THE BUMPY ROAD OF COLLABORATIVE INNOVATION IN ONLINE DELIVERY: HOW TO NEGOTIATE IT?[1]

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The authors were involved in the development, implementation and evaluation of an e-learning based postgraduate unit in the Faculty of Education. The development and delivery took place within the On Line Teaching (OLT) environment at the Queensland University of Technology. One of the main features of the unit is the integration of face-to-face and on-line tutorials that allowed the simultaneous participation by on-campus and external students. The barriers and obstacles encountered from planning, through design to delivery have been documented and critically examined. The obstacles and barriers can be mapped in a problem space bounded by time constraints, level of expertise, resource limitations and paucity of support. Based on this mapping it could be argued the current affordances of the OLT environment and the configuration of the Media Equipped Lecture Theatres (MELTS) and Computer Equipped Classrooms (CECS) may need to be more flexible to allow for this type of development, delivery and pedagogy.

Keywords
online unit design, postgraduate teaching, hybrid e-learning systems, external studies

This paper discusses our[2] experiences in the re-development of a unit in the Faculty of Education incorporating on-line learning during the past two years. The unit, Professional Application of Research (EDN611), is the first postgraduate research training unit offered in the Faculty of Education at the Queensland University of Technology. The unit outline states that

> *This Unit focuses on the needs of professionals for reading, understanding and evaluating professional research both within and across different paradigms. It assists students to develop skills in understanding and appreciating the process and techniques used in research in order to critically read and interpret a wide range of research studies. ... This Unit focuses on the needs of professionals to seek research knowledge that addresses specific problems or issues in their practice and to develop a positive attitude towards research in general. It assists students to search databases and other sources to locate published research reports in their field and evaluate them critically.*

As a compulsory unit at the postgraduate level, it also aims to assure that students have developed sufficient information literacy and academic writing skills to facilitate their postgraduate studies.

The redevelopment of the unit illustrates a hybrid learning environment embedding e-learning containing a few innovations that are of value for the university's endeavour to further develop its on-line teaching and learning. In short, these innovations included:

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[1] Paper presented at the On Line Teaching conference Beyond Delivery. 2005, Queensland University of Technology: Garden Point. http://www.talss.qut.edu.au/service/talss/

[2] Several people have contributed to the design and implementation of this innovation. This reflection is by three of the people taking part in the project and our discussion of our learning does not exclude alternative views of other participants nor does it claim to talk for them.

- the provision of exactly the same learning experiences for external and internal students, in particular using technology to allow external students to participate in campus tutorials;
- the efficient delivery of online lecture notes through the use of PowerPoint with Audio-files instead of web streaming lectures;
- a functional approach to the organisation of the website to allow easy access to material and information;
- the use of CDs to mirror the website for use by students with limited or slow Internet access.

Some of these features will be elaborated upon below. The literature would indicate (Gilbert, 1995; Leggett & Persichitte, 1998) that barriers to using technology to support teaching and learning have remained virtually unchanged for several decades. Discussing and documenting our experiences in this process will assist us in sharpening our own learnings from the project, but also and more importantly, may contribute to further developments of such innovations in the wider higher education community. Other publications on the project will target some outcomes stemming from the implementation of the unit in 2005 (Shield, Atweh, & Singh, 2005).

Jane Marcus (cited in Gilbert, 1995) developed a model to help conceptualise factors which impact on the development, implementation and wide adoption of on-line learning environments. In this model the decision to "adopt a particular innovation is a function of available resources, the perceived value the individual ascribes to the innovation, and whether the individual engages in communication with other adopters"(cited in Gilbert, 1995). Marcus defined *perceived values* (PV) as a "subjective cost/benefit analysis" where the pros and cons of adopting new technology are weighed. Similarly, she described the availability of *resources* (R) as the "controlling variable embodying aspects of technology, expertise, infrastructure and funding. Lastly, she defined *communication* (C) as the measure of the ability to communicate with "earlier" adopters. In this context we expand the definition to include communication between the developers, support personnel, clients and the wider university community. Symbolically, this function can be expressed as A=f(PV,R,C) where the independent variables represent three dimensional space within which an environment for developing e-learning initiatives can be placed. In this paper we will use this model to reflect on the factors affecting the design process followed, the product developed and our learnings from the project.

