FROM BLENDED TO ONLINE LEARNING: COMPONENTS OF THE GAP

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ABSTRACT

At the University of Mauritius, blended learning is defined as the application of technology to support a range of teaching and learning activities in courses that are mainly given to full-time undergraduate students on campus and part-time mature students on postgraduate programmes. This article reports the observations of two studies that were carried out at the University of Mauritius. The first study was carried out in August 2003 with a hundred first year students who were enrolled on the CSE1010e module offered on the Virtual Campus. The second study was carried out in August 2004 with a first batch of 15 students who were enrolled on the Masters programme in Computer-Mediated Communications and Pedagogy. It is obvious from the results that students perceive that their learning experience has improved but they would still prefer keeping face-to-face sessions rather than moving completely online. The barriers to the implementation of such approaches are briefly discussed.

INTRODUCTION

e-Learning, technology-enhanced learning, blended e-learning and concepts like computer-mediated pedagogies are currently emerging fields in education that is receiving widespread attention from educators, researchers, teachers and practitioners all over the world. The number of national and international e-learning/computers in education conferences are increasing yearly where presenters expose lots of new and innovative ideas, revolutionary and sometimes controversial practices, and systems/technologies that have been developed to facilitate the implementation of these new modes of education.

One of the main advantages of delivering web-based educational materials is that the same content is delivered to a number of students and can be accessed with no restrictions of time and place. The integration of technology in learning, needs to address the very important issue of enhancing the teaching and learning process, rather than just being seen as a new flexible delivery medium (Nichols, 2003). The web therefore can be seen as (1) a new delivery medium for distance education materials; (2) a flexible and rich medium (in terms of multimedia) for students to access their learning materials and (3) a medium offering a new paradigm for learning.

The most basic form that e-learning could take would be as a replacement for the traditional print medium that is sent through postal communications to students dispersed across the planet. In this mode students' learning could be enhanced and supported by computer-mediated communication tools like forums, email, chat rooms and advanced tools like internet-based video-conferencing.

E-learning can also be used to offer pedagogical support to on-campus students. This is often defined as technology-enhanced or blended learning. The Internet provides an infrastructure that supports the diffusion of hypermedia courseware elements. This combination of multimedia objects in a hypertext supported environments make the acquisition and comprehension of some concepts easier for students. There has been much research illustrating the benefits of integrating multimedia in instructional materials to enhance the learning experience of the learner (Astleitner & Wiesner, 2004). It is also widely postulated that multimedia is a very useful tool to address students with different learning and cognitive styles (Ayersman & Minden, 1995).

Contemporary researchers in education focus mainly on the use of the Internet infrastructure to implement new learning paradigms grounded in more socio-constructivist settings. They insist that the Internet should not be used as only a medium for delivery of electronic materials but should viewed as a medium that supports new learning paradigm, pedagogies and instructional approaches and that facilitates the construction and application of knowledge through authentic and collective activities (Schneider, 2003).

This article reports the observations of two studies that were carried out at the University of Mauritius. The first study was carried out in August 2003 with a hundred first year students who were enrolled on the CSE1010e module offered on the Virtual Campus. The module followed a classic content-based approach to e-learning and the blended component in the module appeared in the form of face-to-face tutorials that were held weekly during the semester. The second study was carried out in August 2004 with a batch of 15 students who were enrolled on the Masters programme in Computer-Mediated Communications and Pedagogy. The programme was also delivered on a blended mode using the same principles of the CSE1010e, which is with face-to-face sessions, tutorials and practical in the computer laboratories. The major difference is based on the pedagogical engineering of the programme, which followed an activity-based approach.

A Content-Based Approach to e-Learning: The CSE1010e Experience

The CSE 1010E (Introduction to Information Technology) was initially delivered through print-based distance education mode and it became the first module to be delivered online (blended) at the University of Mauritius on a large scale (~ 1000 students). The CSE 1010E module (Figure 1) has now been delivered without any major problems, for approximately two academic years now. The module is hosted by the University of Mauritius Virtual Campus, which provides the technological infrastructure and pedagogical tools to enhance the teaching and learning process.

