This is the authors’ final peer reviewed (post print) version of the item published as:

Orr, Stuart and Bantow, Ray 2005, E-commerce and graduate education: is educational quality taking a nose dive?, *International journal of educational management*, vol. 19, no. 6-7, pp. 579-586.

Available from Deakin Research Online:

[http://hdl.handle.net/10536/DRO/DU:30003213](http://hdl.handle.net/10536/DRO/DU:30003213)

Reproduced with the kind permission of the copyright owner.

Copyright: 2005, Emerald Group Publishing Limited
E-commerce and graduate education

Is educational quality taking a nose dive?

Stuart Orr
Graduate School, Deakin University, Malvern, Australia, and
Ray Bantow
Faculty of Business and Law, Deakin University, Geelong, Australia

Abstract
Purpose - Online education has been growing rapidly, but has not had the benefit of the extensive teaching pedagogy development of traditional face-to-face teaching. This paper aims to provide a review of the current literature and present the results of a survey, conducted to determine the effectiveness of a graduate online subject.

Design/methodology/approach - The literature was reviewed to identify measures of success and quality in online education delivery. These measures were then considered in relation to their application in practice via a case study based around a survey conducted at Deakin University in Australia.

Findings - A total of 16 relevant measures of teaching quality were identified in the literature. Most measures had elements of bias and some were more generally applicable to online learning. The case study suggested that the value of computer mediated learning in an online environment was limited and that a combination of print and computer mediated conferencing performed better in more of the identified quality matrices.

Practical implications - Online learning does not save teaching resources if standards of quality are maintained. It can be used to provide a remote teaching facility, provided it is backed up by resources such as printed study guides. For the subject evaluated, online mediated learning did not provide the same quality of education.

Originality/value - Whilst some research has been conducted in this area, no substantive grounded theory has been applied to postgraduate or fee-paying online education regimes. As a result, case studies of such applications can be very helpful in the design of future teaching systems.

Keywords Electronic commerce, Education, Graduates, Computer based learning, Quality, Australia

Paper type Case study

Introduction
Since the mid-1990s, we have seen an increasingly rapid entry of the "new economy" (e-commerce) into the hitherto cloistered domain of education. According to Boehle et al. (2000) approximately 54,000 online courses were available in the' USA in 1998, with 1.6 million students enrolled - a 70 per cent increase relative to 1995. Despite the number of institutions introducing online education, many institutions believe that the cost and effort required to meet quality objectives for programmes offered online often exceeds available resources (Phoha, 1999; White, 1999). Other educational institutions declare exactly the opposite (Boehle et al., 2000; Greco, 1999). Whichever group may be correct, this area certainly remains a controversial topic, the principal issue being quality standards and control (Greco, 1999). Even corporate training departments are now being influenced by access to online education, shifting their focus from instructional design to quality control. The literature also presents numerous opinions regarding quality in online learning, addressing education ranging from secondary through to postgraduate studies. As paying graduate distance education is one of the fastest growing areas of distance education and is one in which online learning has the potential to contribute significantly (Blotzer, 2000; Dobbs, 2000), this paper will focus on the impact of online learning on quality in this area.

Whilst this mode of teaching has facilitated delivery in large education programmes such as undergraduate degrees, it has had a profound effect on the delivery of smaller fee paying graduate level programmes. The latest "buzz-word" is of course, online delivery. Everybody wants it or is rapidly trying to develop a capability to deliver it, but what is it really? Does it mean convenience at the expense of quality, or is it yet another medium of delivery, for which new systems of delivery and quality control must be developed? This paper provides a review of the current literature on this topic and presents the results of a survey, conducted at Deakin University to determine the effectiveness of a trial graduate online subject. The paper examines the various
perspectives in the literature on what constitutes success in online delivery and the measures of quality that are appropriate to this process.

This paper provides an overview of some of the most recent literature on the topic of online learning and then presents a case study relating to a trial of online learning at Deakin University in Australia. The case study was prepared from interviews with the academic responsible for the unit in which the test was carried out and incorporates the results of a survey, which formed part of the testing process. This paper concludes with a discussion of the findings of the case study in relation to the observations in the literature. In particular, the paper addresses the divergent views on what constitutes appropriate online delivery from the quality assurance perspective (such as the level of personal interaction necessary for "quality" learning and the capacity of technology to support the process) and the intriguing absence of negative student feedback regarding online graduate education in the literature (which possibly challenges the role of the customer in defining quality in this process).

Literature review
The literature identified a range of quality measures that apply to online learning for students studying by distance (off-campus; content and currency of the material presented, convenience for the student, response rate to student queries, impact of student feedback, humanisation of the process, skill acquisition, career development assurance, student-teacher relationship development, one-to-one and one-to-many static learning interactivity (causal progression of ideas), dynamic interactivity (development of new relationships during the learning process), effectiveness of critical technology, suitability of writing style, rate of information availability (relative to traditional teaching), overall course quality assurance and institutional (university) commitment to the programme.

