

Effective Delivery of On-Campus Networked Learning: Reflections on Two Case-Studies

John Cook and Tom Boyle

*School of Informatics and Multimedia Technology, University of North London, 166-220
Holloway Road, London N7 8DB. Email: j.cook@unl.ac.uk and t.boyle@unl.ac.uk*

Abstract: This paper compares the experience of the two studies. In the first study on-line group work was structured around the production of essay-style critiques and the development of prototype multimedia resources. The second study describes an approach to designing on-line interactions between tutors and students that aimed to promote critical debate about an assessment task. The paper then sets down a framework of five key issues that markedly influence the effective delivery of networked collaborative learning in a campus context. The paper concludes by suggesting that if pre-delivery planning of networked learning gives detailed consideration to these issues, then the teaching and learning experience will be greatly enhanced.

Introduction

The purpose of this paper is to identify and explore key issues in the effective delivery of campus networked learning. The first case study, at Manchester Metropolitan University, involved networked, collaborative work carried out by conversion M.Sc. students. The second study, at the University of North London, involved sixty-four second year undergraduate multimedia students.

Following a description of the two case studies, we present a comparison of the experience of these two studies. This comparison led to the identification of a set of five key issues to be considered when implementing networked on-campus learning. The first four issues are concerned with the internal module design and the nature of the interventions. The fifth issue involves external concerns.

First case study: Manchester Metropolitan University

The complementary use of communication-based pedagogical re-engineering and interactive multimedia learning provides a significant opportunity to develop advanced learning environments. The aim of this project was to develop and evaluate such a learning environment.

The implementation of learning technology has involved interventions on two main dimensions: producing enriched courseware, and re-structuring classroom practice (Collis, 1997). This project involved complementary interventions on both these dimensions. The project was conducted with twenty-six M.Sc. students studying a module on multimedia systems design. A multimedia web site was produced to extend the module courseware. The students also engaged in Web-mediated group collaborative work which involved a critique and extension of the courseware materials.

The multimedia web site, the 'DFML' site was designed to complement the book 'Design for Multimedia Learning' (Boyle 1997). The book remained the main medium for the structured exposition of underlying concepts and theoretical structures. The function of the site was to provide a learning experience that could not be supplied by the book, e.g. by providing interactive examples that illustrate concepts, and providing access to source materials on the Web. The view was that the site and book together should provide a richer learning experience than either could alone.

The DFML site was designed so that it could be incorporated as a courseware component within class level electronic support environments, such as WebCT. WebCT is a commercial 'classware' product for the Web. It supports the provision of hypertext notes, on-line course calendars and on-line quizzes. It also provides a bulletin board facility that supports group conferencing. The tutor is provided with tabular information based on the automatic logging of student activities. The tutor can thus keep track of student progress, including student contributions to discussion groups.

In the spring 1999 semester the DFML site was introduced into the course. The students were given access to a new Web site. The home page for this site contained two main links. The first link was to the DFML Web site; the second link was to the bulletin board facility in WebCT. The students were organized into small groups. Each group was set up as a separate discussion group in the WebCT bulletin board facility. The students were asked to work cooperatively on two tasks: to produce on-line critiques of the chapters in the book/site, and to produce a small multimedia resource to illustrate a topic in the book/site.

The evaluation entailed a mixture of quantitative and qualitative methods. This mixture of methods provides summary numerical data supported by richer insights (England and Finney 1999, Atkins 1993). A questionnaire was used to gather information on the students' assessment of the DFML site, and the use of electronic group work using WebCT. This questionnaire was followed by focus group discussions.

The evaluation indicated that students found the group bulletin board facility in WebCT very easy to use. The overall median score was 3.5 out of 4. Observation and talking to students throughout the course showed that the group conferencing was very popular. This view was reinforced by student comments in the focus groups. There was a mixture of full and part-time students on the course. The flexibility of structured electronic communication was especially appreciated by the part-time students. It helped them to keep in touch throughout the week with the full-time members of the group.

From the tutors point of view the use of WebCT was a very useful innovation. The tutor was entered as a member of each group. He could thus keep track of the activities within the groups. These activities included the number of communications sent and read in the group bulletin boards. The logging facilities in WebCT made it easy to produce summary reports on the students' activities. This knowledge provided the basis for greater confidence in allocating assessment marks to the groups.

