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The Formative Developmental Evaluation of an Online Module in Health Promotion using Asynchronous Computer-Mediated Communication

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This paper provides an overview of the design and development, and describes the formative developmental evaluation, of an online module on Health Promotion for community pharmacists, using a web interface supported by FirstClass™ within the Department of Medicines Management's Online Learning Zone.

The literature reports the reluctance of some learners (and tutors) to embrace computer-mediated communication (CMC) for learning and teaching. The development of the technology and the learning materials using CMC is costly. It was therefore important that the university department evaluated learners' reactions to a prototype interface and module before making further investment in this delivery medium.

A qualitative, phenomenological approach to explore learners' experiences was employed. A semi-structured guide-list for face-to-face interview was developed to explore learners' perceptions of the delivery system and its usability, and their experiences of studying and learning using asynchronous CMC.

The feedback from participants, together with observations from the course team, suggests that asynchronous computer-mediated communication does improve the quality of student learning.

The findings are potentially useful to others developing online learning.

Keywords: Asynchronous; Computer-mediated; Evaluation; Learning; Online; Pharmacy

INTRODUCTION AND BACKGROUND

This paper provides an overview of the design and development, and describes the formative developmental evaluation, of a module on Health Promotion for community pharmacists that was delivered online using asynchronous computer-mediated communication (ACMC) during April–June 2002.

Since 1994, the Department of Medicines Management (DoMM), Keele University has provided a two-year, part-time Postgraduate Diploma in Community Pharmacy (PgDCP). It is a second generation distance learning (DL) course, delivered principally using paper-based DL materials, supported by three, one-day face-to-face (f-2-f) events each year at the University.

ASYNCHRONOUS COMPUTER-MEDIATED COMMUNICATION (ACMC) FOR COLLABORATIVE LEARNING

In 2001 the Course Development Team (CDT) decided to explore the use of asynchronous computer-mediated communication (CMC that is not dependent on "real time" or synchronous communication and interaction) for collaborative learning, thereby moving into the so-called "third generation" of DL course delivery. Although hundreds of learners had successfully completed the PgDCP without the facility of ACMC, the CDT felt that computer technology provided an important addition to the media available to providers of DL courses, and that it would be prudent to explore its potential benefits for our learners and course tutors.

However, the CDT was cautious of being drawn in to the "technology trap" of using computer technology simply because it exists. We had to remain mindful that whatever media we used for DL it had to deliver the knowledge and learning of the right focus, standard and quality, to enable our learners to meet the learning outcomes. Also, that

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we (and our learners) could afford to use it. Having reflected on the learning outcomes for the PgDCP, and the advantages of an asynchronous medium (Mason, 1998), we concluded that collaborative learning using ACMC could help our learners achieve those outcomes that are embedded within a constructivist approach or emancipatory orientation to teaching and learning.

DESIGN AND DEVELOPMENT OF AN ONLINE MODULE

Teaching, Learning and Pedagogical Strategy of the PgDCP

The DoMM aims to provide courses of the highest quality that support our learners within a constructivist approach, as defined by Klemm and Snell (1996), to teaching and learning:

- Learning as a social process,
- Dialogue,
- Interactivity,
- Collaborative learning,
- Critical reflection.

Learning as a Social Process

Nipper (1987) advocated that learning should be a social process. DoMM currently achieves this mainly through the f-2-f days that complement the DL materials. If a student cannot attend a particular study day they have no other formal opportunity to participate and interact with a group of fellow learners and tutors.

   Although encouraged, a minority of our learners use the telephone to communicate with tutors or each other, but the use of e-mail has increased over the last two years. The acceptability of e-mail is perhaps related to it being more flexible than the telephone by being "open" all the time. So, the emergence of this "third generation" in DL appears to have created an unparalleled opportunity for changing the way in which DoMM's learners and tutors interact together.

Dialogue

"Dialogue... the essential ingredient for ensuring that students engage actively with learning materials" (Morgan, 1993). A constructivist approach to materials design requires the use of dialogue to encourage "distant discussion" among learners and tutors, to involve the student in interactivity that gives him/her responsibility and autonomy in the learning process. At present, apart from the media described above, dialogue in the PgDCP is principally achieved through the use of a conversational

style in the print-based materials, and assessment feedback from tutors to learners. ACMC has the potential to enhance dialogue, and it is arguably the most fundamental development in the future enhancement of guided didactic conversation (Holmberg, 1995).

