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Enhancing learning through strategies lecturers use: A snapshot of students' learning at a satellite campus

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Disciplines

Arts and Humanities | Social and Behavioral Sciences

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Abstract

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Keywords: blended learning; satellite campuses; distributed learning environments, pre-service Teacher Education; Technology in Tertiary Education;

Introduction

The aim of this study was to investigate the learning experiences and perceived learning preferences of students studying in a distributed learning environment at the Loftus Education Centre (LEC) a satellite campus of the University of Wollongong (UOW). The environment at Loftus is a distributed learning environment as it "blurs the boundary of campus-based and distance education" (Lefoe 2003, p.33). The LEC environment operates through blended learning, for example, WebCT provision of notes, assignment details, resources to assist with assignment completion and e-readings alongside some technologically delivered lectures with face-to-face tutorials and other learning support. This approach to teaching and learning is part of a university wide commitment to the use of technologies to improve the learning outcomes of students, as expressed in the UOW Strategic Plan 2008-10, Objective 2:

> "An active, collaborative and flexible learning experience for students" (UOW, 2007, p.15)

supported by strategies which include:

> "Optimise the mix of delivery methods to enhance the learning experience of students across all teaching locations
>
> Optimise the use of teaching spaces and technical facilities to provide a physical environment that is engaging, collaborative and flexible" (UOW, 2007, p.15).

The LEC has been operating now for six years and some of the early cohorts of students who have studied their entire degree while enrolled at the LEC are now graduating. Thus, given the central role of blended learning in this environment, it is timely to investigate the extent to which the students have found this approach helpful to their learning.

Context

UOW has a drawing area that extends from the far south coast of NSW to the southern outskirts of Sydney and west to the dividing range. This area is served by a series of satellite campuses and access centres that extend beyond the hub campus at Wollongong, all of which participate in the distributed learning environment. These centres and campuses (Bega, Batemans Bay, Shoalhaven, Moss Vale and Loftus) extend the availability of the University of Wollongong's learning opportunities well beyond that offered by the hub campus. They are linked to the hub campus teaching and learning programs through the use of Information Communication Technologies (ICTs), including eduStream[1], videoconferencing, WebCT sites and remotely available student administration services called Student Online Learning Services (SOLS).

The LEC was established in 2003 with an initial enrolment of 18 students in two degrees. Since then, the LEC has grown to reach an enrolment in 2009 of 286 students across six degree programs. The

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[1] eduStream is the system used to give students access to recorded lectures and other learning materials on the internet (Caladine, 2007, p.6)

two Faculties involved in this study (referred to as Faculty X and Faculty Y in this paper) offer undergraduate degrees in different ways, despite both offering degrees in the social sciences. As well as the use of remote student administration facilities for all Loftus students, Faculty X integrated WebCT subject support with face-to face lectures and tutorials in an attempt to connect the Faculty X Loftus students to the hub campus' learning and teaching programs. At the time of this study, the students were in small year cohorts and the majority studied synchronous degree programs. Students had access to teaching staff (sometimes through main campus staff who travelled to Loftus to teach) in small classes including small lectures, making it possible for academics to cater for individual differences. The small and intimate atmosphere made teaching staff (mainly casual UOW employees) accessible to students and led to many interactions between the students as well as between students and staff, leading to high levels of student engagement and a strong classroom community characterised by "mutual interdependence and a sense of trust and interaction among community members" (Rovai 2002, cited in Graff, 2006, p.127).

Students enrolled in Faculty Y, however, were in a different situation. Except for the first year enrolments (where Faculty X and Faculty Y enrolments were roughly equal in the year this study was conducted), Faculty Y students were enrolled in larger year cohorts and across three degree programs and so did not all study the same programs. For these students technology was used not only to connect them to the hub campus teaching and learning progams through shared resources and information via the WebCT,as for Faculty X, but also subject delivery itself usually involved a video-conferenced or eduStreamed lecture. This meant that students regularly had a lecturer that they had never engaged with in a face-to-face learning environment as their main point of contact. Casual tutors delivered the face-to-face component of the program on-campus at the LEC. Consequently, ICTs such as WebCT, videoconferencing, eduStreaming and SOLS were central to the students' abilities to receive and engage in learning opportunities through the LEC.

