Delivering an Online Global Masters Degree: How Can We Manage Learning in a Managed Learning Environment?

Susannah Quinsee

quinsee@soi.city.ac.uk

Jo Wood

jwo@soi.city.ac.uk

City University, London.

ABSTRACT

This paper considers ways in which online education can be managed and monitored to ensure that independent learning is promoted and students gain access to high quality resources. Using a distance learning Masters course as a case study, we evaluate the effectiveness of three aspects of the online learning experience.

Keywords

Networked learning, virtual library, managed learning environment (mle), distance learning, computer mediated conferencing (CMC)/discussion boards.

INTRODUCTION

The past few years have seen dramatic changes in the way that higher education manages information through the growth of e-learning programmes. This is particularly apparent from such projects as the Massachusetts Institute of Technology (MIT) OpenCourseware (OCW) initiative. MIT has launched the OpenCourseWare project because it 'reflects MIT's institutional commitment to disseminate knowledge across the globe' (MIT, 2001). They claim that OCW provides:

> *a way to share [MIT's] thinking about the content of a modern curriculum in all the areas in which MIT excels. Users of this site may include other academics around the world and individual learners who may not have access to similar educational materials (MIT, 2001).*

Students will not be able to gain credit for MIT degree programmes or courses by using OCW material, as 'the most fundamental cornerstone of the learning process at MIT is the interaction between faculty and students in the classroom, and amongst students themselves on campus' (MIT, 2001). This is the key to MIT's strategy. Resources can be shared online, across the world, however it is *communication* which is the heart of the learning process. It is this interaction between students and tutors which informs the lecture material and drives the education of students.

MIT is not alone in providing access to free course material via the Web. In the US, Barnes and Noble online now offers free courses in a variety of subjects from business education to life enhancement. In the UK similar initiatives are being developed. ESRI, a major provider of Geographic Information software and services, has launched its virtual university, where you can sign up for basic modules for free or pay for more advanced online training. However, often commercial rather than pedagogical issues

motivate these initiatives.

For UK higher education, e-learning, in its various forms, has been heavily debated. Most universities have developed e-strategies, for example Warwick University's detailed plan includes a proposal to lease laptops to students in an attempt to ensure all students have access to online course material. Yet one of the main obstacles to online education in the UK is not access to hardware, but the lack of reliable, fast Internet connections. The development of the E-University by the Higher Education funding bodies, demonstrates one vision for the future of higher education in the UK. UK eUniversities Worldwide's mission is to 'provide an e-learning platform to deliver high quality education to a global market principally via the internet' (eUniversities, 2001). By fostering collaborative working relationships between the public and private sectors, the UK eUniversities Worldwide intends to improve the market for UK degree courses and attempt to ensure that quality standards are applied to e-learning. Developing educational programmes that can be taught solely over the Internet has the distinct advantage of allowing universities to increase their marketplace globally as well as providing opportunities for widening access to education.

CASE STUDY: MASTERS IN GEOGRAPHIC INFORMATION AT CITY UNIVERSITY

It is with these benefits in mind that the Masters in Geographic Information (MGI) was developed at City University, London. Based in the Department of Information Science, the first intake of students was in September 2000. Designed for delivery as either face-to-face or via distance learning the MGI is aimed at professional and part time applicants across the world. Students can choose either to study full time at the University in London or full or part time via distance learning. All students have the opportunity to visit the University if they wish during their period of study. Currently there are approximately fifty students enrolled on the MGI, but the online resources are used by around 500 students in the Department as a whole.

A virtual learning environment (WebCT) is used to mange the delivery of the MGI. The following online resources and tools are used by the course:

Lecture materials

Course and Departmental information

Coursework submission

Multiple choice quizzes

Discussion boards

Chat rooms

Group work functions

Email

Survey functions for obtaining module and course feedback

The virtual learning environment is the primary method of communication between staff and students for distance learners. All students take a total of ten taught modules and then undertake a written research project over the final summer of the course. As the course is a Masters level programme teaching follows a relatively structured and traditional method of delivery. Lectures are delivered on a weekly basis and include associated feedback tasks that the distance students are encouraged to complete. These tasks are not compulsory, but enable the course team to monitor the progress of distance students and spot those that are struggling at an early stage. This method of voluntary assessment also enables to the students to plan their studies and review their own progress with the course. Feedback tasks may include writing précis of the lecture material, objective testing, submitting the answers to exercises via the discussion board or undertaking a review of a particular resource and posting evaluations to the discussion board. Students also take written examinations either at the University or an approved local centre.