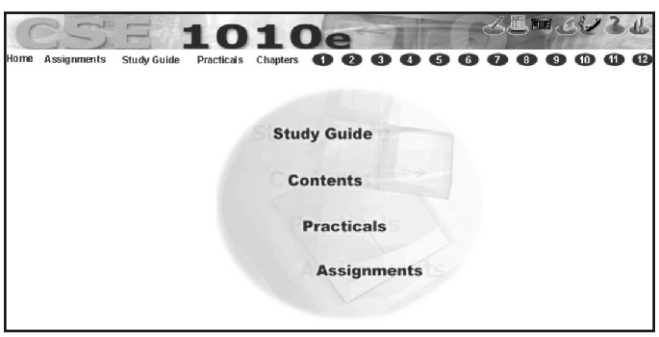

Figure 1: The Cse1010e Homepage

Students have an online study guide (also available in print format) where they have access to an instructional plan that helps them in their learning. They get instructions about chapters to read and exercises to carry out. The contents section provides students with a multimedia learning material arranged in a hypertext structure that helps them to understand concepts easily. Students also have access to a range of self-assessment questions for each chapter. The assignments and practical sections contain necessary information about continuous assessment and hands-on activities to be carried out in the lab. Students also have access to online discussion forums where they can discuss with peers and tutors about concepts and topics related to their module. Every week the students have a one-hour face-to-face tutorial session with their tutors who provide them with the required pedagogical support.

Re-engineering for an Activity-Based Approach: The Masters in Computer-Mediated Communications and Pedagogy Programme

Contrary to the undergraduate module in Information Technology, the Masters programme is delivered neither through the traditional classroom-based delivery nor through the classic e-learning approach. The rationale is that classic e-learning through well-structured platforms, diffusion of contents online with structured chapters and classic activities such as open-ended questions and Multiple Choice Questions defeat the purpose of using e-learning to foster innovative pedagogies and to promote knowledge construction and autonomous development of the student (Santally & Senteni, 2004).

The programme is more centered towards knowledge construction, socialization and collaboration based on a set of authentic activities that will help the student develop an understanding of the subject matter, formulate personal learning goals depending on their professional interests and to use a set of pedagogical and technological tools to support them in the process. These activities form the core of the students' continuous assessment that mainly focuses on the targeted competencies and skills that the student needs to demonstrate using higher order cognitive skills.

From an activity-theoretical point of view, learning is being reconceptualized in the sense that the course contents are no longer the object of the activity but they are perceived as tools to help learners achieve the object, which is now some skills, or competence that they need to develop.

The Virtual Learning Environment

The CMCP programme is delivered through a course portal (figure 3) that the students can access with a common username and password through the Internet. The same

content is given to the students on cd-rom to minimize Internet browsing to read activity guidelines and documents relevant to carry out the activity. Students are however encouraged to visit the web site quite often so that they may be aware of latest changes, modifications and news relevant to the programme.

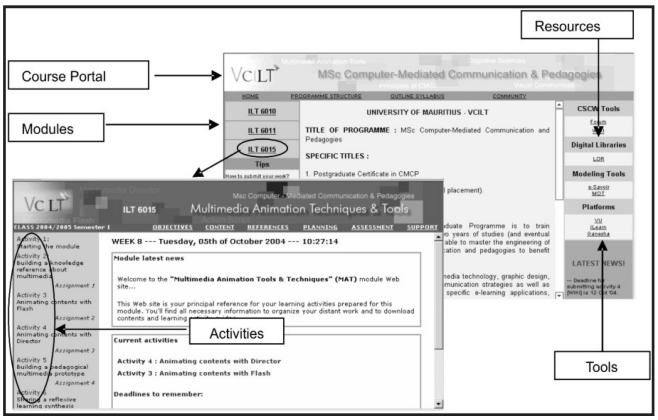

Figure 3: The MSc CMCP Course Portal

The CMCP course portal has been designed in a very simplistic approach in the sense that the pages are mainly static and light in terms of technicalities to promote maximum usability for the students. On the left-hand side, they have links to the modules they are following in the current semester and from the figure, we can see a snapshot that clearly demonstrates coherence and consistency in the design. On the right, they have access to a range of tools, digital libraries, learning platforms and forums that are common for all modules they are taking. The portal itself, the range of tools and description of the activities form the instruments that the students will use in the course to achieve the targeted outcomes.

Research Questions and Methodology

The main purpose of this paper is to get the perceptions of the students' vis-à-vis the use of technology to support part or a major part of their courses and whether there exists a difference in the way that postgraduate students perceive the new approach when compared to the views of undergraduate students on campus. The undergraduate students follow the courses on a content-based approach while the part-time postgraduate students follow the courses in a more autonomous, flexible way and which is activity-based.

Data Collection

Data for one hundred (n=100) undergraduate students who enrolled at the University for the academic year (2003-04) has been collected online through the VCILT Test Center (http://vcampus.uom.ac.mu/testcentre), an online infrastructure to survey students learning styles and feedback on online courses at the University. The students have been chosen from different faculties and departments since they all do the module "Introduction to Information Technology CSE 1010E". To ensure privacy of students' records, each student is given a unique code throughout the study and their names and student identification numbers (IDs) are not used at any moment.