Below is a summary of the two faculties' approaches to teaching in this environment:

Faculty Y	Faculty X
Student administration facilities linked technologically (SOLS)	Student administration facilities linked technologically (SOLS)
WebCt subject support: readings Assignment details	WebCT subject support: readings Assignment details
Lectures delivered from the hub campus via eduStream and videoconferencing to small groups (approximately 30) at Loftus and to small groups and large groups on other campuses simultaneously	Lectures delivered face to face in small groups (approximately 30)
Tutorials delivered face to face	Tutorials delivered face to face
Tutorials delivered by casual staff who work primarily at the LEC Lectures delivered by hub campus staff	Tutorials and lectures delivered by hub campus staff and by casual staff who worked primarily at the LEC

Literature review

The term 'blended learning' has multiple possible definitions (for example, Swenson and Redmond, 2009; Yoon and Lim, 2007; Mackay and Stockport, 2006). The most accurate description of the blended learning opportunities at Loftus is an adaptation of the definition used by Swenson and Redmond (2009), which is: "Asynchronous or synchronous online learning combined with 20% or more face-to-face" (p.4). This definition accurately reflects the distribution of learning across face-to-face and technologically-delivered learning opportunities and, if 'online' is expanded to become 'technologically delivered', it can also accurately represent the delivery environments of the learning opportunities at Loftus.

It is often claimed (see Lambert and Brewer, 2007 for a brief summary) that blended learning allows for the best of both worlds – face-to-face learning and elearning- and can even provide better learning opportunities than either of these approaches can offer on their own. It can enable the student experience to be flexible in terms of location of learning; timing and pace of learning; communication channels used; the nature of some peer interactions; and the opportunity to reflect on and revise materials. Collis and Moonen (2002) and Vaughan (2007) point out the positive aspects of flexibility in timing offered by blended learning, not only for the students' convenience but in terms of the students' outcomes. Students have time to reflect, reconsider and revise their learning as they progress through their work. Blended learning provides the opportunity for "intensive and complex engagement with a subject" (Manghani, n.d. p.2) and facilitates distributed cognition across individuals, physical resources, computerised resources and links and learning objects (Barab and Plucker, 2002) providing a rich and interactive subject environment. Vaughan (2007) reports improved student learning outcomes in a number of studies into the outcomes of blended learning. Similarly, in their review of various studies into blended learning Collopy and Arnold (2009) report that multiple studies document that content learning outcomes are similar across both blended learning and face-to-face environments.

Thus there is a body of evidence that demonstrates that blended learning offers similar or better learning outcomes than face-to-face learning alone. However, not all these positive outcomes can be present in all blended learning environments as the key to successful learning outcomes lies not in the learning opportunities themselves, but in the use that is made of them by the students. To some extent, this use depends on the way that the learning opportunities are perceived and used by the students, that is, the affordances they perceive in the learning opportunities. Affordance, as first conceived by Gibson (1979, cited in Spink and Foster, 2007) refers to "the opportunities for action offered by the real world" (p.2). He considered that an affordance existed only when a use was perceived to exist for the object. However, Norman (1999, cited in Spink and Foster, 2007) extended Gibson's concept to include a designer's intended use of an object, allowing for the discussion of intended and actual affordances in the design of objects.

Blended learning offers students a number of possible, or intended, affordances which staff predict when planning combinations of learning opportunities based (implicitly or explicitly) on pedagogies that underpin their teaching and the demands of the subject matter. That is, when planning which form of technology to use, or what sort of a learning object to create, staff are presupposing students' particular uses of these technologies and objects. Students, in turn, interact with these learning opportunities on the basis of their perceptions of how to use the opportunities to foster their own learning. Their perceptions can be influenced by their understandings of the reasons for which various learning opportunities are provided and their own personal motivations and situational demands. These two perspectives – the staff's and the students' – of each teaching-learning situation, can be closely aligned or quite distant for each individual teaching-learning event.

The elearning component of blended learning can simply be e-information (Race, 2005, cited in Manghani, n.d.) or the interactive affordances of the learning situations can be ignored by students (Ramsden, 2003, cited in Manghani, n.d.) so that learning opportunities presumed by staff when designing learning environments, such as reflection or interaction, may never take place. Both Prensky (2001, cited in Goodyear and Ellis, 2008) and, more recently, Bennett, Maton and Kervin (2008) point out that today's so-called 'digital natives' have varying levels of expertise in a diverse range of technologies and use these technologies in different domains of their live. Universal familiarity with the technology typically associated with blended learning in higher education settings cannot be assumed. This is further confirmed by Vaughan (2007) who reports that one of the key challenges faced by students in blended learning situations is the initial problem of the self management of their studies, including the use of sophisticated technologies.