A certain number of the modules are also taken by other postgraduate students in the Department of Information Science. This encourages interaction between face-to-face and distance students. However, this mixed mode of teaching raises issues concerning access of material for face-to-face and distance students. One of the major strengths of e-learning is that students can be easily directed to online information sources, but a concern is how to ensure that students on the distance programme receive parity of access to resources. The MGI has attempted to address this problem by establishing a virtual library of relevant information sources on a secure server housed by the University library. This resource uses the Athens authentication system to provide access to a range of material from book and journal articles to examination papers and dissertations.

The first year of operation of the MGI raised a number of issues concerning the management of resources and learning in an online

learning environment. By evaluating three main functions of the virtual learning environment used to deliver the MGI, a number of key findings are made concerning the way students learn and the differences between face-to-face and distance students. The three functions examined are

the dissemination of content-rich materials

the effectiveness of the threaded discussion forum for the exchange of ideas and learning support

the importance of the metaphor in information organisation.

These aspects were evaluated through the use of qualitative and quantitative questionnaires, content analysis of WebCT discussion archives and web logs.

Dissemination of content-rich materials

Each module consists of ten lectures released weekly to students. Once the lecture is made available to the students they have access to the material for the remainder of the course. It is presumed that students will access each lecture in turn and complete the associated tasks before progressing to the next lecture in the course. Students' access of materials, including what they have accessed and when, can be tracked and monitored through the web server. This data can assist with evaluating the learning process and measuring students' progress. Analysis of this information has shown that there are a number of different archetypes of student behaviour regarding usage of online material.

Archetypal behaviour concerning participants use of computer mediated conferencing (cmc) facilities has been well documented. The concept of 'lurking', referring to those users who do not participate to discussions, is probably the most familiar. Salmon (2000) identifies different type of lurkers, such as 'freeloaders' and 'sponges', in order to promote a fuller understanding of this form of behaviour (p.80).

It is possible to apply a similar approach to students' access of online lecture materials. For example, we could say that a student who accesses materials once on a regular, weekly basis and then again during a revision period would generate the following pattern of access:

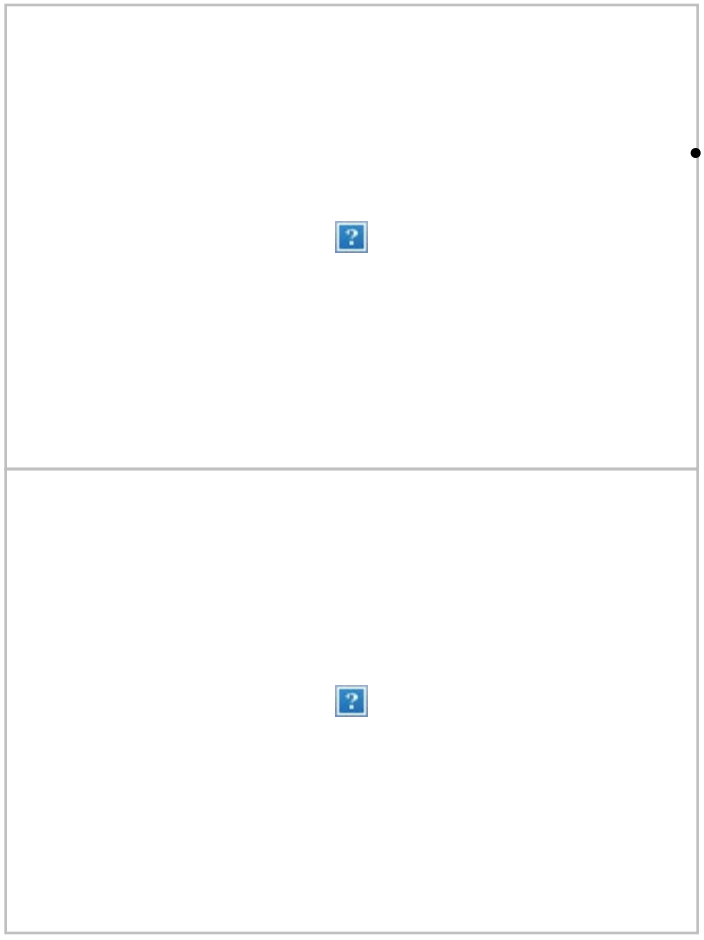


Figure 1: Example of a student's access to material.