Interestingly, most of these measures have built-in elements of bias (either anti- or pro online learning) and some are also more generally applicable to distance education, of which online learning can form a part. As yet, the application of e-commerce to graduate education appears to be viewed in a subjective manner by both participants and non-participants in the process. The following discusses some of these in relation to the evidence presented in the literature.

The intimacy of the learning process is vital and is one measure of quality in which the academics believe that online learning is at a natural disadvantage (Boehle et al., 2000; Daniels and Rubin, 1998). Pritchard (1998), contends, however, that a virtual classroom is far more intimate than a traditional classroom because the participants expect more personalized responses, personal attention, and individualised experience. Written dialogues often produce more thoughtful contributions from students than oral discussions (Boehle et al., 2000; Carpenter, 1998). Greco (1999) claimed that some institutions believe face-to-face interaction to be essential if intimate communications are to be established in the learning process in the learning process, whilst other institutions are of the opinion that the increased accessibility of staff possible through computer mediated conferencing creates a greater feeling of intimacy for students studying online, than for those who attend a class for a brief period, once per week. Dumont (1996) suggested that one of the principal benefits of online learning is, in fact, that the learning process is more active and the collaboration more interactive. Phoha (1999) suggest that online learning cannot provide good academic/student interaction because the learning process is a dynamic one and cannot be conducted asynchronously. On the other hand, Carpenter (1998) claimed that a major online MBA provider, Athabasca, finds that students claim that the asynchronous communication actually increases the quality of the information conveyed and provides a more equitable environment for interaction. Pritchard (1998) identified the fact that as the instructor plays an important role as a mentor in the learning process, they must adopt techniques suitable for the environment in which they teach.

By 2001, 35 per cent of Motorola’s education must be carried out via the internet. By 2002 they plan for that to be 50 per cent. KPMG conducts 70 per cent of its training primarily online (Dobbs, 2000). Graduate students generally want to pursue their course work on their own schedules (Greco, 1999). Many students still do not have logistically acceptable access to quality graduate programmes, such as MBAs (Carpenter, 1998). It has been suggested that, in fact, the traditional structure of education no longer meets the needs of students who are viewing education as a part of a lifelong process, who require a just-in-time perspective to their education and those with competing pressures including full-time employment. They suggested that the availability and flexibility of online learning are important features of a pedagogy for learning in the twenty-first century. From an equity perspective, the internet provides a levelling influence over social structure, which is relevant to education.
The integration of emerging technologies such as multimedia, groupware and the internet is enabling significant innovations in education, possibly more so than any other profession (Angehrn and Nabeth, 1997). One of the current benefits of online learning is that student interactions are usually recorded as part of the learning process, thus making assessment and feedback more equitable (Dumont, 1996). This also relies on the organisation and academics to build suitable skills to enable them to respond using the capabilities of the technology, at a reasonable response rate (Clarke, 1996).

**Case study**

**Trial of online delivery at Deakin University**

Deakin University has an approximate total of 70,000 students enrolled. Of these students, approximately 40 per cent study off-campus, with some significant cohorts studying outside Australia. As a result, Deakin’s "virtual" campus is the largest of its five campuses. Recognising the importance of off-campus studies, Deakin determined, upon its formation as a University, that it would provide an on-off-campus learning environment which was equivalent to or better than traditional campus based teaching. At the time, printed study guides would develop that formed the backbone of the learning support that is provided to Deakin off-campus students. These study guides still provide the backbone of off-campus learning at Deakin today. The preparation of these guides is a major process, employing many educational designers and resulting in Deakin operating the largest (by volume) printing works in Australia.

In addition to producing print based study guides, Deakin has been using a proprietary computer mediated conferencing (CMC) system called FirstClass since 1995. This system has proved to be hugely successful and is now incorporated into the delivery of all of our off-campus study materials at the postgraduate and undergraduate level. It is so successful, in fact, that it is also extensively used by on-campus students who would not normally have access to such a resource at other institutions. Surveys of the use of CMC by on-campus students shows that this technology does in fact significantly enhance their learning environment by providing, for example, an opportunity to interact with the academic on a one-to-one basis. As a result of the rapidly growing size of classes in tertiary education in Australia, one-to-one interaction is not always possible in the classroom environment. These surveys also determined that the purpose for which on-campus students utilised this resource as part of their learning process was different to that of off-campus students, due to their different approach to learning and study environments.