This means that staff cannot assume students' can see or use the affordances available to them in a blended learning environment. Unlike the face-to-face context where teachers can mediate (Steketee, 2006) the learners' uses of and understanding of the resources, the asynchronous timing of many of the interactions that occur in a blended learning environment means that learners are being required to use the resources without the mediating influence of their teachers. Thus, they must make appropriate use of the resources by themselves and this can be problematic. As Sadler and Given (2007) point out when discussing Norman's (1988) view of affordance, "...it becomes especially important to recognize both an object's intended uses (ie "real affordances") and the affordances perceived by the user (or "perceived affordances")" (p.3). When these two aspects of affordance are incongruent, an 'affordance gap' occurs. In some instances these gaps may be conducive to learning, for example, when an assignment exemplar is provided for students with the intention that it be used as a model and then students critique it and improve on it; or these gaps may be problematic for learning, for example, when power point slides are made available for students with the intention they are used to prepare for an interactive face-to-face learning situation, yet students see them as substituting for attendance at a face-to-face learning event. Thus students' perceptions of the affordances can influence the potential and actual value of the resources available in any blended learning environment, and these perceptions are influenced by a number of factors including the students' familiarity with the technology; their understanding of the nature of the learning they are engaged in; their motivations; their understandings of their own learning processes; and their ability to self manage their learning on the basis of all of these understandings. This is not unique to blended learning situations. Students' abilities to self-manage their studies, that is, their abilities to locate and access resources (human and otherwise), to interact with and use them and to manage their own individually conducted learning has been shown to be important drivers of students learning outcomes (Drew, 2001).However, the asynchronous timing of interactions in a blended learning environment can exacerbate these influences. Thus, the teaching and learning that occurs at the LEC assumes a meta-awareness of the learning processes and environment. However, as Lawson (2004) points out, such a meta-awareness cannot be assumed. In a blended learning environment, the use of technology adds a further area of assumed and required knowledge to this situation.

Consequently, in a distributed learning environment such as the LEC, it becomes important to investigate students' perceptions of the relative value of different aspects of their environment to their learning, with a view to improving the students' outcomes and the experiences of staff and students in this environment.

Research question

The research question for this study was:

What do students on an isolated campus find most useful to their learning in a university wide, distributed learning environment?

Method

This research study aimed to investigate Loftus students' perceptions of their blended learning environment at the LEC. It asked them to provide, in their own words, their views on what was helpful to their learning. The questionnaire was open ended so as not to presuppose answers. Themes and categories have been extracted from the responses.

The work of Calder and Daly (2007) provided the basis for this research study. Calder and Daly (2007) interviewed small numbers of students studying in a traditional on-campus environment at James Cook University. As such their work was both recent and based in an Australian context. They transcribed and analysed their data, giving them detailed, but not generalisable, findings. These same questions were then trialled in written survey form early in 2005 at Loftus through an evaluation of four cohorts of students who had studied the one core first-year subject to ensure the clarity and validity of the questions. The questions were then adopted without alteration for this research, to allow the maximum capture of students' views and the opportunity to compare the findings with those of Calder and Daly (2007) in order to begin to expand our understandings of specific Australian higher education teaching and learning contexts. Because this research is into a specific Australian context not before researched. A qualitative approach was deemed most suitable.

This study used purposive sampling as only students attending the Loftus Education centre were surveyed. Although data was collected as early as 2005, the data reported in this paper is from 2007. Late in 2007, the population (n=290) at LEC was surveyed over a period of a week. Only the responses of the undergraduate students (enrolment: n=252) were included in this research as the post graduate numbers were very small (below 10). One hundred and thirty eight undergraduate surveys were returned completed giving a response rate of 54.8%.

The responses were coded for themes and categories, initially using the themes developed by Calder and Daly (2007) with the identification of emerging themes occurring throughout this process (see Appendix 1 for details). The categories were entered into a relational data base and reports on mean scores and percentages derived for each Faculty, for each of the survey questions.

The instrument

Students were asked to answer two open ended questions about their learning experiences at Loftus. These were the questions asked:

1. What strategies can lecturers use in their lectures that help you to learn?

2. What is it about the delivery of your entire subjects (resources, assessments, tutorials, Learning Development workshops and appointments etc) that helps you to learn?

Results

The results for the Faculties involved in this study shared many similarities and a key difference. The results for both Faculties in this study also shared key differences to the findings of the Calder and Daly (2007) study.