Key:

- Represents access to a lecture

However, we have found such student behaviour to be rare and other patterns of access are more common.

Figure 2: The Hoarder

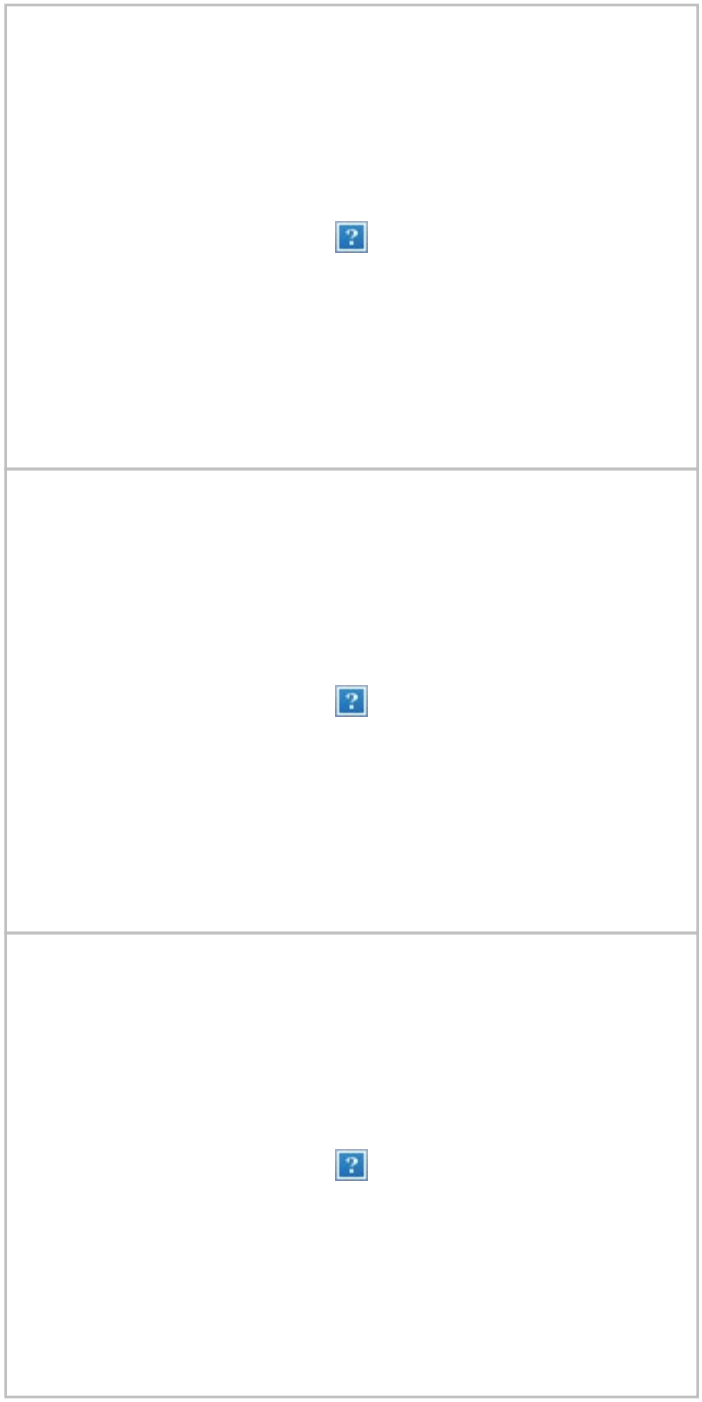
Lectures are accessed in batches by the hoarder. The student began the course late and seemed to be catching up during the module. There is some access around revision time. It appears that some lectures are printed out and then referred to offline. Others, however, are returned to on a occasionally.

Figure 3: The Expert

Expert students may not access all the lecture material. This student only accessed a couple of lectures during the taught element of the module. Instead, lectures were only accessed around the time of the coursework (just before day 50) and then once during the revision period. The student seems very confident of their abilities in this subject area.