Whilst FirstClass also allows materials, such as sections of a study guide and assessment details to be delivered to the students online, it was decided to test a system that would support full online delivery of study aids. The objectives of this test were to:

1. determine whether it would be possible/desirable to replace the current printed study guide (such guides can be approximately 600 pages long) with an electronic version;
2. evaluate whether the assistance provided to the learning process by CMC could be substantially increased by the addition of online learning materials; and
3. whether this system would enable us to offer a better learning environment than was currently achieved with the combination of CMC and print based materials.

When considering the delivery systems that Deakin would use, a major driver was the pedagogy of the education process involved. During the planning stage for the testing of the online delivery system, opinions remained equally divided on whether a focus on computer mediated learning (CML) and computer mediated communications (CMC) was more appropriate. Deakin elected to test the use of online learning materials in a CML environment using a proprietary internet based system called TopClass. Having determined the approach, the test focused on one of Deakin’s graduate units (Economics for Managers), which has approximately 400 students per semester studying off-campus and approximately 600 students per semester in overall. This unit was a part of the core of our MBA programme, so it was anticipated that the test group would be both critical and vocal in their responses to the introduction of a new technology in its delivery.

One of the methodological concerns was ensuring the valid testing of this system without introducing excessive bias resulting from current technology limitations (Dobbs, 2000). Deakin has been experimenting for some time with incorporating elements of classroom teaching into the virtual environment. The current limitations of the technology do not allow the incorporation of enhancements such as video recordings (Palter, 1999), although Deakin’s initial experimentations with audio streaming is proving to be more successful. In the 1980s, Deakin experimented with the provision of videotapes of lectures for its virtual campus. These were found not to be very successful as they did not significantly enhance the virtual learning environment in any particular way and were consequently discontinued. The experiences from the attempt at incorporating video
into the learning environment in the past, would suggest that online video streaming is also not likely to complement the virtual learning process in any significant way. This finding is also entirely consistent with Deakin’s experiences with its virtual campus for which we have learnt that a different pedagogy must be adopted[1].

One of the interesting findings of this survey, which did not reflect on the technology utilised as much as the concept of using online learning to enhance the learning process, was the significance of the pastoral role that the academic plays in the learning process for students at the graduate level. The survey demonstrated that the participants, being individuals with significant life and professional experience, required much less academic input, study supervision and guidance, than students with fewer life and professional experience. For example, out of 170 messages posted over a period in the unit being tested, in the standard CMC learning environment, the academic was required to post only three responses. The students themselves provided the rest of the responses. Thus, it would appear that the virtual campus, even if CMC alone was used, was still self-managing. The logical conclusion from the quality perspective of this finding was that any tool utilised to add online materials to a CMC learning environment or an attempt to convert a CMC to a CML learning environment needed to ensure that this mutual guidance process occurred as easily and effectively as possible.

Another interesting finding resulting from the survey - which again referred more to the existing CMC aspect of the learning, rather than the introduction of CML – was that this system facilitated not only equitable input into group exercises, but also provided an effective vehicle by which the supervising academic could assess both individual contribution and collaboration within the group. CMC works as an asynchronous communication vehicle between students working in different locations and so a physical record remains from their discussions and contributions. As the FirstClass (CMC) system was configured to provide each of the students with a separate and secure site for their study group, the academic was able to gain a “fly-on-the-wall” perspective of their interaction. This proved to be both useful in providing equitable grading, as well as resulting in the issues relating to group dynamics. Equity and assessment is of course an important quality measure for both on-campus and distance education.

The testing of online learning and the adoption of a CML learning environment also confirmed how important it was for the students to move to the centre of the learning process and for the academic to withdraw and act as a consultant in this environment (Greco, 1999; Pritchard, 1998). Student centered learning is very rare in education as the academic is normally at the centre of the learning process in a classroom. An off-campus CMC only learning environment still tends to place the academic at the centre of the learning process as they dictate the format and content of the printed learning guide. When the learning materials were transferred to a CML online learning environment, the academics were required to take a different role. The important education quality measure of responsiveness to student feedback in this environment could only be achieved when the academic transferred to the role of learning facilitator. In fact, this quality measure is not as significant in the off-campus CMC learning environment. It would appear that the mindset with which students approach the use of learning materials supported by CMC alone includes the expectation that the academic is at the centre of the learning process and is, in fact, represented by the printed study guide.

Deakin places significant emphasis on the quality measure of intimacy in the learning process, which, according to the literature, is a quality measure that applies to all learning pedagogies (Boehle et al., 2000). Whilst mechanisms were normally built into the learning pedagogies for students studying both on-campus and off-campus in a CMC environment[2], there was a concern that the CML learning environment may provide sufficient intimacy in the learning experience. The survey determined that the intimacy levels in the CML environment being tested were equivalent to that of the CMC learning environment currently utilised by Deakin. The CMC component of the learning environment that was still present when the CMC learning environment was implemented was found to be primarily responsible for the maintenance of this level of intimacy.