With the postgraduate students, a questionnaire was circulated in the last weeks of the semester among the 15 students enrolled on the programme to get the feedback on their current experiences and attitudes towards this novel teaching and learning approach. An online forum was also opened to allow students to share and exchange their views concerning the programme. The questionnaire contains information in the following categories: (1) their personal information, academic and professional background, (2) their experience and proficiency level in information technology, and (3) their general perception of the programme and of its new teaching and learning approaches.

Field observations and informal interviews were also carried out with the students during the semester (ongoing process) so as to obtain information about their feelings with the system, their reactions, perceived usefulness and ease of use of course websites and communication/ collaboration tools. This approach was also very useful to observe how their perceptions evolved and changed as their familiarity with the system increased.

Results & Observations

Observations with the Undergraduate Students

1. Do you have a PC at home?

Yes	88 %
No	12 %

2. What is your Proficiency level in using the Internet?

Proficient	52 %
Average	27 %
Low	20 %

3. Do you find that the e-learning course helps to understand concepts normally taught in normal classes?

Mostly	37 %
Averagely	51 %
Not at all	12 %

4. Did you find the conferencing tool useful?

Yes	95 %
No	5 %

5. Would you like to follow another similar module?

Yes	69 %
No	27 %

6. Do you find that learning with computers increased your confidence?

Yes	64 %
No	4 %
No opinion	32 %

7. Do you think that learning with computers improved your learning experience?

Yes	98 %
No	2 %

OPEN-ENDED ANSWERS

1. Was the offer of such a course stimulating? Please give reasons.

   YES (95%):

   - The online course is not boring and is different from the other modules.
   - Planning of our work becomes more flexible.
   - It stimulates various abilities of the student and develops their maturity towards self-learning.
   - The online course is interesting. It's a new experience as up to now, I have only studied from books.
   - This is a new method of learning. Most profitable to slow learners.
   - Easily get information we want from tutor without having to wait for the following week to ask questions.
   - Interaction between students of the same module in other groups.
   - Sounded like an original idea.
   - Demands more personal responsibility.
   - A change in the way of studying because since primary to secondary, we are doing classroom class.
   - Virtual interaction is becoming more common in businesses.
   - We can post our answers, queries online whenever we are free. No need to wait to meet teacher.
   - Helps me to work at my own pace.
   - Learning via computer exciting as it is a more graphical user interface compared to a book.

   NO (5%):

   - No proper guide was available.
   - Spending much time reading on PC harmful to the eyes sometimes.
   - Would have preferred a lecture and discussion class.
   - Prefer studying in books because books are more readily available and can be read anywhere at anytime.

2. How can the computer communication (Forum) tool be enhanced to better facilitate interaction among students?

   - An online tutor will help in this case.
   - A student board could be added where students can meet and make groups.
   - Most students don't know how to communicate via the forum. There should be more information on how to interact on forum.
   - We should be able to change or delete the message we have sent, in case we make mistakes.
   - Students should be encouraged to participate in the forum.
   - Introduce a system whereby students can participate in quiz, ask questions as well as receive answers. This will stimulate better participation as well as bring more fun.
   - Put more questions and debates on forum and mark answers to better motivate students to participate.
   - Instant messages between tutor and students would have been better.
   - Give more information so that students will know that there are facilities to interact among students.
   - Put interesting topics to discuss each week.
   - Must be more interactive.

Observations with the Postgraduate Students

It is currently the eighth week of the semester (consisting of 15 weeks) for the Masters programme in CMCP and 15 students are presently enrolled. The students come from various academic backgrounds such as French, Agriculture, Computer Science, Physics, Math and Engineering. Most of them are primary school teachers and secondary school education officers. We also have a policeman with an Information Technology background. The first session of the course was a face-to-face one and most of the students were very motivated to follow such a non-conventional course. They were delighted with the fact, that there will be no formal lectures and classroom attendance is not a pre-requisite to sit for the exams.

The principle is that attending classroom lectures does not guarantee successful learning, which is different from passing an exam. We define the occurrence of successful learning in our programme as a three phased activity: (1) Knowledge Acquisition phase; (2) Knowledge Application Phase; (3) Knowledge Construction through Sharing and Reflexive Practice. The students carry out the first two phases after going through the detailed activity guidelines and the third phase normally has an overlapping component with the other two phases. This is normally carried out online through collaborative learning tools such as a discussion forum and it is a continuous process of negotiation, sharing and reflection with the peer community.

