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Collaborative learning online

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The decision to offer a course by online delivery involves a range of issues relating to teaching/learning methodology, instructional design, and delivery software. This article describes the development of a Masters course that uses collaborative learning as the teaching/learning method. The theoretical basis for collaborative learning is explained and related to instructional design for online delivery. Evaluation data from the first three subjects are included. These are based on questionnaires and content analysis of computer conferences. Evaluation data reveal issues that are important to successful outcomes using this way of teaching.

Introduction

The decision to offer courses online may be based on the importance of reaching clients wherever they are with a course that is intended to be more immediate and engaging than paper-based distance education. In some cases, this may be seen to be the only way to reach the target audience; in other cases, online delivery may be seen to be an improvement over existing course delivery methods that can be offered to students who are equipped to study in this mode. Whatever the reason, the decision to offer courses online leads to major considerations about the philosophy and methodology that will be applied to teaching and learning, and the instructional design of courseware to support the online delivery mode.

The approach to teaching and learning is an important issue in meeting the learning needs of students. Modern society is characterised by a rapidly expanding base of knowledge and expertise, such that many students cannot be expected to be cognisant of all of the knowledge in their chosen area of learning (Bruffee 1993). As a result, methods of teaching and learning are being developed in a more student-centred way (Hannafin & Land 1997), so that students can learn how to find the knowledge they need to solve important problems. A major emphasis in business is teamwork, and many business-oriented courses ask students to work in collaborative groups on learning tasks as a way of developing skills that the students need or will need in their professional roles (Milter & Stinson 1995a). Collaborative learning is a way of managing the teaching and learning process involving team activities with a problem-solving focus. It encourages both teamwork and networking, and can make learning an immediate, challenging and engaging activity. Collaborative learning by computer conferencing can be an essential and carefully integrated part of the instructional strategy used in an online course.

This article examines the theoretical basis for collaborative learning, and how the theory has been applied in the development of an online course at Masters level offered by the Institute of Land and Food Resources at the University of Melbourne. Online delivery is the principal means of course delivery rather than a supplement to regular classes. The purpose of the article is to illustrate how previous research can be applied to instructional design for an online course using collaborative learning, and to provide a rationale for using this learning model as a basis for course design. The development process applied at the Institute of Land and Food Resources is outlined, and preliminary evaluation data used to highlight the effectiveness of the design model, and issues relating to its implementation. The article should be of value to people who are contemplating the introduction of online delivery for courses at any level.

Rationale for collaborative learning

Collaborative learning is an approach to teaching and learning in which students are required to work together in the learning process, and to reach a consensus through negotiation to accomplish group tasks (Bruffee 1993). Some important attributes include open ended topics that the students explore in order to create their own meaning or interpretation (Graham & Scarborough 1999) with a shared group grade as an incentive for group work (Klemm & Snell 1996). Open-ended topics, used in circumstances in which collaborative learning is applied, frequently take the form of a case study. The importance of collaborative learning as an instructional method has led to its application in situations in which computer-based learning is required. Studies have emphasised the student-centred nature of collaborative learning in CBL (Hannafin & Land 1997), and ways in which case studies can be applied in this way (Ward & Freeman 1997).

Collaborative learning was developed in response to some perceived shortcomings in the abilities of graduates from business schools. Graduates were perceived to lack analytical and communication skills, and the type of interpersonal skills that would enable them to negotiate solutions and provide effective leadership (Stinson 1990). These problems did not imply that the students lacked knowledge, rather the students lacked the ability to apply the knowledge that they had acquired.
Many other studies have identified similar outcomes, leading to the conclusion that ‘existing educational systems are producing individuals who fail to develop a valid, robust knowledge base; who have difficulty reasoning with and applying knowledge; and who lack the ability to reflect upon their performance and continue the process of learning’ (Koschmann et al. 1996, p. 85).