Prior to discussing our experience in the redevelopment of EDN611, three comments are essential to keep in mind about the model. First, this model is useful as it allows the examination of multiple factors including socio-contextual parameters in addition to technological and infrastructure resources that affect the design and implementation of pedagogical innovations. However, it must be pointed out that each variable identified in the model is in reality a whole set of factors or conditions that, for convenience, may be grouped together under broad categories of resources, perceived values, and communications. Secondly, in real contexts the variables identified in the model are not independent from each other as their interaction is perhaps of more interest than their individual effects. However, it is easier to discuss the main factors that lead to our conceptualisation of the project and the resulting learning in terms of the above three dimensions independently. Thirdly, each of the variables can be discussed in terms of their positive and negative contributors to the design process - i.e., as hindrances or as enablers. In what follows, we will discuss both our expectations and the barriers encountered in the design of the unit under each set of variables.

Perceived Values and Visions

In another paper on the project, Singh, Atweh and Shield (2005), argued that impetus and design of this innovation did not start with consideration of what technology can provide for us rather "we started by identifying problems with the existing offerings of the unit and then we sought out possible solutions. Some of these problems lent themselves to technological solutions; other problems were solved by the design of pedagogic practices". Similarly, the authors discussed several national and institutional policies that impact on higher education and use of technologies in their unit delivery. In this paper we will concentrate on the specific values that led to the particular design adopted. Two sets of values are identified here: those stemming from identified problems in the previous teaching/ learning experiences in the unit, and those stemming from the pedagogical commitments of the designing team.

Traditionally, the unit has been compulsory for all postgraduate students enrolled in the Master of Education (now Master of Learning Innovation) course in the Faculty and has been offered in internal,

external and block mode (the latter conducted during school vacations). The pedagogical experiences, provided in the three modes were quite distinct. Similarly, the focus on different topics depended on the lecturer teaching that mode. Traditional modes of external printed notes and assessment submission had been employed in this subject for about 15 years with minimal use of a website, used mainly for provision of additional resources. The external notes were based on one specific required textbook making update of the textbook too expensive. During the past five years, all students enrolled in the unit were expected to have access to email for communicating with their lecturers. Due to increasing family and work demands on students, the majority of students enrolled externally in the unit.

The discourse of equity and access has been intrinsically a component of the establishment of external studies at universities in Australia. Undoubtedly, external offering of units and courses increases the access to university study for many students who otherwise might not have been able to participate. Likewise, it makes university study easier for students whose circumstances, i.e. work or family commitments, may hinder their attendance on campus. Flexibility in modes of offering also caters for different learning styles of students. However, in designing this unit, we were cognizant of the fact that many students who opt for external studies due to their circumstances may have preference for learning experiences that are based on face-to-face and weekly structured interactions with their lecturers and other students in class. Hence, what may appear to be a "choice", may not be fair and free.

Right at the commencement of this project it became clear to us the existence of multiple –and at times conflicting - discourses behind the use of technology in unit delivery. At the end of 2004 the Faculty adopted a policy to use the website to deliver all external units within different courses. At a minimum, lecturers are expected to place traditional external notes on the web for students to download and print at their own cost. Arguably, the demand for minimising the costs of courses by the Faculty was achieved by cost shifting to the end user, the student. In this context, we were guided to use technology not simply to save money, but rather to improve teaching and learning for all students, and in particular to ensure that external students were provided with the best possible learning experiences.

Our expectation of the technology was that it stream lined the various forms of delivery. As Singh, Atweh and Shield (2005) argued a lot of time is spent examining the nexus between conventional on-campus face to face pedagogy and the technology mediated off-campus pedagogy that we were attempting to implement in the unit. Initially the consensus was perhaps that the on-campus experience was the optimum and the challenge was to graft as much of that type of experience as we could onto the off-campus experience. As the development of the unit progressed there was a fundamental shift in that philosophy. The imperative started to become: What type of pedagogy mediated by the technology best suited both on-campus and off-campus students given the conceptual difficulty of the material we were trying to teach and the threshold understandings of the students?

