1), 58-72.

Muilenburg, L. Y., & Berge, Z. (2005). Student barriers to online learning: A factor analytic study. *Distance Education, 26*(1), 29-48.

Northup, P. T. (2002). Online learners' preferences for interaction. *Quarterly Review of Education, 3*(2), 219-226.

Norton, P., & Hathaway, D. (2008). Exploring two teacher education online learning designs: A classroom of one or many? *Journal of Research on Technology in Education, 40*(4), 475-495.

Pillay, H., Irving, K., & Tones, K. (2007). Validation of the diagnostic tool for assessing Tertiary students' readiness for online learning. *Higher Education Research & Development, 26*(2), 217-234.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). NY: The Free Press.

Rogerson-Revell, P. (2007). Directions in e-learning tools and technologies and their relevance to online distance language education. *Open Learning: The Journal of Open and Distance Learning, 22*(1), 57-74.

Rovai, A. P., & Barnum, K. T. (2003). On-line course effectiveness: an analysis of student interactions and perceptions of learning. *Journal of Distance Education, 18*(1), 57-73.

Shea, P. (2006). A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Networks, 10*(1), 35-44.

Shea, P., Chun Sau, L., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *Internet and Higher Education, 9,* 175-190.

Summers, J. J., Waigandt, A., & Whittaker, T. A. (2005). A comparison of student achievement and satisfaction in an online versus a traditional face-to-face statistics class. *Innovative Higher Education, 29*(3), 233–250.

Vovides, Y., Sanchez-Alonso, S., Mitropoulou, V., & Nickmans, G. (2007). The use of e-learning course managent systems to support learning strategies and to improve self-regulated learning. *Educational Research Review, 2*, 64-74.

West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. *Educational Technology Research Development, 55,* 1-26.

Yang, Y., & Cornelius, L. F. (2004). Students' perceptions towards the quality of online education: A qualitative approach. *Association for Educational Communications and Technology*, *2*(7), 861–877.

Appendix A

Blackboard survey – students

20. All of our units have Blackboard sites. Thinking about all units that you have studied, which of the following Blackboard features have you used? Please rate the overall effectiveness of the features of Blackboard.						
	Least effective				Most effective	
	1	2	3	4	5	N/A
Announcement from lecturers						
Announcements also copied as emails to students						
Discussion forums						
Chat rooms						
Wikis						
Blogs						
CMD						
Audiostreamed lectures						
Videostreamed lectures						
Lecture Powerpoint presentations						
Learning resources and associated activities						
Group work area						
Email contact with other students						
Links to relevant websites						
Quizzes						
Assessment information						
Examples of previous assignments						

Examples of previous exams						
Frequently asked questions						
Opportunity for feedback from students						
Other, please describe						

21. What are the best features of Blackboard? Tell us why?	
Feature	Why is this good?

22. To contribute to our bank of ideas, please provide an example of how using Blackboard has helped/enhanced your learning.

23. What are the worst features of Blackboard? Tell us why?	
Feature	Why is this bad?

24. To contribute to our bank of ideas, please provide an example of how using Blackboard has hindered/inhibited your learning.

25. How easy do you find Blackboard to navigate?				
not at all				very easy
1	2	3	4	5

27. We are aware that some students face barriers in accessing and using Blackboard. Please tell us which of the following relate to you. Please select as many as you believe apply.

No Barriers Finding time to access a computer Download times Cost of internet access Cost of printing Finding essential unit material Other

Blackboard Survey – Staff

We value your opinions regarding your use of Blackboard. In relation to units for which you have responsibility, please respond to the following items.

1. Which Blackboard features do you use?

	Use Regularly	Use Sometimes	Use Seldom	Don't use	Didn't know feature existed
Announcements from lectures					
Announcements copied as emails to students					
Discussion forums					
Chat rooms					
CMD					
Wikis					
Blogs					
Audiostreamed lectures					
Videostreamed lectures					
Learning resources and associated activities					
Group work area					
Links to relevant websites					
Quizzes					
Assessment Information					
Examples of previous assignments					
Examples of previous exams					
Email contact with other students					

Frequently asked questions					
Opportunity for feedback from students					

7. Comment on the best features of Blackboard.

8. Comment on the worst features of Blackboard.

9. Please comment on any perceived differences between Blackboard and its use/uptake by internal and external students.

10. Please comment on ways that your Blackboard site is interactive, identify any issues you experience when using Blackboard interactively.