To attempt to solve these problems, many business schools tried more holistic approaches to teaching and learning business skills. One of these has been to create a limited simulation of the business environment, with the students being required to structure their learning around case study problems. Collaborative learning is fundamental to this approach as it reflects an essential attribute of the work environment. In many cases, new developments and important decisions are made collaboratively. Small groups are formed so that people with different relevant skills are brought together to work out a solution to the problem. To reach a solution, a work group must form a consensus that takes account of each person’s perspective. In collaborative learning, a process that is analogous to a ‘real’ business situation is created, with students required to analyse a problem, determine if additional information is needed and find it, respond to additional information as it becomes available, and reach a consensus on a solution (Jonassen, Mayes & McAleese 1993, p. 240). In this way, students learn both basic business concepts and the ability to apply them in a business environment (Milter & Stinson 1995a).

Constructivism

An important assumption on which constructivism is based is that learners construct their own meaning based on prior knowledge and experience brought to bear on the learning task. Jonassen, Mayes and McAleese (1993, p. 233) suggest: ‘The most important epistemological assumption of constructivism is that meaning is a function of how the individual creates meaning from his/her experiences’. The most effective learners make learning an active and engaging process, to develop a rich pattern of meaningful associations (Biggs 1999). This process has been described as a generative approach, leading to deeper levels of processing after surface levels have been discarded (Jonassen, Mayes & McAleese 1993). In the constructivist view, knowledge and the context in which learning occurs are closely related. Knowledge is not seen as abstract – it is only meaningful within a context, and is ‘inert’, having little real value, when separated from its context (Hannafin & Land 1997).

Constructivists emphasise the importance of the nature and level of the learning task. As learning is highly contextualised, the task needs to relate to the environment in which the knowledge will be applied. Hannafin and Land (1997, p. 170) suggest that: ‘The focus has often been on developing critical thinking, problem solving and reasoning skills. The overarching goals are to encourage manipulation rather than simple acquisition, and to root the learning in concrete experience’. Learning in this way frequently involves interaction with other learners. Glaser (1990, cited in Jonassen, Mayes & McAleese 1993) argues that cognitive development occurs through processing concepts that are originally experienced in social contexts, and that while meaning may be an individual construct, shared understandings result from social negotiations of meaning.

Collaborative learning as a constructivist activity

Constructivist processes are considered to be more evident when ‘students collaborate to produce and share representations of their understandings of the world’ (Jonassen, Myers & McKillop 1996, p. 94). Collaborative learning processes encourage knowledge construction in an environment in which learners are sharing their own understanding, and trying to negotiate a shared understanding. They become aware of the existence of multiple points of view, and that advanced knowledge construction needs to take these into account. In this way, students learn from their peers as well as their teachers (Jonassen, Mayes & McAleese 1993). Social interaction and negotiation of meaning are important to the process, as students need to learn the communication, collaboration and team building skills necessary for this learning style (Milter & Stinson 1995b). These skills are characterised in the business context as: ‘the ability to collaborate effectively – the ability to influence others and be influenced, to listen and understand, to work out differences so they do not become destructive conflicts, to use diverse perspectives, cultures and expertise to maximise effectiveness’ (Milter & Stinson 1995a, p. 35). Group activities are considered to develop transferable skills, communication and interpersonal skills, and to enhance deep learning, leading to improved learning outcomes (Morris & Hayes 1997).

Collaborative learning is best applied to complex problem- or case-based scenarios. As context is important, these scenarios need to relate to real world situations so that students can experience the type of problem-solving task that they will need to deal with in a work environment (Jonassen, Mayes & McAleese 1993; Jonassen & Reeves 1996). Such problems should be structured so that students may need to find more information in order to define the problem, with no single right way to obtain it. The problem may change as new information becomes available. Problems must not have a single correct answer (Koschmann et al. 1996). In this environment, how students approach the problem solving task, and incidentally their own learning, is as important as what they learn. Active learning by problem solving is a key aspect of any constructivist environment (Reeves & Oakey 1996).
Instructional design for online collaborative learning

While collaborative learning was first developed in a classroom environment, computer-based technologies are used to enhance the potential of collaborative learning. By using the Internet, collaborative learning can be applied as an instructional technique for flexible delivery/distance education. To apply collaborative learning techniques in this way some new approaches to instructional design are required. Current research suggests that traditional models of instructional design do not provide any guidelines for the 'design' of interaction among students and with the subject lecturer, and also that the existing models are limited in their adaptability (Hannaﬁn & Land 1997). Another limitation of traditional instructional design models is that they focus more on the object of knowing (content) rather than on the process of coming to know (Jonassen, Mayes & McAleese 1993).