Figure 4: The Struggler

The struggler begins the course late and attempts to catch up



by accessing the early materials in batches, similar to a Hoarder. They then move into a weekly pattern, but the curve of the graph illustrates they are gradually lagging behind. This is also signified by the access at the later stages of the course which is again in batches. There is no access at revision time - the student did not complete the course.

Figure 5: The Refresher

Materials are accessed on a weekly basis by the refresher, but the student is constantly returning to previous lectures for reference and clarification. Even after the taught element of the module has finished (around day 70), the student returns to the lectures. There is more activity around exam time, particularly focused on lectures held later in the module, perhaps those which the student had less time to study when they had other pressures at the end of the term. The behaviour of the refresher is directly opposite to that of the Hoarder.

These archetypes illustrate extreme patterns of behaviour, yet they are helpful in identifying how students engage with the online resources. Interestingly, there is not an obvious correlation between the mode of study and behaviour. Students in both modes of study exhibited a variety of these characteristics, however what can be said is that more students in face-to-face mode tended to revisit material, in a manner similar to the Refresher. This could be because face-to-face students have access to computing facilities on campus and are charged for printing out lecture materials, therefore they tended to revisit the materials online. In addition, face-to-face students may refer to lectures online whilst completing practical exercises. Distance students, on the other hand, would not want to spend more time than necessary online if they are paying for the connection and would therefore be more likely to print materials out. Despite this, all types of students returned to the materials during the revision period, except those who did not complete the course.

By identifying archetypes of student behaviour and using the tracking facilities available within the virtual learning environment, we are able to gain a much greater insight into how our students are learning and how they are using the lecture material. In addition, students with difficulties can be discovered at an earlier point in the course, thereby assisting with retention and progression. The issue of retention in distance learning courses can be a major problem, but if we can chart our students' progress and tailor the delivery of our courses accordingly then we have a greater chance of responding to the diverse needs of our learners and improving satisfaction with the course.

Attempts can be made to tailor online courses to the individual needs of students and embrace the flexibility that e-learning can offer. As the behaviour of the ‘Expert’, illustrated in figure 3 above, indicates not all students feel that they need to access every lecture when it released to them. When delivering education to mature, part time students who are in full time employment there may well be vocational or technical aspects of the course that the students regard as irrelevant or unnecessary.

Lecture materials for MGI students have been developed to incorporate a series of learningNotes. These are brief supplements, similar to fact sheets, that support material outlined in the lectures. They may contain further information on a specific topic or explain how to develop a particular skill. Students can choose to access these learningNotes when they are reading the lecture or at a later date. They may decide that they do not need to read a particular learningNote at all. LearningNotes have been developed to assist students manage their learning and their time more effectively. Figure 6 illustrates how learningNotes are accessed from lecture material.

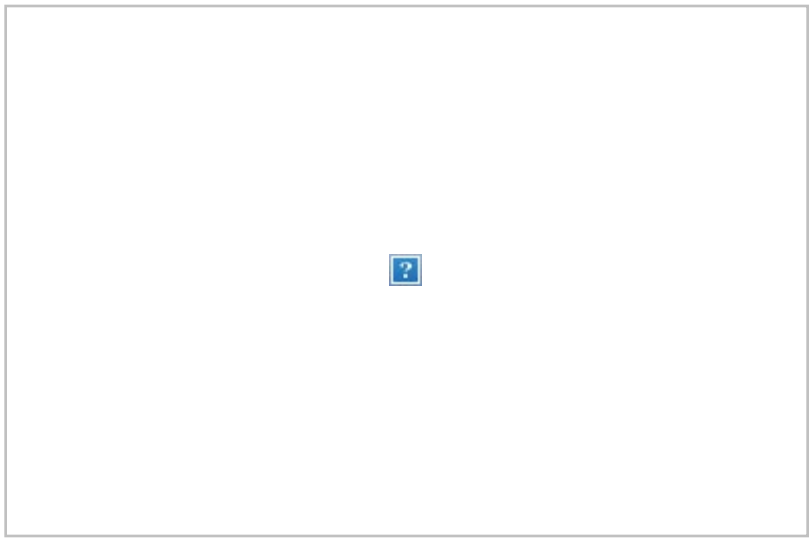


Figure 6: Example of a learningNote

The effectiveness of the threaded discussion forum for the exchange of ideas and learning support

The discussion boards (or conferencing facilities) used by students on the MGI vary between modules. What is common to all modules is that as each lecture is released a discussion thread is started relating to that particular lecture to encourage academic discussion or questions on particular points. In turn, when coursework or other forms of assessment are released similar discussion threads are generated in order to manage the thread of conversation. Students have access to a general area for miscellaneous enquiries too and there is an announcements topic for sending out important information for students. This area is locked so as to highlight the importance of such information for students.

