Teaching for Blended Learning
How is ICT impacting on distance and on campus education?

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Abstract. The concept of blended learning, defined in a range of ways, has begun to change the nature of all teaching and learning in higher education. Information and communication technologies have impacted by providing a means of access to digital resources and interactive communication for all courses and the blending of pedagogy and technology has produced a range of approaches to teaching and learning. This paper will investigate reported studies from both research literature and from the writers' research, defining what they have concluded are teaching practices that use the concept of blended learning effectively.

1 Introduction

The online environment has become accepted as a medium for learning in higher education, initially by those teaching and learning at a distance, but now more pervasively by those teaching and learning in more traditional on campus environments. Information and communication technologies (ICT) have impacted on all sectors of education by providing the means for ease of one to one and group communication while providing access to digital resource sharing but particularly in higher education, this use could be changing the nature of learning and teaching. ICT use in the field of distance education, as a means of communicating with learners who previously relied on more traditional and individual technologies such as telephone, fax and mail services has changed the nature of the field in providing the medium for ongoing interactive social learning, However, even in distance education, blending modes of learning and teaching has been a common practice

where this is practicable. ICT use in on campus education, where face to face communication and resource access are more available, dominant and unproblematic, has meant that it is used in a variety of ways and its impact is more variable.

The term blended learning is being used to describe the combination of modes of learning and teaching made possible through the mediation of ICT. Such a term needs careful definition and study as there are many different combinations of media, learning designs and teaching strategies encompassed in the concept. The blending of pedagogy and technology has produced a number of approaches to teaching and learning not always consistent in their effectiveness and quality of learning. However in both distance education and on campus education, learners are seeking blended learning as a mode of choice and this paper will describe the learners' perspectives and reasons for this. We will analyse studies reported in the research literature and draw from our own research studies in both distance and on campus learning environments, defining what we have concluded are teaching practices that use the concept of blended learning effectively. With a focus on blended learning from the learners' perspectives, we examine what is effective teaching for successful blended learning.

2   Literature Review

Blended learning is a term now used in the literature to describe a wide variety of teaching and learning that generally involves ICT. Its use has been described in many contexts, for example, the corporate sector [10], distance education [4], and also for different kinds of learners, for example, in professional development [1] and foundation degrees [3]. Most of the reports in the literature have related to conventional university settings where traditional campus based activities have been mixed with online learning, which might include CMC. Molesworth [6], for example, has recently reported on the introduction of online learning with CMC in a traditional undergraduate marketing course and Cottrell and Robison [2] report an introduction of online learning to an undergraduate accounting course.

A major theme in the literature is the varied way in which blended learning is described conceptually. This diversity is acknowledged by Whitlock and Jelfs [11] in their editorial of a special journal issue on the subject and illustrated by wide ranging definitions and frameworks in the journal papers that follow. Osguthorpe & Graham [8] also introduce a special journal issue defining the term and its direction in practice and describe "the aim of those blended learning approaches is to find a harmonious balance between online access to knowledge and face to face human interaction" (p228). This blend may involve the mixing of online and face-to-face learning activities, students or instructors with a number of goals including pedagogical richness, access to knowledge, social interaction and ease of course revision (p 231).

Most commonly, however, writers interpret blended learning as a combination of face to face learning with technology based, and particularly internet based, learning [5] but in a review of the literature on blended learning, Oliver and Trigwell [7] have

extended the notion of what is blended in identifying seven different blends, which were mixing:

- e-learning with traditional learning
- online learning with face-to-face
- different media,
- different contexts, for example, work and study
- different theories of learning
- learning objectives, for example, those concerning skills as opposed to knowledge
- pedagogic approaches, for example, distance and campus based learning.

They regarded the field as 'ill defined' (p.17) and in their view, 'almost anything can be seen as blended learning and consequently, use of the term does not help us understand what is being discussed' (p.18). Often, the term was very general and reflected an aggregation of different circumstances, so there were no underlying principles from which to determine what might or might not be blended learning. They describe the diversity of definitions as lacking in an analysis of the learners' perspectives and they offer 'variation' theory as a framework for research that shifts the perspective of the blend from the teacher to the variation in learning experiences of the learner and reconstructs the term blended learning. This was "based on the idea that for learning to occur, variation must be experienced by the learner. Without variation, there is no discernment, and without discernment, there is no learning…learning occurs when *critical* aspects of variation in the object of learning are discerned. Discernment is about the experience of difference" (p.22). What is important is not variation per se but the impact of the contrast and comparison that occurs because of the variation. They argued that different teaching media could be used to help students experience variation and that there was a role for blended approaches in creating this learning situation. Advantages can be gained by drawing on all possible ways of learning with variation theory providing a new conceptual framework to further investigate blended learning environments, particularly from a student perspective.