Instructional designs for constructivist learning environments, including those that use collaborative learning, tend to work on key principles rather than on prescriptive guidelines. Instructional design needs to encompass the entire learning process and environment, rather than just the specifics of the computer software and network environment. Some key principles are that the computer-based courseware should not control the users' actions. Rather it should allow the user flexibility of access and navigation and provide a range of tools (Harper & Hedberg 1997). To work meaningfully with such an environment, the user needs to experience an information or knowledge construction need, typically a problem solving task. By using the computer network environment to find information, to manipulate data using software tools, and to communicate with other students, the user will find the environment engaging (Jonassen, Mayes & McAleese 1993). In this type of environment, software tools such as spreadsheets and computer conferencing systems become cognitive tools, that is tools to aid thinking and problem solving processes as an aid to learning (Jonassen & Reeves 1996; Harper & Hedberg 1997). Computer networks for conferencing are important cognitive tools in a collaborative learning environment as they become the enabling device for developing shared understandings and collaborative problem solving. Information databases and the wider resources of the Internet also become cognitive tools applicable to learning through collaborative problem solving.

Some examples of computer networking to online subject delivery are the online case studies ‘Service Watch’ and ‘System World’ used in teaching Business Information Systems (Ward & Freeman, 1997), and the series of databases to teach subjects in an MBA program (Milter & Stinson 1995b). In this latter example, delivered by classroom instruction, separate databases were established for program information, contacts, the knowledge base, discussion topics, and problem assignments, with a discussion database for learning issues. Separate discussion databases were established for data needed, and ideas for action. Milter and Stinson (1995b) report that the use of online databases led to an improvement in the quality of student input over face- to-face discussions. Students tended to be more thoughtful about their contributions and students who were reticent to speak up in face-to-face groups had no such inhibition with their online contributions.

Creating learning environments for online subject delivery using collaborative learning requires a focus on enabling the students to access all of the information needed for the subject. Students also need to access the necessary tools in the form of a range of computer conferences and/or data manipulation tools such as databases and custom spreadsheets. Within this basic structure, there is scope for considerable variety in the details of organisation and structure, depending upon the nature of the subject content and the problem solving tasks. The next section will consider the use of online course delivery for external students in a Masters program.

Application of collaborative learning to online course delivery

Collaborative learning was seen by the course developers to be important because of its value in the context of education for a business environment. Instructional design of course materials is based on the multiple database model used by Milter and Stinson (1995b) and by the University of Guelph (Sparling 1998). Online delivery is by the Internet, using Lotus Notes groupware. Students are required to make their own arrangements for computer use and Internet access through an ISP. Students can access the course materials using a browser, or use the Lotus Notes Client software provided to them on enrolment. Installation and connection using the Client software causes some problems initially, however it provides better access than a browser when installation is complete. As the students are employed in rural industries, and the majority live in rural areas, online delivery is the most effective way of reaching the students. There have been, however, a few problems relating to the quality of telephone lines in some areas.

The design model uses several databases, each serving a different function. A database of subject materials takes the form of a study guide, combining information with instructions as to the required activities for each week. Due to the emphasis on collaborative learning, several online conference databases are established for each subject. Students are required to log on regularly to a conference relating to the topic for the
week (the Online Workshop) to make contributions and to respond to those of the other students. Students are given group tasks to complete and submit for assessment. These mostly take the form of a case study on which the students carry out a group analysis and problem solving task. A separate conference database is established for each group, with access restricted to the group members and the lecturer. As group tasks are an important part of the collaborative learning process, they are an important item of assessment. Students are expected to share the task in a group assignment, and to work together to negotiate an outcome on which they all agree.

Assessment of group tasks can be a difficult issue. If all members of the group are given the same mark then the outcome may be unfair as students who do most of the work effectively carry the others. The problem of 'free riders' has been addressed by taking group collaboration a step further than the task. After a mark for the group task has been allocated, the group is asked to come to an agreement about relative levels of contribution from group members. When this agreement has been negotiated, the group task mark is varied for each member in relation to their agreed contribution to the task.