Interactivity

"A concern often associated with DL is the lack of learner interaction" (Hill, 1997). Interactivity on the PgDCP is currently provided by attempting to make the print-based materials "active" through the use of self-assessment questions and reflective activities, and providing interactive workshops on the f-2-f days. However, there is evidence that ACMC could allow the development of deeper learning than that which is possible using our current media. An emerging body of published literature on online learning focuses our attention on the World Wide Web (WWW) as offering the greatest potential for promoting interaction by, and engagement of, the learner.

Collaborative Learning

The rapidly growing literature in this field, and personal experience of one of the authors (PEB), indicate that conversation and interactivity are much more likely to prove effective to students' learning if they are structured within a collaborative learning activity that results in group interaction, or individual learning as a result of group processes.

   Dillenbourg and Schneider (1995), and Brown (1997a) provide some evidence that learning collaboratively within the virtual learning environment provides a deeper (superior) learning experience.

   Nipper (1987) is among many who provide a valid argument that collaborative learning reflects the real world situation of teamwork and that learning which is encouraged using this method will stand the learner in good stead in the wider world. Team-working between community pharmacists and other health care professionals is becoming increasingly important. Given that most community pharmacists are solo practitioners, this presents a considerable challenge. Developing skills in team-working is one of the learning outcomes of the PgDCP that our existing media have to address; ACMC could prove a valuable tool in developing this skill in our learners. Moore and Kearsley (1996) comment on the benefits of the medium to learners for whom sharing professional experiences can be of great value.

Critical Reflection

To critically reflect on one's experiences and performance is considered an essential element of

❑   Health professionals increasingly have to cope with long and unsociable working
    hours that make it difficult for them to attend f-2-f elements.

❑   There is the potential for f-2-f workshops to be dominated by the more vocal and
    confident students who have a particular learning style. It is argued that ACMC
    increases the opportunity for quieter, more reflective students to contribute at
    their own pace to increase their confidence.

❑   Our students are located throughout the UK, and have to travel sometimes
    hundreds of miles to attend a study day. The use of ACMC could remove the
    need for this, in part if not in total.

❑   An ACMC environment would allow our network of part-time tutors, also located
    throughout the UK, to communicate with students beyond the f2-f days so that
    they would be more 'visible' to learners than they are currently.

FIGURE 1   Practical reasons for exploring the use of ACMC.

a health professional's Continuing Professional Development (CPD). However, due to a lack of understanding of the concept, it is probably only consciously practised by a minority. Pettit (1998) claims that ACMC facilitates reflective learning by giving learners time to reflect on the issues presented so that they can construct a thoughtful reply. Burton and Anderson (2002) reported reflection on practice as one of the successful outcomes of their online learning environment.

Practical Reasons

The CDT also identified some practical reasons for exploring ACMC as outlined in Fig. 1.

A Model for Collaborative Learning using ACMC

Using the online medium per se will not automatically promote quality collaborative learning, within a constructivist pedagogical paradigm. It is imperative that the technology is used appropriately (Thorpe, 2002a).

Wegerif (1998) supports the staging of activities to introduce the complex skill of learning online and interaction between students and tutors. Mason (1998), Klemm and Snell (1996), and Harasim *et al.* (1995) describe the need for structure in an online learning environment. Salmon brings staging and structure together in her "five-step model" (Salmon, 2000)

Thorpe (2002a) draws a distinction between online courses, where: (i) ACMC complements and supports learning from prepared text-based course materials, and (ii) ACMC makes the learners the key agents in directing their learning, with little in the way of prepared course materials provided for them. The CDT felt that design (i) would be most appropriate and acceptable at this time for our learners and tutors given both groups' relative inexperience of the medium.

The existing paper-based module on Health Promotion (M5) from the PgDCP was chosen for development for online learning. This module was chosen since the CDT perceived that it would provide a good "test-bed" for team-working using structured interactive activities, and there are many resources available on the WWW to support students' learning. In addition, the principal tutor for the module (JM) had expressed a keen interest in developing her skills as an online tutor. This was important since online teaching and facilitating requires different skills to that for conventional f-2-f interaction, and there is growing published evidence that it has proven difficult for some academic staff in some institutions to adapt.