3   Methodology

This paper acknowledges the confusion in definition of blended learning and the inconsistency that is described in the literature. In this paper we will investigate the impact of ICT in providing variation for student learning, from the perspective of the dominant mode of pedagogy, learning environment and technology that is used in each blended situation to provide the variation that learners need in order to learn. In our application of the term blended learning, ICT may be used to either enhance the dominant mode of face-to-face on-campus interaction and or may provide a blend of synchronous and asynchronous media (that can also include face-to-face classes) to complement a dominant mode of distance education. In the studies we report, we will describe the difference in the way ICT complements the dominant mode for learning and we will seek to analyse the way teachers can use the learners' perspectives most effectively.

We will draw on two main studies:
1) a study that investigates blended learning in the dominant mode of on-campus education and
2) a study that investigates blended learning in the dominant mode of distance education.

We will examine research that has been carried out in these modes to show the way learners have perceived and used blended learning. Both studies focused on the way students learned online and were driven by research questions that focused on different ways of learning from individual approaches to learning to collaborative group learning. They were both mainly qualitative studies that used interviews and content analysis of online discussions as central sources of data. In the course of the interviews, students spoke freely about their responses to the dominant mode of learning and the choices they made from the possibilities for variation for effective learning and these aspects will be discussed here.

1) The study with a dominant mode of *on campus teaching* was a case study that researched 25 New Zealand undergraduate business students with on campus classes complemented by an online discussion. The course was about ethical behaviour and was compulsory for all business students, irrespective of their field of study and each class contained students from different business fields, for example, accounting, marketing, information technology and international business. They were interviewed individually after the completion of the semester with their recall stimulated by the archived discussion provided digitally on a laptop computer.

2) The research study with a dominant mode of *distance education* was an ethnographic study of three sample groups of students (31 students) studying for their Master of Business Administration degree by distance education. These students met initially at a weekend residential with face to face sessions and their communication for the rest of the semester was in small groups online. The group interaction of these students was a compulsory process in their course and was implemented through the use of the university's computer mediated communication (CMC) system. The data gathering methods of the study were predominantly qualitative with data gathered from a range of sources mainly through individual interviews at the beginning and end of the year of group study, as well as through a constant monitoring, saving and analysis of the text of the electronic group conferences and electronic participation logs over the length of the one year course, with the researcher a participant observer in the electronic community.

4 On campus education and blended learning

The case described was situated in an undergraduate course in the business faculty of a New Zealand university. The main online discussion activity was styled as a debate and was assessed. The debate was based on a moral dilemma and related

reading was provided and preparatory tasks were required. This activity produced high levels of student engagement, and, at times, passionate and heated discussion. The participants included both New Zealand based students (locally termed Kiwi) and international students from China and the case has therefore been able to provide descriptions of learning from both points of view. Each class had a weekly two hour face-to-face class, where new topics and concepts would be introduced and this was followed by independent work which was based on online activities, for example, readings, quizzes, and case studies. The task of the online debate was a focus of the blended learning environment and 25 students were interviewed.

The results of the study showed that:
-   online discussions helped all the students to learn,
-   reading the online postings prompted engagement,
-   writing the postings aided deeper understanding,
-   the need to communicate to peers clearly and persuasively also aided their understanding,
-   Chinese students could participate more due to the online features that gave them time to read postings, think and prepare answers in English and
-   students were never off task.

The learning design was effective as the online discussions were linked to the face to face class and course by (a) weekly class discussions of such things as theoretical concepts, e.g. of the theories, the debate issue and reading, and case studies/application of the theories, (b) the teacher, who clarified the task and expectations, - encouraging everyone to go online and talked about the debate and postings in class and (c) their assessment. The online discussions were regarded as complementary to the face-to-face classes.

