THE EFFICACY OF MODE-A ELEARNING SITES: AN EXPLORATION OF E-LEARNING THROUGH GROUNDED THEORY

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ABSTRACT
eLearning is a new and exciting area for educators in so far as it promises to deliver a student centred approach to learning; frees the student up to gain access to learning material when it suits them; provides an online record for educators whether students have accessed that material and often incorporates audio and visual aspects that empower the disabled at the same time, to name but a few advantages. There are of course downsides to eLearning that is often expressed through the often quite legitimate insecurities of academic staff that their intellectual property is able to more easily be reproduced; that their class attendances have dwindled; that students are now simply using eLearning as a placebo for real learning which takes place in the classroom. This paper explores eLearning through grounded theory, presents a map of important key terms and provides a small sample survey to assess student attitudes to their use of Learning Management Systems.

KEY WORDS
eLearning, LMS, Modes, Grounded Theory

1. Introduction

The nature of the student cohort has dramatically changed over the last decade to a student body that is at once harder to teach yet more critical of poor teaching [1] and far more demanding of service provision than their parents were. One mainstream means by which service provision can be delivered to students is through the use of eLearning which may be defined as material delivered via electronic networks or multimedia platforms. In practice however this means the provision of course material through the use of Learning Management Systems (LMSs) such as Blackboard™, Moodle™, LAMS™ and Click2Learn™.

The use of eLearning in higher education is becoming increasingly prevalent with the ever-changing demographic of the student population [2]. While undergraduate students were previously young (18-25 years of age), single and studied full-time, today’s student is just as likely to be mature-aged, married and/or a parent [2]; these factors along with the revolution in information technology have obviously had a major impact on the requirements of university educators [3]; [4]. An example of this is in the increased use of online Learning Management Systems (LMS) such as Blackboard™ and Moodle™ to name but a few platforms. Such sites can be either part of a ‘blended’ program where quizzes or discussion boards are used and where students may be assessed online. Alternatively LMSs may be a purely information-based resource providing students with information about their unit of study, access to readings and any assessment tasks they may be required to complete [5]. Although we present different modes of LMS; in this paper we focus on the efficacy of Mode A type LMS which are purely informational.

As eLearning sites such as WebCT become commonplace, there is increasing demand on faculties and schools to provide them to such a point that some schools and departments within institutions including the University of Sydney and Macquarie University are now mandating each unit of study must have such a site. Further still, in some ICT Departments, such as the one at Macquarie University, not only must virtually all learning material be made available online, but the material should as far as possible be in open-source format to enable access by all manner of platforms, hardware and software.

Such policies raise the question of how useful students actually find these sites and in particular how useful they find the voluntary, information-based Mode A sites. The literature presents a multitude of case studies that evaluate particular online teaching approaches by surveying students [6]. In the last decade eLearning technology has become very popular, so much so that even many full-time students now choose to access their course material online, negating (at least in their own minds) the need to attend classes unless specifically required to do so. For example the first named author has seen regular lecture attendance decline from an average of 40% over the last few years down to 20%.

The combination of LMSs with sample solutions to material, in combination with regular access to video-recorded lectures means students appear satisfied to attend classes if and when it suits them. When asked informally what they think of tools like iLecture™, they respond enthusiastically. We seek a more formal means to
determine the level of student satisfaction with Mode A sites through the development and deployment of a student survey.

This paper is comprised of a number of sections. Section 2 presents the institutional background and definition of a number of LMS modes. Section 3 provides our methodology and examines eLearning through an interpretive epistemology using Grounded Theory as the basis for the survey instrument created and presented in Section 4. The final section offers our broad conclusions.

2. Background

In the interests of the reader, we begin with a brief introduction to each institution. The University of Sydney is Australia’s oldest, founded in 1850. It belongs to the Group of Eight (Go8); the top eight research universities of Australia. As in common with all Go8 institutions, Sydney is popular as an institution of enrolment first choice and attracts a high proportion of full-time ‘direct from secondary education’ students. In 2008 enrolments were 46,054 students total; 35,713 full-time; 10,341 part-time (22.5% of the student body).\(^1\)

Macquarie University on the other hand was founded in 1964 and from the outset sought to differentiate itself from its established rivals, the University of Sydney and the other N.S.W. Go8, the University of New South Wales. In 2008 Macquarie’s enrolments comprised 33,052 students in total, with 20,692 full time students and 12,090 part-time students (36.5% of the student body).\(^2\)

At the University of Sydney the purely informational LMS site is referred to as Mode A (table 1) which in the case of this study meant both A1 and A2 – i.e. relevant course information is available on the site, however use of the site is not compulsory and is not required for assessment. As the reader will note, at a finer level of granularity, the A Mode sites may either provide information only (A1) or the second type (A2) may require student participation but they will not be assessed on their participation. Again this study includes sites of both type A1 and A2.

Student satisfaction is important in today’s student-centred learning environments. A formal means of gauging student satisfaction is through course experience questionnaires, provided either towards the end of each semester or at graduation. At the University of Sydney, the Student Course Experience Questionnaire (SCEQ) is the main source of evidence pertaining to the student experience of eLearning [7]. However, merely 5 out of 50 questions are related to eLearning (10%). There are fewer studies on student perceptions with regard to the usefulness of particular modes of online delivery; such as Mode A; whereas, students’ interactions with course interfaces have a major impact on learning [8].