Findings from question 1: *What strategies can lecturers use in their lectures that help you to learn?* *(see Appendix 2 for Question 1: Tables of Results)*

The survey responses to this question: *What strategies can lecturers use in their lectures that help you to learn?"* touched on a key difference between the two faculties at the LEC. Faculty X students received face-to-face lectures that were similar to traditional seminars, whereas Faculty Y students received lectures via eduStreaming or videoconferencing.

Faculty Y students ranked the emerging theme 'Technology' as having the most influence on their learning (31.81%, n=49, see Table 1 Appendix 2). This theme included categories which reflected both positively and negatively on the influence of technology on their learning. For example, 5.84% (n=9) made negative comments about the impact of eduStream on their learning, while 5.19% (n=8) made positive comments about its impact. A smaller number (4.54%, n=7) made positive comments on videoconferencing and a larger number (7.79%, n=12) made comments on general issues related to video delivery.

At the finer level of analysis of 'Categories', Faculty Y students ranked the category of 'Current, real life examples' within the theme 'Lecture Strategies' as being the most influential on their learning (9.09%, n=14, see Table 2, Appendix 2) and the category of 'Video delivery issues' within the theme 'Technology' as having the second highest influence (7.79%, n=12, see Table 2, Appendix 2).

This suggests that although students' preferences for videoconferencing and eduStreaming vary, the single biggest influence on their learning remained the nature of the content they received, specifically examples and explanations of the application of the content of their subject to their world. It also indicates that, from the students' points of view, lecturers are unaware of the limitations of the technologies they are using and the impacts of these limitations on the students' abilities to access the information being delivered.

Results for Faculty X students also reflected aspects of their teaching-learning environment. Faculty X students ranked the theme 'Lecture Strategies' as having the most influence on their learning (31.25%, n=30, see Table 1 Appendix 2). This theme contained the following categories: discussion and interaction; current real life examples; questions and answers; powerpoint presentations; recaps and reviews. This was followed by the theme 'Groupwork' (19.79%, n=19). Interestingly, at the finer level of analysis of category, the rankings of the themes were reversed. Faculty X students ranked the category "Discussion and Interaction' within the theme 'Groupwork' as having the single biggest influence on their learning (14.58%, n=14, see Table 2 Appendix 2) and the category 'Current Real Life Examples' within the theme 'Groupwork' as of second greatest influence (12.5%, n=12, see Table 2 Appendix 2)

These students, like the Faculty Y students, indicate a valuing of modelling by lecturers of the application of subject content to practice. As social sciences rely largely on this skill in analysis and

critical analysis of theories and situations/cases, it seems that students' primary concern is for explicit demonstration of this by their lecturers to facilitate their learning. The low ranking of the theme 'Technology' by Faculty X students (6.25%, n=6) is no doubt, in part, a reflection of the lesser role it plays in these students' programs. This contrasts with the Faculty Y students, who receive lectures through technology. They ranked the categories involving Technology highly. They also ranked categories involved in the 'Lecture Strategies' highly and frequently (three out of the five first-ranked categories, see Table 2 Appendix 2), suggesting that the strategies the lecturers use are particularly important when technology is the delivery method.

This raises two questions, neither of which can be addresses through this study.

Firstly, what is the role of mediation of technology by lecturers in the face-to-face teaching situation in the case of Faculty X? Does this account, in part, for the absence of any negative comments concerning technology? Why are there no positive comments on its influence on their learning?

Secondly, does Faculty Y students' preoccupation with the theme 'Lecture Strategies' reflect the lack of mediation of the use of technologies? How great is the impact of the lecturer's use of the technologies on the students' learning? To what extent is this a reflection of an affordance gap?

Below are examples of the range of the students' responses to question 1:

- **Realise we can't see them if their slides are up so any questions that may help us, remain unseen which doesn't help our understanding**
- **Actually giving lectures, podcasting = awesome to us in Loftus**
- **Do them by videoconferencing, not just on WebCT**
- **Use of close up cameras on the whiteboard as used in COmm121**
- **More visual aids and interaction. More internet download.**
- **Posting lectures online via edustream**
- **Try to verbally demonstrate things as we can't see when they write it down**
- **Give us access to the electures through edustream**
- **Video lecture PowerPoint slides work well**
- **It would be helpful for electures to be recorded and put on line for download as well**
- **The audio lecture the voice should be clearer to hear (technological error)**
- **Repeat questions asked by Wollongong students in lectures before answering the question, otherwise remote campus students can't hear the question**
- **Include remote campus more in lectures**
- **Get to know how to use the technology better**
- **Videoconference lectures=very difficult, everyone talking, easy to just not go, hard to listen as not in front of you, lecture summary notes great help to assist when listening over the net./edustream, hard to be motivated to listen to**
- **Actual lectures-edustream is a much more difficult way to learn. Actual lectures (even videoconferencing) is a much better option**
- **Have actual lectures rather than edustream**
- **Have actual lectures – edustream is boring and most people don't listen to it**
- **Make lectures available to all classes not just edustream**
- **Understand how to use computer/video equipment**
- **They need to learn how to use the technical equipment involved in videoconferencing**
- **Don't have edustream lectures**
- **Conducting videoconference lectures for all subjects for remote campuses**
- **The lecture recorded on mp3 format should be recorded on higher quality since it was hard to listen to some parts. Want video lecture**