The main enhancements that the online component added to the face to face class were the record of the discussion, reading and writing instead of listening and talking, time to think, all of which improved the quality of the discussion. There was also the possibility for everyone to have their say and for some Kiwi students the virtual environment meant that it was easier to take part in the discussion, to disagree with other students and the opinions expressed were often more honest. For Chinese students, these features enabled them to talk far more with their peers online than they did in the classroom. The differences were that their conceptions of learning were much more teacher focused and they found it hard to participate in class discussions. While they did not like the debate as a learning activity, there was better interaction with peers in the online discussions their asynchronous and text based nature gave them time to read, think and express their ideas in English.

Peer interaction for all of the students occurred in two ways. Students were reading and thinking about others' postings, but the real potential value of the online debate lay in the students' responses to others' ideas and the way that that activity was deepening their understanding. Here, responding occurred because of the debate requirements, and if the debate had been voluntary, then a lower level of interaction would have been likely. This illustrates that interaction is not inherent in the CMC environment and confirm the important role of curriculum design in prompting students to go beyond their own internal conversations and start testing their ideas with their peers.

> *Other people's points of view would send me down tangents, of opening my mind and get me thinking about different angles on a subject.*

For these students, place flexibility meant that they mostly participated in the online discussions at home and rarely at the university or at work. This may result in less demand for computer laboratory access at universities and indicated that students are ready to use laptops and other mobile technologies for interactive learning away from universities. Time flexibility for the students meant that they were able to access the debate at any time of the day or night, thus fitting their learning into already busy lives. The content analysis showed that students were always on task in the debate and the interviews indicated that, despite the reduced class contact hours, students regarded their participation as occurring in their own time and did not wish to waste it. This was different from class, where students were there for a defined time, which they did not regard as their time and hence the temptation was to chat and go off task. There was also a strong sense of the online discussions as a learning space where it would be inappropriate to socialise. The other dimension of time flexibility that students recognised was having time to think as they read the postings and composed their own contribution.

The case illustrated the ways in which on campus students go about learning in an online discussion when it is included within their course as a significant activity. Key features of the learning context for students were identified as assessment of the activity, the discussion was structured as a debate on a controversial topic, and students were required to respond to their peers. The online medium, meant that students had to work in a communication environment that was text based, and virtual, with no visual or aural cues, but with time and place flexibility. The teacher's expectations, and the activity were well documented and the debate was well connected to the class activities in terms of both content and skills, and the teacher regularly commented on the debate proceedings in class. Overall, the students described benefits of the online environment for their learning. The main one was the text based nature of the debate which engaged students with the activity, and required them to clearly establish their position and communicate it to their peers.

> *It [writing] makes you kind of get all your thoughts and condense them and actually realise what you think…cause I think very much, up in your brain it all a big mess of thoughts and things…so actually condensing it and going "this is what I really think" …helps you to learn.*

What also emerges from this case is the ways in which students view the blend as an effective part of their learning with a clear recognition of the benefits of both ways of learning with online discussions as complementary to face-to-face discussions. The importance of integration of the online component with the class and course as a whole was evident in establishing its coherence and legitimacy.

5 Distance Education and blended learning

The second study involved a group of postgraduate MBA students that consisted of 31 part-time students (21 male, 10 female) based in a diverse range of workplaces

and geographical locations in three states of Australia. Their course in Business Economics within the MBA course at an Australian university was designed for students who were geographically distant from the university so distance education was the dominant mode of learning. However the course blended a range of learning activities beginning the semester with a weekend residential of compressed classes supported by print readings and study guides with a central learning activity of online class discussion, complemented by required small group discussion. The online system also provided email communication and access to digital resources and small group interaction was required for assessment to complete group tasks throughout the semester. The assessment tasks devised for the course established a purpose for collaborative group processes through the use of electronic group space. Students were assessed as a group by 5 fortnightly tutorial assignments submitted electronically and a group case study.

The learning design was effective as the small group online discussions, though run as student facilitated interaction were linked to the distance education print materials and readings   and were structured and assessed. The teacher used the face to face residential component to define the course expectations, and encouraged the small group interaction through media of choice as the central course design. The face to face residential component and the traditional distance education materials complemented the online group interaction.

The teaching and learning that took place in the Business Economics unit within the MBA course satisfied criteria for an effective model of collaborative group learning devised for the online environment.

1) It involved heterogeneous groups of peers mutually negotiating roles rather than acting in teacher directed roles as in the cooperative learning model. The original group structure was devised as part of the MBA course but the role structure was decided autonomously within the group and adapted to changing group activities and individual capabilities.