<table>
<thead>
<tr>
<th>Mode</th>
<th>Definition</th>
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<tbody>
<tr>
<td>A1 - Informational</td>
<td>The unit of study website provides information resources only (e.g. unit outline, readings, link to other related websites).</td>
</tr>
<tr>
<td>A2 - Supplemental</td>
<td>A1 + The unit of study website provides activities requiring active student participation but these aren’t part of the assessment framework for UoS.</td>
</tr>
<tr>
<td>B1 – Blended (Assessment)</td>
<td>A1 + The unit of study website provides activities requiring active student participation and these are assessed as part of the students’ performance</td>
</tr>
<tr>
<td>B2 – Blended (Replacement)</td>
<td>A1 + The unit of study website provides activities requiring active student participation and these activities have replaced some face-to-face.</td>
</tr>
<tr>
<td>B3 – Blended (Replacement and Assessment)</td>
<td>A1 + The unit of study website provides activities requiring active student participation and these are assessed and have replaced some face-to-face.</td>
</tr>
<tr>
<td>C1 – Fully flexible</td>
<td>The unit of study website supports a UoS can be completed almost completely off-campus (e.g. may require a residential weekend)</td>
</tr>
</tbody>
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Table 1: Definition of the different ‘modes’ used to classify WebCT sites at the University of Sydney.

At Macquarie University, the Learner Experience of Unit\(^9\) question bank totals 14 core questions with up to another 10 supplementary questions available from a bank of 95. A further 15 open ended questions are also there to choose from; a total of 134 questions. Of these 134 questions, five\(^v\) directly relate to eLearning (4%), with one indirectly related to eLearning.\(^v\) There is also a Learner Experience of Teaching\(^v\) questionnaire with 309 sample questions available. Typically lecturers would choose no more than a dozen questions that students would answer, 6 core questions and 6 optional items. Of the total 309 questions, 31 are with direct regard to online access of resources with another 3 questions of indirect relevance to eLearning,\(^v\) making 34 questions of 309 in total (11%). None of the questions directly mention eLearning per se. What does differentiate Macquarie University is that there is also a Learner Experience of Distance Education\(^viii\) questionnaire with 11 open ended questions.

Clearly both institutions cater to online distance learning, but the emphasis is greater at Macquarie University as would be expected, with its greater original focus on ‘non-traditional’ education provision.

3. Methodological Approach

Given the typically mandatory use of LMS in higher education we were interested to determine whether students found benefit even if LMS were not being used to their full potential. To uncover student attitudes within our own institutions we chose to create an online survey. This survey is discussed further in the following section; in this section we provide the basis for the questions included in the survey.
We began with the exploration of a definition of eLearning through an interpretive epistemology. Many definitions of eLearning exist, but very little has been researched on this topic through a grounded theoretical ‘lens’. Research epistemologies are either Positivist (typical of the physical, biological and ‘hard’ social sciences), Interpretivist (typical of the ‘soft’ social sciences and humanities) or Critical (Social) Research (typical of the ‘activist’ disciplines: feminist, gay or indigenous research providing examples) [9]. The former seeks to objectively study a physical object or phenomenon and mandates replicability. Interpretive research does not claim to be replicable, and admits subjectivity is acceptable in research as the human experience or interpretation is central to the research process. Finally critical research actually aims to bring about change as a result of the research conducted [9].

There is some legitimacy in combining these approaches [10]; [11], although the practice is not commonplace.

Our research initially adopts an interpretivist approach [9] through the conduct of qualitative grounded theory. One key strength of Grounded Theory is that it can be used to uncover themes arising in the literature on a given topic or hermeneutic unit (in this case eLearning), that would otherwise not be so visible. The underlying themes In Grounded Theory we may label ‘codes’. The ‘groundedness’ of these codes, that is to say the occurrence of the codes in the literature tells us how important a particular theme is in the literature. Having established a number of codes, we can then construct a network map whereby codes are subjectively joined to one another. The number of times any given code may be joined with another is referred to as the ‘density’ of the code. The combination of the code groundedness with its density permits us as researchers to gain a more complete understanding of a topic which in turn informs further interpretivist or perhaps positivist research approaches, in our case the latter. It is this initial interpretation of data through a technique such as grounded theory that can lead us as researchers to examine a topic in more depth through other complimentary approaches, such as positivism for example.

Ten papers were selected to be examined through the lens of grounded theory; they were so chosen because they were of a nature whereby authors simply but clearly attempted to explain what was meant by ‘eLearning’. Examining Appendix A, we see the codes are linked together and concentrations of codes provide some understanding of topic importance. Looking at the left hand side of the figure there is a concentration of codes around modes and well as around the Learning Management System mode in the centre-middle of the figure. The reader should nonetheless bear in mind that grounded theory analysis of topics is a subjective exercise in line with interpretive epistemology and another researcher is likely to come up with a different network map, although codes are liable to be similar.