The web interface, supported by FirstClass™,[†] and the online learning materials and activities were developed within the DoMM's Online Learning Zone (OLLZ). Four main areas were developed. Two provided an informal conference forum for students and staff to raise and discuss issues: (i) Cafe-Bar (general issues); (ii) Technical Self-help

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[†]FirstClass™ software is provided by the Open Text Corporation, Open Text UK HQ, Webster House, 22 Wycombe End, Beaconsfield, Bucks, HP16 0DE. The version of the server software used for this pilot was FirstClass v7.

(IT problems). One area provided the forum for students to work together on structured tasks and activities during defined weeks over the period of the module. The remaining area provided access to the study blocks that contained learning materials.

Formative Evaluation and Developmental Testing

The literature reports the reluctance of some learners (and tutors) to embrace CMC. This was also an anecdotal opinion of the authors who have several years of experience of using the medium for learning with the UK's Open University. The development of the technology and the learning materials using CMC is costly. It was therefore important that the CDT evaluated learners' reactions to a prototype interface and module before making further investment in this delivery medium.

From previous annual monitoring and evaluation of the paper-based version of the module, the CDT was confident that the actual course content of reading materials for knowledge base of M5 was appropriate for, and acceptable to, our learners. However, given that we were introducing a new delivery system, the CDT felt that it was essential to subject the online version of the module to robust formative evaluation.

AIM AND OBJECTIVES OF THE EVALUATION

The main aim was to explore learners' perceptions of the online version of M5. Also to inform what DoMM's strategy should be for the future delivery of modules/courses, using this medium/ACMC.

The objectives were to:

- Determine learner' perceptions of the usability of the OLLZ that provides the interface for M5.
- Determine learners' perceptions of the usefulness of the medium/ACMC for teaching and learning.
- Identify any changes that need to be made to M5 for future learners.
- Propose a strategy for the future development of ACMC in the PgDCP.

Methodology

A qualitative, phenomenological approach to explore users' experiences was employed. A semi-structured interview script (guide-list) for f-2-f interview was developed to explore users' perceptions of the delivery system and its usability, and learners' experiences of studying and learning using ACMC. This had the advantage of keeping the interviews focused while allowing the individual participant's experiences to emerge. The topics for

the questions were chosen following an extensive trawl of the literature that had identified emerging issues in relation to teaching and learning online, and from the personal experiences of two of the authors as online students.

Recruitment of Participants

It was considered inappropriate to test the online version of M5 out on current students because of the risk on compromising their learning should an unanticipated serious development fault emerge. Calder (1994) confirms the legitimacy of recruiting others for this purpose, "... 'as if' they were students".

A letter was sent in February 2002 to 25 former students who had completed the PgDCP in the two-year period (1998–2000) when M5 was an optional (not compulsory) module on the course, and they had not chosen it. This was considered a reasonable approach since: (i) they had studied as distance learners at postgraduate level using our current media and therefore should be "experienced" distance learners; (ii) they had not studied the topic previously and thus were not repeating the learning; (iii) they might feel more inclined to volunteer given the incentive of a new subject to contribute to their CPD.

The letter also included details of the minimum computer specification that would be required to support the learning medium.

The intention was to recruit 5 or 6 participants for the pilot. Salmon (2000) advocates that anything from 4 to 12 is an acceptable student group number for continuing collaborative working online. A follow-up letter was sent to non-responders. Fifteen replies were received in total. Six individuals indicated that they wished to take part, another 8 indicated that they would consider participating at another time, and one did not wish to participate at all. One of the 6 subsequently changed his mind due to personal circumstances.

The principal researcher (PB) telephoned the 5 who were recruited to confirm their participation, and their e-mail addresses, and to explain her role as the researcher. A date for PB to interview them f-2-f after the module had finished was agreed. The researcher had no further contact with the participants until the end of the module when she e-mailed them to confirm the interview appointment.