2) The assessment tasks devised for the course established a purpose for collaborative group processes through the use of electronic group space. Students were assessed as a group by 5 fortnightly tutorial assignments submitted electronically and a group case study.

3) Students were also individually assessed by an individual case study proposal, a multiple choice test and a final exam. If evaluated both individually and as a group, the students understand that they have a responsibility to the group to contribute and meet assessment requirements but this also provides the assessor with a means of assuring that all students have learned from this process.

4) Students could gradually learn the language of the new knowledge area of Business Economics through the online discussions. Through the small group conferences, students coming from many workplaces and previous learning environments were acculturated to the learning community of Economics.

In interviewing the students, it became obvious that they chose a blend of varied learning environments and media where possible. They were grouped into three groups in as close a geographical proximity as possible, although this proximity varied widely. One group, Group A, were able to meet periodically as a face-to-face group as well as being regular users of their group conferences. A subgroup of this group consisted of 3 students working in the same workplace who decided to work

together and not via the electronic group conference, although they used the system for reading the whole group conference. Another group, Group C consisted of students who were so widely scattered geographically that the electronic conference was their central communication, but they supplemented this with the use of phone or fax. The third group, Group B, chose to meet face-to-face as all group members worked in the central business district of a capital city. Though two thirds of this group used the electronic system to read the whole group conferences, they did not share text and ideas through their small group conference.

There was a layer of communication outside the online discussion space that was very important to the group communication. Often the small-group conferences were used as a means of flagging other group communication, either faxing, phoning or establishing group meetings. One student described their group's layered communication process:

What generally happens is that reading a message on the board is a precursor to a telephone call or a series of telephone calls.

The whole data group, represented the type of postgraduate student often studying in this distance mode, with an average age of 33 and jobs ranging from accountancy-related occupations to engineering positions, public servants etc who shared similar management responsibility or potential for such responsibility in their workplaces. This factor also meant that all students were based in workplaces that demanded full time commitment and one of the reasons many of them had chosen to study part-time and by distance mode, was to attempt to balance these demands. Most students had easy access at work to fax machines and telephones for either local or distance calls. One student raised the aspect of distance influencing the choice of technology. Students who were further away and faced with more costly telephoning may be more likely to try using the online system. Sometimes, though, it was the purpose of the activity that dictated the communication used, as with one student's need to 'caucus' opinion in his group which he thought needed the one-to-one communication of the telephone.

You know we got on the phone and talked about some of the issues quite a bit. And the electronic medium no doubt helped to keep the information flowing, but I think that the telephone is a more useful means of caucusing and chatting and getting support.

However the students were aware of the limitations of these other technologies as well as the specific advantages of online communication of asynchronous shared text. The flexibility for managing the time of communication at their convenience, as well as the ability to share digitised text without having to retype it were both advantages that busy collaborating students appreciated.

If Frank's got something he knows I want and to save me having to retype it or whatever he will post it on the board and I can get access eventually so it's, yeah it is very useful from that point of view.

The use of layers of communication with a central message base on the online conference and through a mixture of technologies for different purposes enabled effective and efficient communication in the groups and showed the students' need for blending media even when the dominant mode of learning is at a distance. A further small scale study of this course [9] showed a similar pattern of choice of

interaction with students choosing a blend of media and communication modes for learning where this choice was possible.

6 Conclusion

As predicted by Oliver and Trigwell [7], when learners' perspectives were researched, they expressed an understanding of the benefits of both online and face to face interaction and chose, where possible, to blend these modes. Teaching effectively for blended learning, whether the dominant mode was distance or on campus learning, required careful design and preparation with expectations of student interaction online explained and designed to complement the dominant mode and required as part of assessed tasks.

A concern that is raised from these studies is that increasingly traditional distance education courses are offered only through the mediation of internet based technologies with fewer structured face to face opportunities built into programs. Though the students learning on campus will gain by the blended mode that provides them with variation in the experience of learning, students learning at a distance may have fewer opportunities for blended learning, especially as programs are taught globally. Developments in ICT with internet based telephony and accessible forms of audiovisual synchronous communication are addressing these needs to some extent but the role of teachers in designing for effective learning within these models are becoming even more important. As with the careful complementary blending of on campus and online learning, they will need teaching strategies that acknowledge the importance of explicitly establishing social presence and a sense of community among distance education students as the impact of development in ICT affects learners at a distance.

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Biographies

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