During the first weeks, the various activities that were carried out online, student attitudes, feedback, and behavior during face-to-face seminars were observed. At this stage, the students started to realize one important aspect of the course that was completely mismatched with the reasons of their rejoicing for not having traditional classroom lectures. Their workload has greatly increased through this new learning paradigm and they realized the importance of good time management. They were not devoting enough time to read the guidelines for the activities and this was affecting their confidence. As a result, some of them wrote to ask for weekly face-to-face sessions. This would however defeat the very purpose of the course. Our answer to that was very simple and it was in fact a question that made the students reflect on what they have asked. How can we effectively teach you not to teach through classroom lectures by having classroom lectures?

From the beginning of the semester, one student was not completing any of the activities but he was present in all the face-to-face seminars that were organized. When we queried him about the activities he admitted he was in a real mess, and that he felt being part of the team when he comes to the seminars but at home he just cannot manage and as soon as he is stuck he abandons the work. The intriguing thing is that emails were sent to him asking him whether he had problems so that he may be offered support. Amazingly, he never responded but when he met in the face-to-face classes then it was really a different situation.

The fact that the students following the course were not physically separated from each other by long distances, they used to meet regularly to discuss among themselves and support each other in the activities. The positive side of this was that a dynamic situation evolved and this created a momentum in learners lacking behind to catch up. Furthermore it was a pleasure to see that there was a mentality shift from competition to collaboration and collective work. However, a few students who were lagging behind or had some difficulties in the learning process started to feel awkward and as a result lost confidence in themselves. This had a negative impact because instead of being motivated to catch up they started thinking to eventually dropout, although none of them actually did it.

Do you find that your learning is more fruitful with this approach?

Only one student (out of 15) found that his/her learning was not fruitful with this approach. While he acknowledges that the approach is good, he finds it difficult to work on his own (i.e. independently) since it is difficult to understand concepts and that he would feel more secure if more face-to-face meetings were held.

Would you prefer to revert back to the traditional approach?

When asked whether they would prefer to revert back to the traditional approach 81% responded negatively while 19% said that they would revert to traditional classrooms and use the online component only as a supplement to the classroom lectures. The amazing thing is that even some of those who found that learning were more fruitful with this approach wanted to revert back to the traditional system.

Do you feel you have enough support (technical, pedagogical, academic) to carry out the course?

While most of the students are satisfied generally on having enough support for the course, it seems that approximately 50% of the students are not satisfied with the technical support they are receiving from the course. On the other hand only 25% felt that tutorial and academic support was not enough.

Would you be prepared to act as agents of change for this new conceptualization of the teaching and learning process?

When asked about this aspect, all of the students answered yes. The principal reason of their positive attitude is that there is a paradigm shift in education towards web-based education and that they want to keep up to date with new and innovative methodologies in education. Some reasons are more classical such as "it enables learners to become autonomous", "one can learn at his own pace and do the course at home" etc.

However, 20 % of them posed some conditions before they can be prepared to act of agents of change to promote such type of education. Some of the conditions were that the cost of connection to the Internet should decrease, that there should be a face-to-face session for the first introduction of any new topic, and change of curriculum, and high-level policies to promote such types of education.

Arguments Supporting the Blended Approach to Teaching and Learning

It is clear from the observations that whether undergraduate or postgraduate, students are not fully ready for completely online education and that the blended approach to e-learning is still important strategically and pedagogically. However, at this stage of the research, there are some fuzziness concerning what to consider as blended learning and what to consider as fully online and most importantly how to decide about the extent of "blended" that exists in a module or course that is delivered this way.

From the observations, the majority of students feel their learning is enhanced by the introduction of technology and that they feel more confident. But it has previously been found in a similar research at the University of Mauritius that there is no significant difference on performance. The fact that Mauritius is currently experiencing its "IT Revolution" with the creation of the Cybercity may also prove to be a stimulant for the student's acceptance of the new technology. As can be seen from the comments from both groups, information technology is currently fashionable.

Students still emphasize on the importance of their tutors and lecturers to support them in the teaching and learning process. However, where technology is perceived as a good thing is the fact that students get the opportunity to interact with the tutors/lecturers anytime and from anywhere. This aspect gives them moral boost and continuous support throughout their learning experience. This observation has been made mainly with the undergraduate students. What is in fact important for the students is not to see the lecturer face-to-face but to interact with him regularly. This would give them a feeling of confidence and reassurance that they are on the right track and that everything is fine.