Technology has provided the capacity to increase the provision of powerful alternatives for students to participate in classes from a distance. Further, it provided for their virtual participation in real-time along with students on-campus. In this unit, this was accomplished by holding bi-weekly tutorials simultaneously on- and off-campus. Off-campus students were able to connect through a chatroom on the website, and consequently hear and see the physical classroom procedures. Further, they could participate in the discussion by typing in their comments and questions. The chatroom interactions were projected in the physical classroom that allowed on-campus students to interact with off-campus students. Further, just as in a face-to-face classroom, off-campus students could break up into small rooms to engage in an activity in-depth and return to the main chatroom for reporting.

The website is central to the study of the unit and access is required by all students irrespective of their enrolment mode or their access to the university campus. All lecture notes, information about the unit, teaching materials and assessment items are obtained from the website and equally accessible to on- and off-campus students. Likewise the website provides students with mechanisms to interact with each other and their teaching staff in a variety of asynchronous and synchronous means.

The other set of values guiding the design of the unit related to sound pedagogic principles. First, we sought pedagogical practices that were not centred on the university lecturers as the sole source of knowledge for the students. The provision of lecture notes, references, relevant websites, and reflective activities on the OLT site, enabled students to use a wide variety of resources to systematically develop their knowledge, skills and processes in the unit. Although we structured the

material in the Study Centre on a week-by-week basis, the existence of the whole corpus of material on the website at the start of the semester allowed students to work through the material at their own pace.

Second, through the formation of Small Groups and the use of synchronous and asynchronous communication tools, we provided students with the opportunity to share their questions and concerns with each other. These opportunities resided at two different locations on the website. On the one hand, the communication facilities in the Class Group Area were monitored regularly by the lecturers who responded to students' questions and comments in an open manner for the benefit of the whole class. On the other hand, the communication mechanisms in the Small Study Group areas were not regularly monitored and intended for students discussing their concerns among themselves. The development of the community of learners was also enabled through the use of a combination of individual and group assessment tasks. In this unit, the students had a chance to collaborate in the Small Study Groups on two occasions on group-developed tasks totalling 30% of the assessment load.

Third, as a result of a long engagement in teaching this unit to a variety of students, we were aware of the need for student scaffolding in the learning process. Similarly, we anticipated the use of an unfamiliar website and heavy innovative use of technology necessitated additional student support. The development team consisted of academics and university professional staff with a wide range of expertise that allowed for the anticipation of problems that students may have. Likewise, the easy access to email and a variety of means of communication provided students with the flexibility needed to communicate regularly with lecturers and peers. The bi-weekly tutorials were designed not so much to present new material, but primarily to provide students with the opportunity to deal with difficult aspects of the unit in depth and promote discussion on the various topics.

Fourth, in developing this unit the depth and the spread of the discipline knowledge required by the diverse student population were kept at the foreground of our deliberations. The content of the unit covered a range of theoretical and methodological topics necessary for critical engagement with published research. The content and the supporting material reflected the historical as well as the current debates in educational research. We took care not to allow the innovation in presentation to occur at the expense of rigor in the development of the content. Similarly, the content of the unit included the development of some technical skills required for postgraduate studies. In particular, material to develop information literacy and academic writing was integrated within the week-by-week activities and reflected in some assessment items.

Resources as Enablers and Hurdles

In planning and developing this unit, we drew on several resources and came to realise both the opportunities and limitations provided by these resources. Four such resources will be identified in this section: the On Line Teaching (OLT) environment used to develop the website, the physical rooms on campus and the Media Equipped Lecture Theatres (MELTS) and Computer Equipped Classrooms (CECS); computer access by students and, naturally, financial resources to support such innovations. These will be discussed in turn here. Human resources will be discussed in the following section.

First, the e-learning environment for the unit was constructed within the OLT system developed in-house by the university. The OLT has been in development for several years by QUT and is steadily increasing in flexibility and power. It is an open system that enables a variety of unit designs, pedagogies and supporting resources. Undoubtedly, feedback from academics and students as end users has proved invaluable for its development and improvement to meet the needs of an ever changing and diversified teaching and learning agenda at the university.

The OLT does impose a minimal structure of online unit presentation including Notices, Unit Details, Who's who, a Help section and QUT links. All other aspects of the unit website design are flexible within the limitations of the tools provided to staff to develop them. While a variety of structures to present unit materials have been employed on OLT, this unit development created its own structure. In designing a website that satisfied the needs of the unit in terms of content, procedures and pedagogy, we were conscious of the need to carefully structure the information to facilitate its accessibility by the students. We realised that many students in the unit might not have had previous experience navigating the Internet. Hence, its content had to be well structured with careful instructions on how to use it. We adopted what might be called a *functional* approach to the design. We identified three major tasks that

the website has to provide: it has to allow for presentation of the content of the unit; carry out its administrative functions; and allow for communication between students and lecturers. The following diagram illustrates the structure that emerged and a brief list of the content of each section.