Findings from question 2: *'What is it about the delivery of your entire subjects (resources, assessments, tutorials, Learning Development workshops and appointments etc) that helps you to learn?'*

Both Faculty X and Faculty Y students ranked the themes of 'Availability (consisting of the categories: of lectures; of teaching staff; of notes; of campus support; of Learning Development facilities; of WebCt and SOLS and of individual attention) and of Groupwork (consisting of the categories: discussions/interactions; maths tutorials; tutorials; and working with a tutor) first and second respectively (see Table 3, Appendix 3). At the finer level of analysis of Category, (see Table 4 Appendix 3) both ranked the category 'Tutorial' in the theme 'Groupwork' first.

The first difference in the rankings provided by the two faculties is at the second ranked position on the Category level of analysis. Faculty Y students found the technological availability of WebCT subject support and the remote connection to the hub campus (SOLS) as next most helpful, whereas Faculty X students found the Resources category next most helpful. In practice, however, this difference may be superficial as the Faculty Y students would be using the WebCT site to locate and access Resources relevant to their learning.

These responses reflect a positive view amongst these students of the role of resources (human and other) and the opportunity for socially situated, face-to-face interaction in their learning, regardless of the differences in the delivery methods used by the two faculties. As the opportunity to interact on-line through chat rooms and discussion lists was not a general part of this environment this indicates a preference for socially situated and constructivist learning opportunities, but not necessarily a preference for face-to-face interaction over on-line interaction.

Below are examples of the range of the students' responses to question 2:

- ***The small class sizes are really good.***
- ***It makes it easier to learn the work through the reduced number of students making it more directed learning.***
- ***Loftus is such a small centre and thus lectures are personal and more like a tute. It is very interactive.***
- ***Involvement eg discussions and more interactive lessons rather than a 2 hour lecture.***
- ***Supported learning eg [The Learning Development lecturer's] review of material that will be submitted and relevant suggestions (sooo good!)***
- ***Tutorials. Learning Development is great.***
- ***Clearly structured tutorials based on lecture information.***
- ***Smaller class sizes at Loftus. Greater access to lecturer/tutor at Loftus.***
- ***Tutorials. Resources. Internet WebCT***
- ***Smaller tutorials and lectures***
- ***Small class sizes help. We (students) all have got to know each other well which makes us comfortable in each others company which helps for group work, presentations and keeping up to speed with assessments.***
- ***Tutorials with lecturer involvement***
- ***Tutorials, the Learning Development has assisted with my formal essay formatting***
- ***Small class sizes, more involvement***
- ***Friendly lecturers tutorials***
- ***Smaller class sizes-more attention from lecturers***
  The education resources that were put up to help with assignments were extremely helpful (annotated bibliography etc).

Comparison to Calder and Daly's (2007) findings.

Calder and Daly (2007) found the themes 'Passions' and 'Big Picture' in their study. The results of this study was markedly different to theirs, as neither of these themes appeared in the findings. While both Calder and Daly's (2007) study and this one are site specific and small, this still raises a number

of questions, such as, does the small size of the on-campus component of the LEC allow for higher levels of students engagement than the traditional large face-to-face campus situation, so that students are not needing 'Passion" (that is, lecturer's enthusiasm) as a motivator to their own learning? Similarly, does the LEC situation (small cohorts) encourage connections between students and staff that provide a 'Big Picture' (that is understanding of how things fit together)?

Discussion and Conclusion

The two main points of interest that result from this study are:

1   the difference in outcomes between this study and the Calder and Daly (2007) study

2   the potential apparent affordance gap between Faculty Y students and staff, in relation to the use of technology as a delivery mechanism for lectures in a blended learning environment.