The survey also identified the fact that the quality of information transferred in both directions was higher using a CML and CMC learning environment, than for on-campus learning. This observation is supported by the literature (Pritchard, 1998), which identifies the fact that, as both the questions and the responses raised in an asynchronous communication environment are normally better considered, the quality of information transferred in both directions is greater.

This survey also identified a number of negative findings. First, CML, as tested by implementing online learning, did not provide significant advantages relative to the CMC learning environment. This was despite the inherent characteristic of this learning pedagogy that the student is moved to the centre of the learning process. The added technological complexity of the process was also determined to represent a threat to some of the students and required all the students to acquire new skills to adequately participate in the learning
process. Whilst it can be argued that acquisition of such skills is becoming mandatory in the current internet facilitated business environment (Dobbs, 2000), the respondents indicated that the time required to acquire these skills was a barrier to their full participation in the CML learning environment. The regular participants in the CMC learning environment found the transition to CML to be less of a barrier.

Discussion
This paper has referred to online and off-campus learning, as though these were almost synonymous. This is naturally not the case, however, the level of demand for off-campus education worldwide has made the online delivery of such education an important consideration. Despite this, however, the tool should not be confused with a pedagogy (Angehrn and Nabeth, 1997). Online learning may not perform adequately in all the measures of quality that apply to the pedagogy for off-campus education that the institution selects (Phoha, 1999). Consequently, the appropriate tool to deliver the learning must be adopted for the pedagogy selected to establish a process that can potentially reach satisfactory quality levels (Pritchard, 1998). The tool should not be selected first and then a pedagogy adopted to meet the capabilities of that tool. The literature and case above demonstrate that a learning environment which is perceived to be strong in quality of education measures such as intimacy, relevance, customer focus and interaction is one in which the online learning technologies are very carefully managed (Greco, 1999). This observation brings into question the potential quality performance of distance education provided in a CML only learning environment. This is a significant question as many institutions are now considering adopting this off-campus pedagogy through posting their learning materials on the world wide web. It could be postulated that this delivery mode is tantamount to correspondence education, which is identified in the literature to have a range of significant weaknesses (Greco, 1999). Whilst such a learning environment may be suitable for some learning objectives, it is unlikely to meet all of the quality measures that might apply to graduate fee-paying education. Feedback from other surveys of students studying in Deakin's virtual campus indicate that two-way interaction and, in many cases, face-to-face interaction are still perceived to be important elements of the learning process.

One of the most important findings to result from testing the CML learning environment was identifying the elements of the selected learning pedagogy before determining how to deliver it. It is very easy to be influenced by the apparent "features" of online learning technologies and not consider their role in the learning pedagogy that the institution wishes to adopt.

Conclusion
The conclusion of the test of the implementation of a total online learning environment for a graduate unit at Deakin was that, at this stage, the value of CML learning via online learning is limited. In addition it was found that, for Deakin students at least, a better learning environment is currently achievable through a combination of print based learning materials and CMC. In fact, it is safe to say that a blend of both these media is the most appropriate environment. In addition, the research has confirmed that there is no effort to be saved through the implementation of online teaching technologies if equivalent quality performance in the learning process is to be achieved. This observation is identified even in the literature that is strongly in favour of online education (e.g. Carpenter, 1998).

Notes
1. Many of the observations in the literature relating to the quality of online learning are based on the assumption that online learning is an attempt to mimic classroom learning. Deakin's experience in the electronic provision of distance education has lead us to conclude that online, off-campus learning is as different from on-campus learning as grounded theory based learning is from experimental learning. All of these pedagogies have their own strengths and weaknesses, however for the learning process to be successful, it must be realised that different pedagogies suit different learning objectives and environments. The realisation of this difference is vital if the correct quality control systems and measures are to be integrated in the learning processes.
2. Deakin has found that its intimacy levels for CMC based off-campus learning are equal to or greater than those for on-campus learning. This perspective is supported by the literature (Blotzer, 2000). For example, a group of students participating in the CML education environment in the unit being tested met for the first time to participate in a revision weekend. Although none of these students had ever met face-to-face, their level of knowledge of intimate details of each other was striking. Furthermore, they displayed observable signs of intimacy, which are not normally evident, even amongst on-campus students in the same unit. Investigation of their interaction on FirstClass indicated that this tool had provided the basis for the intimacy identified.
References


Phoha, V.V. (1999), "Can a course be taught entirely via email?", *Communications of the Association for Computing Machinery*, Vol. 42 No.9, pp. 29-30.


Further reading