Functional Structuring of EDN611 Website		
Information Centre	**Unit Administration and Communication**	**Unit Content and Resources**
Includes • Unit outline • Pedagogical processes in the unit • Assessment and criteria • Semester Master Plan • How use the website • Official forms • Faculty policies • Lecturers in the unit • Useful contacts	**Whole Unit Level** • Email whole class • Participate in on-line Tutorials **Class Group Level** • Email class group • Asynchronous forums for asking questions and sharing of resources. **Small Study Group Level** • Email study group • Chatroom • Asynchronous forum for introducing themselves, plan assignments	**Week by week** • Lecture Notes (PowerPoint presentations with voice) • Additional readings and relevant websites • Activities including references to textbook, reflection and for discussion • Hints about assignment • Information literacy and academic writing

Using the OLT resource to develop the e-learning in this unit had some advantages. All academics, professional and technical staff involved have developed various levels of familiarity with the system, which reduces the overheads required to master the system and increases the level of support for the unit developers. It also developed a sense of ownership by the technical support staff which simplified problem resolution and a developed a feeling that any feedback on performance of the system would be taken seriously and feed into the design cycle.

However, in designing this hybrid environment as an innovative way to use the site, several problems with the functions and tools developed by OLT became obvious. Some examples included

- the inability to upload multiple interdependent media files to the streaming server without first packaging them as a single application
- the inability to easily resize flash presentations within OLT pages
- the non-intuitive techniques needed to format some web pages as required
- the limitations of file size
- static file management procedures that are complex and non-intuitive, and
- dysfunctional aspects of the chatroom operation.

Secondly, the hybrid on-line/face-to-face presentations took place in a Computer-Enabled Classroom (CEC) which contained a computer, internet connection, projection facilities and was serviced by a wireless network. The computer chatroom was projected in the classroom thus allowing on-campus students and distant students to communicate with each other. The physical space was appropriate to support such innovation and the equipment did prove reliable. However, problems were encountered because the configuration of the computer image was not customized to support the activities attempted here. This required a time consuming manual configuration of the operating environment and loading of hardware drivers and adapters before each event. This was a recurrent process as the machines are re-imaged with the standard operating environment on shut down. A typical configuration sequence would include: disable the agent that automatically switches audio input to line in, install drivers for web cam, disable USB audio adapter for web cam, switch audio recording to microphone, adjust audio levels, adjust mixer for multiple microphone feed and finally load web site. Naturally an automation of this process is highly desirable for future use of these rooms for delivery of pedagogy that is based on simultaneous communication between on- and off-campus students.

Third, there were some considerations related to the availability and ease of access of external students to private computer facilities and Internet connections. While we can assume that the vast majority of

students have some access to the Internet in their workplace or at home, the speed and the cost of such access varied between students. We were aware of the excessive demand on storage and download speed of streaming the whole videotaped lectures. Consequently, we considered the use of PowerPoint presentations with audio-files as an alternative to provide short lecture notes introducing the main concepts dealt with weekly. Once again, due to excessive size of PowerPoint files and possible problems with compatibility, these had to be converted to Flash presentations that could be viewed on most standard web browsers. Similarly, we copied the whole website on a CD that we made available (at no cost) to ease the burden and financial costs on students who prefer to study off-line, or simply did not have access to requisite technology. The Faculty of Education also has a policy to supply the whole course in print format for students who request it. Naturally, certain functions in the website, such as participation at the tutorials and communication with students and staff, were not possible without Internet access.

Lastly, the financial resources needed to support such innovations is a continual issue facing most unit developments. The project was funded by the Faculty of Education as part of the redesign of the Master of learning Innovation. At the end of year, limited resources were made available for the Faculty to increase the use of OLT in teaching external units. That money was available on the condition that it was spent within a few months before the end of the year. The limited funds were to be shared for the employment of a research assistant to develop the teaching resources of the unit, and university's Teaching and Learning Support Services was to be employed to do the website design and development. There were no funds made available to purchase software or hardware to support the project. Software to convert PowerPoint presentations with audio to flash movies and a web cam were purchased by one member of the teaching team.