In March 2002, the 5 recruits were sent a pre-course information pack that provided them with an overview of the module and instructions on how to access the online elements of the module. They were also sent a Course Reader that contained the course textbook and additional papers that could not be accessed online. An assignment was provided, but the recruits were advised that this was optional.

The Module ran from 15th April to 30th June. It included 4 main structured online activities for the students to work together, facilitated by the online tutor, that had been constructed using Salmon's Five-Step Model, and a final activity that asked the students for some preliminary feedback about the module. Two of the activities were structured so that individual learners were assigned specific roles and responsibilities by the tutor to complete the tasks. For example, the roles of opposer, proposer, moderator, and researcher/reporter for a structured debate. The learners were also provided with an online Cafe-bar area for informal chat and a Technical Help area supported by LB. Four of the participants completed the module. Due to unforeseen personal circumstances, the fifth recruit never actually contributed to the online environment.

The Interview Process

Four participants were interviewed f-2-f by the principal researcher at a location convenient to them between 19th July and 1st August. The interviews were audio taped. Each interview lasted approximately 75 min.

Data Analysis

The audiotapes were transcribed in full, then subjected to content analysis. The data was categorised into key themes. These were principally pre-defined through the interview topics. Unanticipated themes were identified by coding up individual paragraphs of each transcribed interview (Proctor, 1993).

Post-interview

Those who submitted a satisfactory assignment received a departmental certificate of completion of the module.

Training for Online Tutor

The need to provide training for academic staff to teach and facilitate using this medium is well documented (Salmon, 2000; Thorpe, 2002b). This was facilitated in the months leading up to the delivery of the module, using the "Tutors" Talk' area of OLLZ that had been previously designed for that purpose, and Salmon's (2000) text.

RESULTS AND DISCUSSION

The participants are identified by the codes S1–S4. Illustrative quotations are presented.

The Participants and their Use of Computers

Demographics

Two participants were female. The age range (29–50) and occupations, shown in Table I, reflected that which the CDT would expect to find in our current student population for this course.

Three had completed the PgDCP in 1999; the fourth in 2000. It was interesting that none of the 1999 cohort actually remembered any of the others, suggesting perhaps that the current delivery media encourage only transient relationships between students.

Previous Use of Computers

Participants were cautious in their descriptions of their use of computers before the pilot study;

> "…basic…" (S4)
> "…not really techie minded…" (S2)
> "…improving [laughs]…" (S3)

However, all used computers at work and home for e-mail and the internet, and all claimed some competence in using word processing and spread-sheet packages. This suggests that pharmacists may be cautious in claiming any great experience in using computers.

Even the participant with the least experience was positive about having to use a computer for M5;

> "…I didn't feel out of my depth, as I, as I thought maybe I would do". (S1)

Overall, this feedback was encouraging since it indicates that learners are likely to have sufficient computer skills to cope with the DoMM's online requirements.

Previous Experience of using Computers for Learning

S4 had been a tutor on the PgDCP since January 2002, and had completed the basic online training in "Tutors' Talk" in OLLZ. This put S4 at some advantage over the others in relation to using the system.

All had used CAL packages to some extent, provided free of charge from the Centre for Pharmacy Postgraduate Education.

TABLE I Occupations of participants

Student ID	Occupation
S1	Community Pharmacist
S2	Community Pharmacist and PCT Prescribing Adviser
S3	PCT Prescribing Adviser and Community Pharmacy Clinical Governance Facilitator
S4	PCT Prescribing Advisor and Community Pharmacist Locum

Participant S2 was also an occasional participant in an unstructured online discussion group for former students of another course she had completed recently. S2 felt that this type of forum would enhance module M5. Given that all students commented on the fact that the Cafe-Bar Area was underused, perhaps this indicates that they were unsure of its purpose as an area for open, unstructured interaction.

Access to a computer for Online Learning

The DoMM currently stipulates that general access to a computer is a course requirement for the PgDCP.

None of the participants had access problems, but all felt that a home computer was essential. They felt that it was unlikely that access to a computer at work for this purpose would be given by employers, but in any case that their workload would not normally allow time for this.

Brown (1997b) and Stenerson (1998) make reference to the importance of easy accessibility to IT as a "fundamental prerequisite" for its successful adoption, and to avoid a negative impact on learning. Although none of the pilot group had access problems, DoMM will make it clear to future students the need for a suitable home computer.