Some module leaders choose to use the discussion boards for non-assessed feedback activities for the students. This has been successful in encouraging students to engage in pedagogic and academic questions on the course material. In this second year of the course, students have also requested that private feedback exercises sent to lecturers is made public to other students through the discussion board and subsequently students have been involved in voluntarily contributing their feedback for public discussion.

We analysed discussion board postings by categorising messages into the following criteria:

- Questions/comments about WebCT – such as ‘how do I submit assignments in WebCT?’
- Questions/comments on e-learning – for example ‘when should I use the discussion board and when should I use email?’
- System faults – such as ‘the link to lecture seven does not work’.
- Academic – any comments or questions pertaining to the course or lecture content.
- Module procedure – such as ‘when is the coursework due in?’
- Unsolicited student information – for example ‘you might find the following web site useful’.
- Programmed tasks – postings relating to specific tasks students have been asked to complete.
- Social – jokes, asides and so on.
- General information – postings relating to the course generally, such as ‘module feedback questionnaires are now available’.

Postings were then identified as ‘untargeted’, ‘addressed to students’, addressed to staff’ and ‘responses’.

In our analysis of the module discussion boards we have found that the usage varies substantially between distance and face-to-face students. During the first year of the course, each discussion board was primarily used by distance students to contact tutors and other students. The academic content of these posting remained high. Unsurprisingly those modules which included programmed

tasks to be completed via the discussion board generated more messages, interestingly however, these messages were not all related to the tasks given. Where module leaders had set tasks for the students, general traffic on the boards remained higher and more social interaction was undertaken. For example, one module (Geographic Information Science) which did not include programmed tasks had only 10% of messages that could be classified as social and no unsolicited student input. However, another module (Visualizing Geographic Information) which did include programmed tasks had nearly 25% of messages which were social or included unsolicited student information. It appears, then, that using the discussion board for programmed tasks encourages students to use this facility for other communication too.

Due to time pressures, the first year of the MGI included a relatively brief induction to WebCT within the context of one of the taught modules. There was not a separate induction on how to use the communication tools and no 'netiquette' guidelines were put in place. This had an effect on the activity on the discussion boards themselves. In the first year, a significant proportion of messages on each module deal with disseminating general information to students – this constitutes at least 20% of postings on each module and on some modules as much as 60%. By the second year of the course, this dropped to less than 10% of total postings made. The reasons for this change in discussion board usage has occurred to due strategies introduced to manage the flow of information more effectively.

Firstly, the introduction of an induction programme for students starting in September 2001 has resulted in a much greater use of the discussion board to discuss academic questions and issues. Students are more comfortable with using the discussion board after the induction programme and gain a sense of what it should be used for. Secondly, staff have developed new ways of disseminating information to students. General issues are now dealt with through the Resource Centre, to which all students have access, and some discussion boards have sections which deal with errors or faults. Thirdly, management of the discussion board has been streamlined by creating topics dedicated to certain groups of students. This ensures that students do not become confused by messages that are not related to them. Fourthly, modules for each course in the Department now have an individual section of WebCT. Last year, only the MGI had this facility, but it became apparent that this was a good way of contacting students on course specific issues as well as encouraging peer support. 'MGI General' assisted with encouraging students professionally by enabling contact between students working in the GI industry. Finally, response times to discussion postings have been considered. During the first year of the MGI there was concern amongst the course team that the discussion board was used as a help desk facility, rather than a forum for discussing academic issues. The tendency was for academic staff to answer student queries rapidly in order to deal with their problems, however, this did not always have a positive affect for encouraging peer to peer support. Students developed the expectation that their queries would be responded to immediately by staff, not by other students. This year, the team has attempted to draw back from the discussion board and let students support each other. This does not mean that staff are not on hand to address student enquiries, but the emphasis has shifted.