Communication within Communities of Practice

While identifying a vision and set of values is essential for establishing an innovation on sustainable grounds and in differentiating between innovation and simple change, and while resources play a "control" variable that determines what is easy to achieve and what remains a vision, here we argue that it is the human resources that ultimately determine which innovations are possible and successful. Innovation designers do not operate in isolation from each other and from the wider community. Hence, learning about the communication aspect of the project is an essential component of innovation development. In this context we will concentrate on our learnings about communication within the designing team itself as well as communication with the wider higher education community.

In designing this innovation we realised the importance of inter-disciplinary team involvement at all stages of design, implementation and evaluation of the innovation. At very early stages of the design process, that lasted about 2 years from conceptualisation to implementation, a group of academics worked in collaboration with professional staff from External Studies, Teaching and Learning Support Services and the Library supported from time to time from technicians from audio visual services and programmers as the need arose. The development team conducted several face-to-face meetings intermittent with numerus discussions and sharing of documents through email. In a context of escalating workloads of all staff in higher education, face-to-face meetings are increasingly becoming harder to organise. Once again, this experience demonstrated that technology might provide the means for supporting democratic decision-making and openness in information sharing.

Working with large interdisciplinary teams is not without its problems. Unfortunately, changes in the personnel involved in the project have caused some unavoidable discontinuity. At least two academics went on study leave in, or prior to the implementation stage. There was also a change midstream in instructional/learning designer assigned to this project. Lastly, due to changes in policy and practices of external studies at the Faculty, the role of the External Studies section became less crucial to the project and their involvement was minimised. Likewise, as in most groups, more people indicate their willingness to take part in the project and they are prevented from full participation due to work commitments and other interests. In long-term projects such as this, proper documentation of each stage is essential for achieving a sense of continuity of decision-making and action.

Arguably, the collaboration of large teams of personnel is an expensive aim to achieve in terms of required human resources and time, which may not be accessible to all unit developers. However, such collaboration is crucial for sustainable and groundbreaking innovations. A more crucial aspect of such

collaboration is the potential rising of tension, if not conflicts, in the operation of the team. Tensions arising from personality conflicts inflict any group work on a project. However, interdisciplinary teams can give rise to additional potential conflicts due to expectations of the roles of the participants of themselves and of each other and their differing paradigm and modes of operation. Such potential conflicts can be managed through the good will of the participants and their awareness of each other's stances. However, more importantly such conflicts can be managed through open negotiation between the participants at the start of the project and all through its development.

For example, in developing this innovation, the team has developed considerable learning about the role of instructional/learning designers and about the need to negotiate that role early at the unit development stage. There is often ignorance on the part of academics on the role that instructional/learning designers contribute to the process of unit development. Schwier, Campbell and Kenny (2004) describe instructional/learning designers as knowledge managers whose work is grounded in theory and informed by models to inform their designs. Their primary task is to "uncover tacit knowledge and make it explicit for the purposes of training and education". In this role they are able to contribute to the reflection by academics on the whole design of their units from identification of the aims, learning activities as well as implementation on-line or face-to-face. On the other hand, some academic clients may simply expect technical support to engage in the preparation and publishing of educational materials from HTML pages to 'off-the-shelf' systems, training in the use of learning tools and resources, and unit management (Kennedy, Webster, Benson, & Bailey, 2002). At the start of this project, the academic participants requested certain tasks of the instructional/learning designer including responsibility to:

- Identify and test appropriate software for conversion of PowerPoint presentations to Flash presentations.
- Provide examples of good practice on the use of OLT from other units
- Design OLT website according to specified outcomes, in particular integrate interactive learning resources to student tasks and activities
- Assist in production of video/audio files development as required
- Arrange and supply graphics for website
- Create a CD-Rom version of the website

However, as working relationships developed during the development and implementation, the role of the learning designer changed gradually towards involvement in the evaluation and documentation of the innovation.