This design model enables the constructivist approach to teaching and learning to be applied. The use of real-world scenarios in which the students must be able to accommodate multiple viewpoints (Jonassen, Mayes & McAleese 1993) and the communication and team building development emphasised by Milner and Stinson (1995a) are facilitated by the design structure and by the nature of the tasks that the students are expected to perform. The course design does not rely on a structured presentation of course content. Rather it relies on student interaction with each other, and with the lecturer. Group tasks, as outlined above, are a particularly challenging aspect of the design. These tasks, however, provide some of the most valuable learning outcomes, as it is through these that communication, teamwork and problem solving skills are developed. Computer-based materials support this form of learning by providing tools for analysis, such as online conferences, and computer programs for financial analysis. The course design applies the principle, proposed by Harper and Hedberg (1997), that the computer should not control user actions. It should rather provide access and flexibility and a range of tools. The structure of the course materials enables all of these interactions to occur in an appropriate manner.

**Evaluation**

Preliminary data from the evaluation study examined the approaches taken by lecturers and students to implement collaborative learning using online technology. This was carried out by considering the interactions that occurred in the online discussions, and by considering student feedback from an online questionnaire that was completed following each subject. By comparing the results from both indicators, a number of patterns of usage could be determined. Some of these were critical to the success of the subject from the students' perspective. This is presented below in summary form. A more comprehensive evaluation is currently in progress.

As indicated above, each subject used a range of online discussions. Two of these - the Online Workshop in which discussion topics were posted each week for all students, and the Group Discussion, which was set up for small groups within each subject to complete collaborative tasks - were considered for the evaluation. Two subject offerings were considered. One group discussion was considered from each subject offering. The method of analysis was based on methods of computer conference content analysis. Mason (1992, p. 113) identified and proposed a number of ways to classify postings to an online discussion. These include a basic message analysis using the categories of 'problem-solving messages, information exchange, and general discussion', and a way of classifying messages in accordance with the process that appears to be happening, using these additional categories:

- Do the participants build on previous messages?
- Do they draw on their own experiences?
- Do they refer to course material?
- Do they refer to relevant material outside the course?
- Do they initiate new ideas for discussion?
- Does the course tutor control, direct or facilitate?

(Mason 1992, p. 114)

Conference postings were categorised as above to determine the types of purpose and types of process that were predominant. The discussions were also summarised to identify directions and trends.

**Results of evaluation**

**Questionnaires**

A questionnaire that could be completed online was developed for this evaluation. The questionnaire used a combination of specific questions to which the students were asked to indicate agreement/disagreement on a five-point Likert scale, and questions that asked for open ended comment. Questions were arranged in groups addressing the following issues:

- technical issues of access and clarity of use;
- effectiveness of content information, how to learn and assessment;
• computer conferencing and collaboration;
• involvement of the subject lecturer and perceived effectiveness of learning; and
• standard questions about effectiveness of teaching, staff involvement and feedback included in subject evaluation for all subjects taught at the University of Melbourne.

Each group was followed by an open ended question. Responses to the groups that are most relevant to this topic will be considered further.

TABLE 1
Responses to questions on technical issues and clarity of use for three subjects

<table>
<thead>
<tr>
<th>SA – strongly agree → SD – strongly disagree</th>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The way the online technologies was made clear to me from the beginning.</td>
<td>S1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 I experienced difficulties in gaining access to the online subject materials.</td>
<td>S1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3 After the initial problems of connection were overcome, access to the online materials and conferences was consistent and effective.</td>
<td>S1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

S1 – Subject 1 → S3 – Subject 3

Numbers in the columns represent response frequency

Data from the questionnaires for the first three subjects offered online have been included in this study. The questions in table 1 show a diminishing level of issues and problems relating to the use of the technology, in terms of technical issues of access and use. The other questions show patterns of responses that vary from subject to subject. One subject provided the students with more online content, and had more input from the lecturer into the online workshop discussions than the other subjects. This subject was rated more positively by the students than the others. The positive rating was consistent across nearly all of the questions, indicating the pervasive nature of the perceived benefit from this input.