However, with the postgraduate students, there have been requests to hold more face-to-face sessions to clarify instructions, problems in understanding and other matters related to the course. While undergraduate students felt that more emphasis should be made on the use of forums to support their learning, postgraduates were continually being urged to communicate through the various tools, which they rarely did. On the other hand, they would not like to revert to the traditional approach but they want to have the course more balanced with face-to-face meetings; in other terms, to increase the "blending ratio". The problem with them is that when they ask questions in face-to-face sessions, it becomes obvious that they have never taken the time to go through the materials already given to them on cd-roms. This is not a problem concerning lack of commitment but it is mainly due to these people being overloaded with social and professional commitments. Therefore they get problems to adapt with these new approaches. When open and flexible learning moves to open and online learning, the flexibility aspect seems to be undermined by the need to familiarize with technology and the need to respond to an increased amount of self-responsibility that is needed in the learning process

Postgraduate students have also been complaining on the fact that unlike their peers who are enrolled on other traditional Masters courses, the indirect cost implications of spending much time on the Internet doing online research, reading and posting messages on the forums started to weigh high on their budget. This problem did not exist with

undergraduate students since most of the blended e-learning took place on the campus for them. If ever they were doing it at home, most of them would not give a first thought to the Internet costs since these are mostly born by the parents. In the case of mature postgraduate students, this is simply not the case.

On the other hand, proficiency in information technology is a common barrier. Although most students were proficient enough in the use of computers and information technology, they were completely new to computer-mediated communication tools such as forums, wikis, learning object repositories and even in the efficient use of messaging systems like email. In other words, they were suffering from a lack of proficiency in Internet uses and applications. This problem arises since most proficiency level training in Information Technology focus on office automation tools such as word processing, spreadsheets, presentation software and databases.

Technical problems with computers also pose difficulties to the students while following the courses. Computer breakdown and system crashes affect the students' learning and consequently they have to come to the university premises to do research work and to complete their assignments. Sometimes these problems are minor, but since the students lack the experience and exposure to computers, they just cannot progress any further. The lack of technical support therefore can have a very negative impact on the students' learning experience.

Finally the context of the whole educational scenario is one of the most determining elements that supports the idea that blended learning should not disappear even if the gaps between blended learning and completely online learning discussed above may be filled in a near future. A simple analysis of current trends in literature that exists shows that many researchers are attempting to find ways of replacing the traditional face-to-face sessions with online learning. In many other contexts, whenever the word e-learning is used, people associate it directly with distance education via the Internet. The concept of blended learning is adopted and implemented in schools and universities with an ultimate vision of completely moving virtual in a near future. The case of Mauritius is not an exception. This is the main problem to be addressed if technology is to be efficiently implemented to improve the educational process.

For instance, Mauritius is a very small country where the time taken to travel between the two most distant locations would never exceed 2 hours in a bus or a car. Students can easily meet on campus to discuss about different issues related to their courses and even meet the lecturers most of the time. Clearly, it does not make sense to create distance-learning courses on campus where students will be learning by themselves. The concept of blended learning is however perfectly applicable where some flexibility is added to the teaching and learning process. Moreover, the introduction of computer-mediated communication tools help improve communication, online collaboration among peers and promote new pedagogical approaches such as project-based and constructivist learning.

On the other hand, with the concept of "democratization of education" in Mauritius, the University finds itself with reduced subsidized budget from the Government and has to face competitions from private institutions and universities. In such scenarios, where the University can offer limited physical places to students whose applications would be turned down, strategically it would therefore make sense to go fully online for these students or for those who cannot attend campus. From the research observations and local experiences, it is clear that when students have the choice, they would prefer to be on-campus, go minimal in class, meet lecturers, pass exams and would never go for the online mode where more personal responsibility and commitment is expected from them. However, learners who cannot secure a conventional place at the university or those whose social and professional commitments do not allow them to be physically present would definitely opt for the fully online mode since they have very little choice and that their first choice would definitely be the University of Mauritius based on its reputation and relatively low costs compared to costs of following courses, say from a UK university.

Conclusion

This paper discusses the main barriers to online education that were observed at the University of Mauritius with one group of undergraduate and one group of postgraduate students. It concludes that the cost of internet access, poor technical support, social and professional commitments of part-time students, unwillingness of students to take more responsibility of the learning process and proficiency in

information technology are the major constraints for the adoption of fully online modules and therefore the blended approach is favored. However, the paper goes into more depth in emphasizing that although these aspects should be taken into consideration, the educational context should be taken into account before going blended or fully online. Many institutions just miss the target by setting themselves the ultimate tasks of having more and more courses fully online just to keep up with the new technological applications in education. Educational reforms in many countries are also based on this assumption. This may lead to a situation similar to the productivity paradox experiences in the United States in the 1960s when computers were supposed to increase productivity but the reverse happened.

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