These strategies have been utilised to manage the flow of information. The result has been that there is a reduction in procedural questions and less duplication of announcements. Actual volume of postings has increased, but this is a positive factor as the postings this year indicate a better understanding by students of how to use this means of communication. A greater confidence in using the discussion board has meant that students feel more comfortable engaging with other students and asking for information instead of receiving it from tutors.

The importance of the metaphor in information organisation

Using familiar metaphors to plan the organisation of information online can be beneficial in assisting students' orientation to the online environment. This is especially true for distance students who may never come into face-to-face contact with lecturing staff or receive any face-to-face training on using the online resources. The structure of the online learning environment for the MGI has been carefully considered. Ensuring that students are able to obtain easy and clear access to information is vital.

In the first year of the course a section, or module, of WebCT was established entitled 'An introduction to online learning'. This was used to provide a brief guidelines for using WebCT and other electronic resources. This year, this module has been renamed the Resource Centre. Information housed in the Resource Centre includes:

- Departmental policies and procedures
- Study skills guides
- Induction material
- Module feedback questionnaires
- Dissertation topics

- Communication with personal tutors
- WebCT user guides
- Information on access to electronic resources

Every user of WebCT in the Department is given access to the Resource Centre and the induction programme for WebCT was based around using this resource. The advantage of the Resource Centre is that it enables information to be disseminated to students easily as well as providing a central means of communication. Face-to-face and distance students can interact on the discussion board over a number of issues, which encourages peer support and assists with orientation to the online environment. During induction, students were asked to introduce themselves to each other on the discussion board in the Resource Centre. By using a more familiar metaphor of a Resource Centre, navigation of the online environment becomes more intuitive. Students should be able to identify with the notion of an online resource centre and make assumptions about what it may contain. If they are searching WebCT for information, it therefore becomes more natural to go to the Resource Centre first. Furthermore, this has assisted with ensuring that material is shared across modules and avoids duplication.

Traditional educational metaphors are also used to assist delivery of the course. Students access online 'lectures' and complete online 'practicals'. Chat rooms are named 'office', 'lounge' and 'seminar rooms'. Yet the activities and participation that students are expected to undertake related to these lectures go beyond traditional modes of teaching. Students are encouraged to engage in more collaborative exercises and exhibit increased self-motivation whilst undertaking their learning online.

The concept of using familiar metaphors to assist with the management of information online has also assisted with the development and use of the Virtual Library. This resource has ensured that distance students are able to access quality resources and gain the same standard of education as face-to-face students. By terming this database of material a library, students have an immediate understanding of the kind of resources contained within this environment. In addition, this helps to distinguish between information contained in the Resource Centre and the resources that are available in the virtual library. It is easier to explain the different functions of each resource by using such metaphors.

By developing a central core of resources that are accessible to all students, a sense of an online community can be generated. Both distance and face-to-face students feel that they are sharing in the same educational experience and can help each other use the online resources. The addition of the Resource Centre has been particularly successful in encouraging peer support related to issues regarding the use of the online environment and has provided valuable feedback on the management of WebCT. There is still more that could be done to enhance the facilities for distance students in particular and one concern is that providing access to shared material may engender the feeling amongst distance students that they are disadvantaged compared to their face-to-face counterparts. However, the advantages of sharing material outweigh such concerns and prevent distances students feeling isolated or not part of an educational community.

CONCLUSION

Several key findings emerge from this evaluation. Dissemination of information must be sensitively controlled in order to prevent information overload. Introducing the Resource Centre and course specific modules has assisted with this. Students need clear pointers and structure embedded within the online learning environment in order to use it to its full potential. Related to this is the management of threaded discussion lists. Discussion boards and communication facilities need to be carefully managed in order to ensure that information is easily available for students. In addition, the form in which the information is given needs consideration as not all types of information are well served using current technologies. The structure of the online environment should be responsive to the needs of the users whilst attempting to retain an intuitive navigation system. This can assist new users with orientation and help existing students locate essential resources. Using familiar metaphors can enable this. Finally, and perhaps most importantly any e-learning programme must be responsive to the continually evolving expectations of its users who may at different times feel both challenged and liberated by this approach to education.

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