In overall terms the project provided integrated support for students of multimedia design on a series of layers. The top layer of support was provided by the use of computer conferencing to support collaborative group work. This was a successful innovation for both the tutor and students. The main courseware, the DFML site, was designed to complement hard copy text and provide enriched access to multimedia experiences. The integration of the book, DFML site and computer conferencing seemed to work well. The multimedia resources providing access to sound, video and animation elicited positive reactions from the students. The process of allowing the site to be updated by its users requires further work and exploration.

Second case study: University of North London

The second study, at the University of North London (UNL) in 1999/2000, involved sixty-four second year undergraduate students. These students were following a module on 'Communicating via Multimedia'. The module web pages can be found at:

<http://www2.unl.ac.uk/~exbzcookj/IM220/intro.htm>

Participants in the module were involved in assessed on-line discussion groups that aimed to drive the learning (Knight, 1995), foster a 'community in inquiry' (Lipman, 1991) and provide an opportunity for vicarious learning (McKendree et al., 1998). A community of inquiry is teacher-guided; it places an emphasis on social interaction and cooperative learning, and it involves reasoning and judgement about knowledge. The starting assumption for vicarious learning is that much real learning occurs through observation of other learners engaged in active dialogues.

On the module students had to complete two assessment tasks, each carrying equal weighting (there was no exam). The focus of this section is assessment one, which involved groups of students cooperating to devise and apply criteria for web site evaluation. We were particularly keen to design the interactions with students on the module in such a way that would promote critical debate about the assessment task. Our initial idea on the module was that the assessment would both meet some of the module learning outcomes and drive some of the learning (Knight, 1995). The learning that the assessment one was trying to foster was critical thinking and argument (assignment two had as a learning outcome some critical evaluation task, so this first assignment was also preparing students for this).

A live debate relating to the assignment would not, in the first author's view, have taken place if students were not motivated in some way. Consequently, the marking scheme (out of 50) for the assignment included 30% for group work and 20% for individual work. The individual marks were to be allocated as follows:

Individual contributions (to online debate)

10% ability to answer questions

10% taking a lead in the discussion, showing awareness of the issues.

Students were asked to make at least three postings to the online debate.

The evaluation of the module made use of an anonymous questionnaire with space for additional comments. Sixty-one out of sixty-four students taking the module completed the questionnaire. Part 1 and 2 of the questionnaire had 11 questions that related to the web site and the online debate. Part 3 of the questionnaire is not dealt with here. Each of the 11 questions in Part 1 and 2 asked the student to respond with a score between 1 and 4, where 1 was 'very poor' and 4 was 'very good' (or some equivalent wording appropriate to the question). The full questionnaire results can be viewed by following the link provided at the top of the module web page (the address is given above).

For a 10 day period for the assignment there were around 400 postings in the online debate. The quality of dialogue varied (of course) but student feedback via the module evaluation was generally good. Most of the students were reasonably satisfied with the web pages and conferencing used on the module. Table 1 shows the total student responses to all 11 questions, by score category (1 to 4) and expressed as a percentage of the total number of question responses (i.e. $11 \times 61 = 671$). On a range of issues a total of about 67% students rated the web site and conference as good to very good (i.e. the sum of Score 3 and Score 4).

Table 1: Student scores as a percentage of the total responses

Score 1	Score 2	Score 3	Score 4
5.7	27.4	43.4	23.2

Questions 5 and 6 in Part 2 of the questionnaire related to the online debate:

5. The module conference was meant to give you an opportunity to get involved in a critical debate. To what extent did it succeed in this aim?

6. How useful did you find the ability to read the debates that took place in the threads for other groups?

Table 2 shows the total student responses to each question, by score and expressed as a percentage of the total number of responses to that question (i.e. 61). The response to Question 5 shows that about 56% of the students thought that the conference was good or very good at meeting its aim. The response to Question 6 shows that about 69% of the students thought that the ability to read other students' debates was a 'good' or 'very good' opportunity for students. The response to question 6 is positive indicator that work, in the area of vicarious learning, may in future be welcomed by students.

Table 2: Student scores for specific questions

	Score 1	Score 2	Score 3	Score 4
Part 2 Question 5	6.6	37.7	39.3	16.4
Part 2 Question 6	1.6	29.5	42.6	26.2

However, the above generally positive results must be seen in the context of additional comments made by students on the questionnaire. These comments highlighted the fact that a major problem

faced by the students was the constant crashing of the network. This in turn frustrated students as they tried to use the conferencing facility. Furthermore, individual comments made by students were not always positive with respect to the module web site and online debate.