The difference in outcomes between this study and the Calder and Daly (2007) study cannot be attributed to any particular cause. However, they do raise a number of questions: what was the role of 'passion' for the students in the Calder and Daly (2007) study? Does it facilitate student engagement and, if so, does the smaller size of the LEC campus make this unnecessary? If so, then the remote nature of the LEC, its use of blended learning have not impacted negatively on the students' learning outcomes because of this. This needs to be further investigated.

The differences in findings between the two faculties in this study in relation to the theme 'Technology' indicates the possibility of an affordance gap that may be limiting the learning outcomes of the students at the LEC. Reimann and Goodyear (2004) point out that in a blended learning environment, not only is cognition distributed but so too is pedagogy, and that improving the learning outcomes of students through pedagogical adjustments requires balancing the various learning objects, resources and the teaching-learning processes so as to achieve an overall improvement. Thus attention needs to be paid to the overall balance of the environment and adjustments in one area may have a beneficial flow-on effect to other areas of the learning environment.

One area in particular that may need improvement involves attuning students to the various affordances intended in their environment. As Bennett, Maton and Kervin (2008) and Vaughan (2007) point out, students are variously skilled in information communication technologies (ICTs)s and there are probably as many differences as similarities amongst the abilities, expectations and experiences which shape the affordances the students perceive. Tallman and Fitzgerald (2005) report on their experiences of the need to upskill students technologically before an on-line course in order to achieve best results. Steketee (2006) points out the need to mediate students' uses of technologies and Reimann and Goodyear (2004) talk about students' search for guidance in the use of technologies. All these studies focus clearly on the students' technological abilities as they dictate the use students can make of the affordances available. However, this study indicates that there are also issues to do with the ways in which staff use the technologies and provide affordances. When staff use the technologies simply to relay their face-to-face teaching to a remote campus, potential affordances are lost and other presumed affordances are absent. For example, the opportunity to stimulate a social constructivists approach to learning across all remote campuses does not appear to be being utilised in a way the students' recognise. Also, the presumed affordance of learning from peers' questions is not always available to remote campus students via the technology as it is currently being used. To ensure that affordances are mutually understood and, therefore, exploited by both staff and students in ways that allow for the constructive alignment of the technology with the university's goals, it may be

beneficial to involve students and staff together in the development of blended learning environments. The students could benefit from a staged, scaffolded and integrated involvement of technology into their study programs, explicitly mediated by staff. Staff may find teaching using technology more satisfying if they were to better understand the perceptions of the students they are teaching. This might better support the sorts of improved quality learning opportunities and outcomes that the university is working towards through its use of technologies and allow for the 'better than either' outcomes claimed for blended learning.

Reference List

Barab, S.A. and Plucker, J. A. (2002). Smart people or smart contexts? Cognition, ability, and talent development in an age of situated approaches to knowing and learning, *Educational Psychologist*, 37(3), 165-182

Bennett, S., Maton, K. and Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.

Caladine, R. (2007). Teaching and Learning with eduStream. CEDIR. University of Wollongong.

Calder, A., & Daly, B. (2007). Learning from our students. Paper presented at the Eighth Biennial Conference of the Association of Academic Language and Learning. Retrieved on 19th December, 2009 from http://www.latrobe.edu.au/aall2007/assets/downloads/papers/ unrefereed_papers/Calder&DalyAALL07.pdf

Collis, B. and Moonen,J. (2002). Flexible learning in a digital world [1], *Open Learning*, 17(3), 217-230.

Collopy, R.M.B. and Arnold, J.M. (2009). To blend or not to blend: Online and blended learning environments in undergraduate teacher education. *Issues in Teacher Education*, 18(2), 85-101.

Drew, S. (2001). Student perceptions of what helps them learn and develop in higher education. *Teaching in Higher Education, 6 (3),* 309-331.

Graff, M. (2006). The importance of Online Community in Student Academic Performance. *The Electronic Journal off e-Learning, 4 (2),* 127-132.

Goodyear, P. and Ellis, R.A., (2008). University students' approaches to learning: Rethinking the place of technology. *Distance Education*. 29(2). 141-152.

Lambert, S. and Brewer, C. (2007). 1st, 2nd and 3rd generation implementations of an elearning design: Re-use from postgraduate law to block/online engineering course. *Journal of Learning Design*. 2(2), 70-82.

Lawson, M.J. (2004). What students know about making good use of learning and teaching situations. *Language and Academic Skills in Higher Education,* 6*,* 11-24.