TABLE 2
Responses to questions on computer conferencing and collaboration for three subjects

<table>
<thead>
<tr>
<th>SA – strongly agree → SD – strongly disagree</th>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 The computer conferences enabled me to exchange information and ideas with the tutor and other students.</td>
<td>S1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>S2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>S3</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 The computer conference discussions helped me to learn more about the subject than I would have learned working on my own.</td>
<td>S1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>S3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9 I worked closely with other students on the group learning tasks.</td>
<td>S1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>S3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 I learned a lot from the other students while working on the group learning tasks.</td>
<td>S1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>S2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

S1 – Subject 1 → S3 – Subject 3
Numbers in the columns represent response frequency

Two of the questions (see table 2) focussed directly on collaborative aspects:
• I worked closely with other students on the group learning tasks; and
• I learned a lot from the other students while working on the group learning tasks.

Students were consistently positive in their responses to the question about working closely with others. They were more divided on the issue of learning from each other, with a minority either neutral or in disagreement with this statement. One student commented on the value of other students’ responses as follows: ‘The answers to the compulsory questions from the other students were very informative and gave me a broader understanding of the subject’. Comments in two subjects pointed to difficulties with the computer conference medium, which did not allow a free flowing discussion. This does not appear to have been a problem in the third subject. In this subject, one of the students said: ‘We are at last getting a real methodology of handling an ideas session online. Each
contributing many points for elaboration by others and by ourselves in turn. Then editing and re-editing. A real online brainstorming session!". In other subjects the students felt that meaningful discussion needed to be by phone.

TABLE 3
Responses to questions on perceived depth of learning for three subjects

<table>
<thead>
<tr>
<th>SA – strongly agree</th>
<th>SD – strongly disagree</th>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td></td>
<td>S1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>S2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>S1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S2</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>S1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>S2</td>
<td>1</td>
<td>3</td>
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<td></td>
<td></td>
<td>S3</td>
<td>3</td>
<td>3</td>
<td></td>
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</tr>
</tbody>
</table>

S1 – Subject 1 → S3 – Subject 3
Numbers in the columns represent response frequency

Questions 14–16 (see table 3) focus on issues relating to the students’ perceived depth of understanding of the topic, the development of problem solving skills that are of use to the students professionally, and the relevance of the course materials to the student’s current professional involvement as demonstrated by their opportunity to use examples from their own work situation in learning tasks. The responses to all three questions ranged from generally positive to strongly positive.

Online discussions

A selection of online discussions was examined. In one subject the lecturer posted a discussion question each week, and summarised the discussion at the end of the week without any participation in between. This led to a pattern in which the students posted a response each week without any further interaction. The online workshop became in effect weekly assignments which tended to become longer. The group discussion about collaborative tasks in this subject was characterised by efforts to quickly divide the task and to reach a rapid closure on the assignment. Student postings built on previous messages to do this. There were some references to the text book in these postings, with a few references to outside sources. Most of the effort was question oriented without reference to sources. No references to outside sources were actually used in the task.

The online discussion in another subject had one compulsory discussion question each week, with additional voluntary questions. Students responded less to the optional question, however there was an active pattern of responses to all questions. The number of responses to this discussion ranged from 17–65, indicating a high level of activity. (Seventeen postings represent an average of two per week, plus the postings made to the group discussion. Sixty-five postings is an average of eight per week.) Postings ranged from one paragraph to just less than a page in length, with only a few longer ones, and several brief items of information. The predominant way of responding was to address the question, sometimes by referring to experience, without any direct reference to the course materials, text, or other sources. Within the online workshop the students appeared to notice what the other students said, but they usually did not make direct reference to other postings, or build on the comments of others. Building is of course more relevant in the group task discussions. The discussion included the case study materials for the collaborative assignments and, with the students’ permission, the papers from the collaborative tasks were posted after assessment was finalised. The text of the online chat sessions was also posted for reference. This was a very active discussion with 450 postings.