Key issues in the implementation of networked on-campus learning

In this section we set down a framework, based on the experience gained from the two case studies, of five key issues that markedly influence the effective delivery of networked collaborative learning in a campus context. Briefly, the five issues are:

- managing the relationship between new and traditional pedagogical techniques
- the task goal set by the tutor
- management of motivation and assessment for a particular student population
- importance of the delivery environment
- evaluation of the effectiveness

The first issue is managing the relationship between new and traditional pedagogical techniques in the learning environment. The first study used a mixture of traditional (e.g. textbook) and new resources in the learning environment. The detailed exposition of underlying theory and concepts was conveyed through the textbook. The web site acted to complement the book by providing access to multimedia illustrations and interactive examples. This combined courseware was in turn embedded in a class organisation that was augmented through the use of electronic communication. The skills required to act as an online tutor are different to those required in face-to-face tutorials (see JISC/CALT, 2000, for detailed guidelines). Liaison with other tutors (when involved) in an online debate needs to be orchestrated. Tutors need to have a clear picture of the skills required when responding to a large number of students in a time constrained, assessed, online debate (in the second case study, each student could have potentially made at least 3 postings each over 10 days). The first author of this paper developed a tactic of 'targeting', where people who had contributed once or not at all were targeted with questions in order to help get their number of postings up to the required 3 postings. The number of postings made by the two module tutors in the second case study differed on a numerical basis, with the first tutor (the first author of this paper) making 103 postings and the second tutor (not an author of this paper) making 34 postings. It is fair to comment that the second tutor did engage in some

quality interactions. However, online tutors must be forewarned that it is advisable for tutors to expect to mix their *interaction style* between that of targeting low contributors with short questions and 'quality time' style interactions (i.e. reflective and discursive dialogue).

A second important issue is the task goal set by the tutor. Networked learning may be used as a new means of delivering traditional learning targets or may be used to promote new learning goals such as discursive argumentative skills, as was the case of the second case study.

A third issue is the management of motivation and assessment for a particular student population. The prior knowledge and motivation of students clearly directly impacts on the ease or difficulty of getting students to use on-line collaborative learning. This directly affects the degree to which extrinsic incentives need to be applied to motivate the students. Both studies used the assessment criteria to some degree to motivate students to contribute to the on-line discussion groups.

Fourthly is the issue of the importance of the delivery environment. There are relative advantages to be obtained from using an integrated support environment, used in the first study, as compared with a hand-crafted delivery environment as used in the second study. For example, in the second case study it was found that Netscape Collabra did not assist the course tutors in tracking students who were not making contributions to the online debate. This was done 'manually' by the first author and then a list of the names of non-contributors was posted on the notice board (one colleague described this tactic as 'naming and shaming!'). By the end of the 10 days period for the assignment in case-study two, only 6 out of 64 students failed to make a contribution to the conference. On the other hand, an environment like WebCT provides essential tools that automate the process of tracking students.

The final issue is the evaluation of the effectiveness of the delivery of on-campus networked learning (this includes issues relating to infrastructure), plus proposals for redesign. In terms of the second case study, we feel that the approach taken to the assignment on the module gave students from a variety of backgrounds the opportunity to engage in serious critical debate. A future aim on Communicating via Multimedia could be to make these dialogues re-usable, as a new kind of learning resource. Unfortunately, student attitudes, as revealed by a questionnaire, do not give us any indication as to the quality of the debate that took place. Of course, in the second case study the marks allocated, and feedback given, by the tutors for individual student contributions do give some measure of the 'quality' of the interactions. However, such feedback will not reveal potentially useful information on the patterns of exchange between tutors and students. Future work intends to address this issue by conducting dialogue analysis of the conference interactions using a technique described in Cook (1998).

Conclusions

We conclude by suggesting that if pre-delivery planning of networked learning gives detailed consideration to the first four of the issues described above, then the teaching and learning experience will be greatly enhanced. Furthermore, the evaluation of these changes post-delivery (our fifth issue) can provide data for re-designs that capture the changing nature of the student population and the delivery environment.

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The authors are members of the Adaptive and Interactive Multimedia Research Group (see <http://www.unl.ac.uk/simt/aim/>).