Lefoe, G. (2003). Characteristics of a supportive context for distributed learning: a Case study of the implementation of a new degree. PhD Thesis retrieved on 19th December, 2008 from http://www.library.uow.edu.au/adt_NWU/public?adt_NWU20050927.114828/index.html

Mackay, S and Stockport, G.J. (2006).Blended learning, classroom and e-learning, *The Business Review, Cambridge,* 1(5), 82-88.

Manghani, S. (n.d.).Dissemination Report: E-Learning Event:'Online Brick Laying' with Gilly Salmon. Retrieved on 15th December, 2009 from http://manghani.free.fr/elearning/Dissemination%20Report.pdf

Reimann, P. and Goodyear, P. (2004). ICT and Pedagogy Stimulus Paper, version 3.3 . Retrieved on 15th December, 2009 from http://lrnlab.edfac.usyd.edu.au:8200/Research/mceetya2004 /report/Archive/ExFile.2004-06-15.8659319410/attach/rep33.doc

Sadler, E. and Given, L.M. (2007). Affordance theory: A framework for graduate students' information behaviour. *Journal of Documentation*, 63(1). Retrieved on 15th December, 2009 from http://proquest.umi.com/pqdweb?did=1198411041&Fmt=3&clientId=20901&RQT=309&VNa me=PQD

Steketee, C. (2006). Modelling ICT integration in teacher education courses using distributed cognition as a framework. *Australasian Journal of Education Technology, 22 (1),* 126-144. Retrieved on 19th December, 2008 from http://www.ascilite.org.au/ajet/ajet22/steketee.html

Swenson, P.W. and Redmond, P.A. (2009) Guest editor's introduction. On-line, hybrid and blended coursework and the practice of technology-integrated teaching and learning within teacher education, *Issues in Teacher Education*, 18 (2), 3-10.

Tallman, J. and Fitzgerald, M.A. (2005). Blended online and classroom learning environments: Reflections on experiences and points to consider. *Knowledge Quest,* 34(1), 25-28.

University of Wollongong, (2007). University of Wollongong Strategic Plan 2008-10. Retrieved on 15th December, 2009 from http://www.uow.edu.au/content/groups/public/@web/@spq/documents/ doc/uow038644.pdf

Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on ELearning*, 6(1), 81-94.

Yoon, S-W. and Lim, D.H. (2007). Strategic blending: A conceptual framework to improve learning and performance. *International Journal on ELearning,* 6(3), 475-489.

Appendix 1 – Themes and Categories

Themes 1-11 taken from Calder and Daly (2007), themes 12-14 emergent in this study, all categories developed from the data analysed in this study.

Themes	**Categories**
1. Flexibility	
	Of timetabling
	Of degree structure
2. Assessments	
	Regular and/or frequent
	Teach to support assessments
3. Groupwork	
	Discussions/interactions
	Maths tutorials
	Tutorials
	Working with a tutor
4. Passion/enthusiasm	
5. Variety	
	Visual aids and audiovisuals
6. Resources	
	Books and readings
	Lecture and readings summaries
	Subject outlines
7. Workshops	
8. Availability	
	Of lectures
	Of teaching staff
	Of notes
	Of campus support
	Of Learning Development facilities
	Of WebCt and SOLS

Of individual attention

9. Big Picture

10. Lecture Strategies

Use current real life applications and examples

Questions and answers

Recaps and reviews

Good use of powerpoint presentations

Poor use of powerpoint presentations

Be interactive

Maths examples

11. Staff preparation and knowledge

Small class sizes

Emerging Themes

12. Technology

Positive about eduStream

Negative about eduStream

eduStream delivery issues

positive about videoconference delivery

negative about videoconference delivery

Videoconference delivery issues

Lecturers ability to use technology

Need to include face to face delivery

13. Personal Connections

Proximity to home

Small class sizes

Social functions

14. Other

Appendix 2: Tables of Results for Question 1:

Question: 'What strategies can lecturers use in their lectures that help you to learn?'

Table 1: Analysis of results by theme and by Faculty.

Faculty Y   Faculty X

Theme	% and number of responses	Theme	% and number of responses
Technology	31.81% (n=49)	Lecture Strategies	31.25% (n=30)
Lecture Strategies	29.87% (n=46)	Groupwork	19.79% (n=19)
Resources	7.79% (n=12)	Variety	10.41% (n=10)
Variety	7.14% (n=11)	Other	7.29% (n=7)
Assessments	5.19% (n=8)	Resources	6.25% (n=6)
Groupwork	5.19% (n=8)	Technology	6.25% (n=6)
Availability	4.54% (n=8)	Staff Preparation	6.25% (n=6)
Staff Preparation	3.24% (n=5)	Assessments	4.16% (n=4)
Other	1.94% (n=3)	Flexibility	3.12% (n=3)
Passion	1.29% (n=2)	Availability	3.12% (n=3)
Big Picture	1.29% (n=2)	Personal Connections	1.04% (n=1)
Workshops	0.64% (n=1)	Passion	1.04% (n=1)
Personal Connections	0	Workshops	0
Flexibility	0		

Table 2: Analysis of results by category, theme and Faculty and where n=4 or more.