Perceptions of the Usability of the System

Pre-course Information

All participants felt that this was sufficient, straightforward and helpful in relation to what the course would involve and how to get online, send, and read messages.

Participants were generally keen, not apprehensive, about logging-on for the first time, for example;

"…quite exciting…really looking forward to it…" (*S2*)

"I felt excited actually [*laughs*]… 'this is a challenge'" (*S4*)

This suggests that a self-selected group is likely to be positively motivated to participate online. This feedback is helpful in relation to the CDT's decision-making for the future around whether online should be a compulsory or optional element of module M5/PgDCP.

Attributes of the System

All participants were generally complimentary about the overall look of OLLZ.

All participants found the system easy to navigate and were able to access all the materials and discussion areas. McMurray and Dunlop (1999) and Brown (1997a) comment on the need for an interface design that enables trouble-free, easy access to all features of an online system.

Course Materials

All participants said the course materials were relevant and useful. The CDT would expect this since they have been tried and tested on the paper-based version. However, everyone expressed frustration with having to print off materials, particularly the materials that the CDT had identified as "recommended reading", which participants interpreted as essential. Although they recognised that this was a personal choice, none of them found it comfortable to read more than a couple of pages direct from the computer screen. Two of the participants felt that they would probably get used to it the more modules they did online. Participants also expressed feelings that this need to print off the materials used up time that they could have devoted to the group activities and learning.

This is an important issue for the CDT to address since it was consistently voiced by all, on several occasions throughout the interviews, as a negative aspect. It was also something that the online tutor observed as an issue that was contributing to participants' workload. Mason (1998) draws attention to this issue. Hislop (2001) comments on this in relation to his students, and concluded that, "…it is easier for all concerned to simply start with paper versions of the materials".

However, all participants said that it was their choice as to whether or not they read the papers online or printed them off.

All participants drew the distinction between going online to read materials that had been placed there by tutors for them to read, and using the system to search for additional relevant materials. They had no objection to printing off materials as a result of information seeking, or that was described as "further suggested reading and useful web-sites".

Support from Online Tutor

All participants felt that online tutor support was sufficient and good overall.

One participant expressed some uncertainty about the tutor's role;

"…I didn't know if I could have just e-mailed her and said 'look I don't understand…'. I didn't know whether it was her role…" (*S2*)

It would appear that the CDT needs to clarify in guidance to students that the online tutor fulfils the "normal" tutor role of clarifying and explaining where needed. Other participants had engaged with the tutor, and vice versa, using personal e-mail messages. Two participants thought that the availability of telephone access to tutors would be an advantage for some things. This was originally explained in the pre-course information supplied to

participants, but was obviously unclear or misunderstood.

Support from IT Administrator (ITA)

Participants were unanimous in their praise of the support they received from the ITA and the Technical Support area. It is generally accepted that prompt and helpful IT support is essential in an online learning environment, and that having comfort in the knowledge that this is available means that students can concentrate on the business of learning.

Support from other "Students"

All participants felt that their fellow "students" provided general support. Two participants felt that some of the human elements were missing and that photographs within the Cafe area would have helped them. S3 also said;

> "I think I would have been much more comfortable having met everybody beforehand." (S3)

Three felt that support was better online than on the f-2-f days they had participated in when studying for the PgDCP, for example;

> "… Diploma…no real networking with any of the other students…online learning enables you to do that…there's no comparison." (S1)

These views are encouraging and suggest that ACMC can provide the interactive, social experience that we seek for our students. S3's concerns would not be an issue since the CDT's current plans for the PgDCP still include at least one f-2-f meeting with students at the beginning of the course.

Online Connection Costs

None of the participants felt that this was an issue.

Perceptions of the Usefulness of the Medium/ACMC for Teaching and Learning

All four participants felt, to varying degrees, that the activities were relevant and had contributed positively to their learning on the module, and none felt that any should be dropped.

Collaborative Learning/Teamwork

Throughout all the interviews, participants referred on numerous occasions to the benefits of "team-working" and sharing of work and experiences to their learning, to consolidate their own knowledge and understanding. This is encouraging given the CDT's desire to promote team-working.