Similarly, multidisciplinary teams run the risk of leading to what can be called the paradox of interactions where individuals with great depth of expertise are only able to develop a rather superficial shared meaning. The challenge of such teams is to use part of their resources and energy to establish a level of profundity for shared meanings that are necessary, not only for the smooth running of the project but also for the effectiveness of the outcomes. In groups that negotiate their roles carefully, they still are subject to the risk of the individual predispositions of members to remain implicit and are ignored amongst the flury of meetings, agendas and short timelines. A project design framework that will draw out meanings and take members into a common place is proposed. It places the project team within a community of practice where pedagogical predispositions and meaning initiates the design cycle. It is a model of partnership development. Adapted from the Interactive Instructional Development (I^3D) Model of Aubrey (1992; in Simms, 1997) the processes of research planning, development and evaluation are undertaken throughout the project. As the project progresses the degree by which these processes influence the project varies while evaluation and knowledge sharing/meaning making are conducted throughout the project cycle. This model socialises the development process and encourages a level of scholarship amongst members of the team.

Lastly, project development teams operate as part of a larger community of practice in higher education settings. Although innovations develop new visions and changes in practice, they should draw upon existing resources and know-hows. Various members of the development team have been involved in external teaching and use of technology in teaching for a significant number of years. Further, the team has surveyed different unit websites and the functions provided by OLT and conducted discussions with several people with experience and expertise in the area. Further project development teams have a social responsibility to put back into their community their developing knowledge and products. In this project, the team organised a university-wide seminar for information sharing attended by staff

from all campuses of the university. The process of dissemination of learning was further advanced through publications at different conferences and refereed journal outlets.

Concluding Remarks

We acknowledge that the process of innovation design and implementation is a complex and demanding activity that is dependent on several contextual factors including the overall context in which it arises, the specific personnel involved and the available resources. Any models of innovation development necessarily have to be stated in general terms that may or may not be so easily and usefully transportable from one context to another. However, the sharing of learning, as we argued above, is a social responsibility. Although we do not claim that the learnings we have developed here are generalisable to all contexts of integration of e-learning in all units at this university or in higher education, we hope that the lessons learnt here might inform, if not inspire, and at least increase the awareness of other developers about some of the possibilities available for them.

In this case, what seems to have worked for us are the following components:

- The innovation commenced by the identification of actual problems in the context of this unit. We have taken into account the changes in policy at Faculty, University and national levels (Singh, Atweh, & Shield, 2005); and we have been aware of what the technology can provide. However, the innovation was grounded in a vision and sets of values and was not controlled by following trends nor by technological imperatives.
- We have made use of the available knowledge and know-how and the available resources – but based on the vision we were able to identify the limitations of these resources. Some limitations were overcome; while others are still to be worked through.
- Developing innovations is a social process with people as the most important and useful resources. Working collaboratively with expanded teams of stakeholders, is a powerful aid to their success.
- Adopting innovative uses of the technology is risk laden. In designing the use of technology in new ways often leads to unforeseen problems that even the most careful planning and controlled trails may not circumvent. In designing this unit we have anticipated the emergence of such failures. In such cases, it is essential to involve the students themselves in taking risks, experimenting and reflecting so that the trials become a collaborative action learning exercise.

References

Gilbert, S. (1995). An "Online" Experience: Discussion group debates why faculty use or resist technology. *Change, 27*(2), 28-45.

Kennedy, D. M., Webster, L., Benson, R., James, D. and Bailey, N. (2002). My.monash: Supporting students and staff in teaching, learning and administration. *Australian Journal of Educational Technology*, 18(1), 24-39.

Leggett, W. P., & Persichitte, K. A. (1998). Blood, Sweat, and Tears: 50 years of Technology Implementation Obstacles. *Tech Trend, 43*(3), 33-36.

Schwier, R. A., Campbell, K. & Kenny, R. (2004). Instructional designers' observations about identity, communities of practice and change agency. *Australasian Journal of Educational Technology*, 20(1), 69-100.

Sims, R (1997) Interactive learning as an “emerging” technology: A reassessment of interactive and instructional design strategies. *Australian Journal of Educational Technology,* 13(1), 68-84.

Singh, P., Atweh, B. & Shield, P. (under review). *Designing Postgraduate Pedagogies: Connecting Internal and External Learners.* Paper submitted for refereeing to AARE for inclusion as a refereed paper at AARE, Sydney, December, 2005.

Shield, P., Atweh, B. & Singh, P. (under review). *Utilising synchronous web mediated communications as a booster to sense community in an online teaching and learning environment.* Paper submitted for refereeing to the ASCILITE Conference.

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