Faculty Y   Faculty X

Theme: Category	% and number of responses	Theme: Category	% and number of responses
Lecture Strategies: Current, real life examples	9.09% (n=14)	Groupwork: Discussions and interactions	14.58% (n=14)
Technology: Video delivery issues	7.79% (n=12)	Lecture Strategies: Current, real life examples	12.5% (n=12)
Lecture Strategies: Questions and Answers	7.14% (n=11)	Variety: Variety	7.29% (n=7)
Resources: Lecture and reading summaries	7.14% (n=11)	Other	7.29% (n=7)
Lecture Strategies: Lecture Strategies	7.14% (n=11)	Lecture Strategies: Lecture Strategies	6.25% (n=6)
Technology: Negative Edustream comments	5.84% (n=9)	Lecture Strategies: Questions and Answers	6.25% (n=6)
Technology: Positive Edustream comments	5.19% (n=8)	Technology: Technology	6.25% (n=6)
Variety: Visual and audio visual aids	4.54% (n=7)	Lecture Strategies: Power point presentations	5.20% (n=5)
Technology: positive comments on videoconferencing	4.54% (n=7)	Staff Preparation: Staff Preparation and knowledge	4.16% (n=4)
Lecture Strategies: recaps and reviews	4.54% (n=7)		

Appendix 3: Tables of results for Question 2:

Question 'What is it about the delivery of your entire subjects (resources, assessments, tutorials, Learning Development workshops and appointments etc) that helps you to learn?'

Table 3: Analysis of survey responses by theme and Faculty.

Faculty Y   Faculty X

Theme	% and number of responses	Theme	% and number of responses
Availability	31.29% (n=46)	Availability	21.95% (n=18)
Groupwork	25.85% (n=38)	Groupwork	20.73% (n=17)
Lecture Strategies	10.20% (n=15)	Resources	14.63% (n=12)
Assessments	8.84% (n=13)	Assessments	8.53% (n=7)
Staff Preparation	6.2% (n=9)	Lecture Strategies	6.09% (n=5)
Personal Connections	5.44% (n=8)	Other	6.09% (n=5)
Technology	4.76% (n=7)	Staff Preparation	2.43% (n=2)
Resources	4.08% (n=6)	Flexibility	1.21% (n=1)
Flexibility	2.04% (n=3)	Passion	1.21% (n=1)
Workshops	0.68% (n=1)	Variety	1.21% (n=1)
Other	0.68% (n=1)	Workshops	1.21% (n=1)
Passion	0	Technology	0
Variety	0		

Table 4: Analysis of survey responses by category, theme and Faculty and where n=3 or more

Faculty Y

Faculty X

Theme: Category	% and number of responses	Theme: Category	% and number of responses
Groupwork: Tutorials	20.40% (n=30)	Groupwork: Tutorials	14.63% (n=12)
Availability: of WebCT and SOLS	12.92% (n=19)	Resources: Resources	9.75% (n=8)
Staff Preparation: Lecturer's prep and knowledge	5.44% (n=8)	Personal Connections: Small class sizes	8.53% (n=7)
Availability: of teaching staff	5.44% (n=8)	Availability: of WebCT and SOLS	7.31% (n=6)
Assessments: Assessments	5.44% (n=8)	Availability: of LD facilities	7.31% (n=6)
Lecture Strategies: recaps and reviews	4.76% (n=7)	Other	6.09% (n=5)
Availability: of notes	4.08% (n=6)	Assessments: Assessments	6.09% (n=5)
Availability: of lectures	3.40% (n=5)	Resources: Lecture and reading summaries	4.87% (n=4)
Availability: of campus support	3.40% (n=5)	Groupwork: Discussions and interactions	4.87% (n=4)
Groupwork: Discussions and interactions	2.72% (n=4)	Availability: of teaching staff	3.65% (n=3)
Assessments: regular or frequent	2.72% (n=4)	Personal Connections: Personal Connections	3.65% (n=3)

Resources: lecture and reading summaries	2.72% (n=4)		