Review

The combination of online delivery and the methodology of collaborative learning has been the main focus for the design and development of the course. Collaborative learning is used to develop skills in communication and teamwork during the learning process, and to develop a depth of understanding that is meaningful to the student. The approach aims to enable the student to apply knowledge and skills in a practical way to solve the real problems facing the students in their professional situations. The combination of collaborative learning with online discussion aims to make interaction immediate and engaging, to focus the learning process and to ensure that difficulties relating to feelings of isolation and lack of contact do not occur.

Instructional design was concentrated on facilitating these aims. Using an Internet connection students accessed course materials, an online discussion they were required to use frequently, smaller group discussions for collaborative tasks, and other databases for assignment
submission, direct questions to the lecturer, student chat and notes from
the course coordinator. This design provides all of the appropriate
channels for the teaching/learning activities associated with collaborative
learning, particularly those related to regular focussed discussion and
group work on case study analysis.

Preliminary evaluation data appear to confirm that the courses are
operating in a way that will enable the students to attain the educational
aims. The relative effectiveness of any individual subject however is
dependent upon the way individual lecturers make use of the resources
provided. High levels of involvement in discussion, support for students’
individual interests and professional development, use of IRC chat
sessions, and the provision of current and challenging case studies have
led to more positive student subject evaluations. Content analysis of
online discussions has confirmed the stimulus students receive and value
from this approach, and the positive value they perceive in learning from
each other as well as the lecturers in a collaborative way.

Data from this evaluation have been applied to course development for
the current year, both in the development of new subjects and in the
revision of subjects previously offered. Subject design has focussed on
the importance of an active online discussion in which the students are
challanged to respond and to review their conceptions by taking account
of other viewpoints. The importance of the collaborative tasks is
emphasised by the evaluation data, and these have been reviewed to
ensure that they are challenging, allow scope for analysis and projection,
without, however, being so extensive as to make a disproportionate
demand on the students’ time. The students valued these activities but
expressed the need for a balance of discussion, group work, and
individual tasks. An effective balance of these activities, presented in a
challenging way, was the approach that the students valued most, and
appeared to lead to the most effective learning outcomes. Staff
developing current and future subjects have this evaluation data to draw
upon in subject development and teaching.

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Perceptions of e-moderators about their roles and functions in moderating electronic mailing lists

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This paper reports on responses gathered using a probabilistic survey (n=162), to gather the perceptions of electronic mailing list moderators, or e-moderators, about their roles, tasks, and responsibilities as list moderators. The issues explored revolve around mailing list moderators’ conceptions of their roles, their rationale for moderating or not moderating their mailing lists, where they learned their craft, and where moderating lists fits into the context of their lives. With such descriptions of the tasks and roles of practising moderators, better training could be developed for those persons wishing to function effectively as online discussion facilitators and moderators, as part of their on-line teaching for instance. Findings confirmed previous research that moderators perceive among their roles those of a filter, firefighter, facilitator, editor, manager, discussion leader, content expert, helper, and marketer. The moderators responding to this survey cited as reasons a mailing list should be moderated as keeping the signal-to-noise ratio high; keeping the discussion focussed within the topic of the list’s mission; keeping down ‘flames’; and digesting/editing posts. Most learned to moderate online discussion lists by watching others perform those functions – rather like apprentices, and either volunteered to be a list moderator, were invited to be, or started their own lists. They report being involved in list moderation because the list is work-related, or is part of their leisure activity, or is part of both.

Introduction

Over the past few years we have been interested in online teaching, both as an adjunct to in-person instruction and as a replacement for face-to-face instruction. We have also been involved in the delivery of professional development seminars using the electronic discussion group (EDG) format (Berge 1992; 1994; Rojo 1995). We believe a moderator is essential in creating a stimulating and supportive online environment (Anderson & Kunuka 1997). In the literature in these areas, there is a growing number of descriptions of the roles and responsibilities of online teachers in course-related computer conferences (Berge 1995; Brochet 1989; Collins 1997; Collins & Berge 1997; Davie 1989; Eastmond 1992; Feenberg 1989; Kerr 1986; Paulsen 1995). A teacher’s role as a moderator and facilitator of online course discussion – an e-moderator –