More specifically the findings through Grounded Theory were that web-based (groundedness 9, network density 3), technology (10,3) is important. Remember the groundedness refers to instance of the code being ‘discovered’ in the literature, whilst the density refers to importance of a code with regard to its relationship to another code. Not surprisingly ‘technology’ plays a substantial role in eLearning, although it is not one of the more connected codes. Another important code or theme is that of Learning Management Systems (8,7) which clearly comprised a pivotal part of eLearning (12,5), but that Blackboard™, Saba™, Moodle™, Click2learn™ and LAMS™ were just examples of such packages. Furthermore, that modes are a critical component (8,7) with mode A sites having a combined groundedness and density of (6,6), B modes sites (7,7), C mode sites (4,5); and also that disadvantages to eLearning exist and lead to blended platforms. Finally replacing face to face teaching (7,2) is also of relevance and student participation (10,3) in the eLearning process is also not surprisingly significant.

An outcome of the grounded theory is that it allowed us to consider the sorts of questions that could be framed in a questionnaire to assess attitudes towards modes and clearly recognise that technology is a key component of the eLearning process. As a result we can more legitimately examine the impact of these web-based Learning Management Systems to see if students also felt advantaged by their use of them. Our study thus aims to investigate the perceptions that students at both the University of Sydney and Macquarie University have about the usefulness of these information-only Mode A sites with regard to such factors as the (1) frequency with which they visit the site, (2) which elements of the site they access most frequently and (3) how they feel they would achieve in the subject without the sites existence.

4. The Survey

In order to reach a large number of students we have used Survey Monkey with the survey distributed as a link in an email sent via the University of Sydney’s FlexSIS™ System and at Macquarie University via emailing staff and asking them to place the survey link on class WebCT/Blackboard/Moodle™ sites.

The survey asked students a range of questions both closed (e.g. yes/no questions, multiple choice and questions using the Likert Scale) as well as a single open-ended question probing the student’s general feelings toward the site. The questions specifically wished answered were (1) whether students have actually logged in to their Learning Management Systems? (2) If they have, how many times have they accessed the site? Next, (3) what did they mainly use the site for?, that is to say, from examining the unit outline to using lecture notes, through to perhaps obtaining assignment information. (4) Will they visit the LMS again? (5) If they will, then again
like question (3) what will they use if for? Next (6) was an open ended question asking them which aspect of the site is most useful for their studies. (7) How often they think they will visit the LMS this semester. (8) Would they be able to satisfy the course requirements this semester without using the LMS? And finally we will incorporate an open-ended question asking students to detail what they think the most useful aspects of the LMS are.

We anticipated that students would have logged into their unit sites (Q1), accessed unit outlines, lecture notes, assignment, tutorial and practical information (Q3), and that they would do this multiple times throughout the semester (Q4) for similar purposes (Q5). We were particularly interested in their answer to Q8 regarding the vital role that even a Mode A LMS might play in achieving success in the unit.

We had been given permission to gather data from the Faculty of Science and Arts at the University of Sydney, and the Faculty of Science at Macquarie University involving around 5,000 students. It is worth mentioning that due to the time limitations of this study the survey was only distributed electronically. As the eLearning sites are not a compulsory part of the course this would tend to favour receiving responses from students who are comfortable accessing the internet while those who are not, would less likely have responded. Ideally the survey would also have been distributed by non-electronic means such as during class or by post.

We received 667 responses to our online survey. While we are able to publish the specific results for each question internally, we did not have ethics approval to publish specific results externally. We can, however, report that our expectations above were confirmed and that students did find Mode A LMS overwhelmingly useful and a very integral part of their learning.

5. Conclusions

A network map has been developed illustrating eLearning which provides a useful addition to the research space on eLearning. The groundedness and density of codes provides the researcher with an indicator of the usefulness of certain themes. Clearly Learning Management Systems comprise a key part of eLearning as do LMS modes. Using these themes, we created and deployed a survey confirming that students find Mode A (A1 + A2) LMS a useful means of accessing material to be used in class as well as information pertaining to the unit of study in general.

Acknowledgements

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References


\[3\] http://www.mq.edu.au/ltc/eval_teaching/leo.htm (accessed 2/10/09)
\[4\] “The flexibility provided through online delivery was important for me”
\[5\] “I had enough guidance to be able to use the online resources in this unit”
\[6\] “The online resources were organised in a logical manner”
\[7\] “The online resources and activities were valuable for my learning”
\[8\] “There were enough opportunities (online or face-to-face) for communicating with staff”
\[9\] “The resources provided with the unit (including online, written, etc) assisted my learning”
\[10\] http://www.mq.edu.au/ltc/eval_teaching/let.htm (accessed 23/10/09)
\[11\] “This teacher used teaching tools effectively (black/white boards, overhead projector, computer technologies)”
\[12\] “This teacher incorporated the use of computer technology effectively into the class”
\[13\] “This teacher used appropriate technology to enhance my learning”
\[14\] http://www.mq.edu.au/ltc/eval_teaching/led.htm (accessed 26/10/09)
Appendix A: illustrating the Grounded Theory network map of the eLearning hermeneutic unit