Mason (1998) gives examples from published literature of this enthusiasm for "technology-mediated" courses, so these participants are not unusual.

Their comments also suggest that the way we structured the activities did achieve our aim of promoting collaborative learning.

Participants also referred to the quality of the team's work as being a motivating factor for themselves as individuals, for example;

> "…quality of the work that they were putting online…motivated me to…produce… that…standard…it challenges you…" (S2)

> "…I probably put a bit more effort in because I knew other people were waiting for my input." (S4)

Participant S4 also specifically mentioned that the online activities had helped her to be a reflective practitioner;

> "…I reflected a lot more… you learn so much from other people as well, from what they 'say'." (S4)

One interesting observation emerged from two of the interviews in relation to a competitive element they had experienced amongst students when they were studying for the PgDCP, which they did not feel in working as a team online;

> "…with the Diploma, you felt, I mean like there was somebody near me, and work wasn't shared because otherwise you, you know,…felt that they could get more marks than you did, and that kind of…so there was…hesitation in sharing, ah with the Diploma, whereas here [online] you didn't have that so… I felt quite comfortable. (S2)

McConnell (2000) express the view that collaborative learning in groups should not be about competition or winning, but about deepening understanding, sharpening judgement and extending knowledge. The comments from the participants suggest that they were finding value from group collaboration that overcame the competitive element they had experienced previously as learners on the PgDCP.

Activities and Assessment

Only two of the four participants expressed any interest in completing the optional assessment, but all felt that the activities would have helped them in this respect. The literature appears to be unanimous in recommending that online group work and assessment should be inter-linked to reward students for their contributions. There is also the general view that this is essential to ensure participation from all students. From other comments made during the interviews, it is unlikely that the pilot group participated because of the assessment, but at least the CDT can be assured that the online activities are compatible with the assessment strategy, and students would observe this.

Role Play

Although not entirely comfortable with role play, all participants felt that this was an effective way of

encouraging the group to work together, and develop generic skills in delegation and time management. Klemm and Snell (1996) advocate that, "learners need to have well defined roles to know what is expected of them". The CDT had specified clear roles for all students for the first three activities. The fact that it had not been so explicit in the final activity caused problems for the individual given the role of Moderator. Participant S4 had found that asking the others to volunteer to take on pieces of work for an activity had not worked well, and this left S4 with a big task-load. S4 felt that it would have been better if individuals had been asked to do specific tasks and recommended that tutors should advise individuals of this at the beginning of an activity in the future.

Time Pressure, Flexibility and Workload

Chambers (1992) argues that the amount of work which students are asked or expected to do is one of the most crucial factors affecting their engagement with a course.

Difficulties with getting online were not always a source of frustration and sometimes provided an enforced but welcome break;

"…if I'm perfectly honest, the course sometimes was so demanding that I was quite glad I couldn't get into something. I thought 'great, I've got a night off, I've got an excuse for a break' [laughs]…" (S4)

This implies that workload was an issue. All participants felt that the CDT had been honest in its information regarding the time commitment required to study the module. However, none had been able to devote this time due to pressures of work and other commitments (e.g. leisure activities) which they claimed would have taken second priority had they been studying the module as part of the Diploma;

"…when I did my Diploma, I, uhmm, I wasn't going to the gym, I wasn't learning the keyboard, and all these things that I've started since my Diploma, but when I was doing my Diploma, I had planned to set time aside for it. During this trial, it was an add-on…"(S4)

Participants also indicated their sense of inter-dependency, and responsibility to others, on several occasions throughout the interviews;

"…with a group of people…there was that feeling that you're letting them down. Worst thing was that I felt that I was letting them down because my work, ah, didn't go out on time on two or three occasions…" (S2)

It is interesting how quickly this can build-up in the virtual world. Klemm and Snell (1996) also refer to this notion of interdependency in CMC.

One major difference expressed between their experiences as students on the PgDCP and the online module M5 was how they could manage their time. What the participants were indicating was that the overall time needed was probably no more than with a paper-based module but, due to the group activities, that they as individuals felt they had much less control as to how they allocated their time. Mason (1998) also draws attention to student feedback that expresses this view. However, this is a crucial part of learning to work as a team, where the members can only deliver a result through the efforts of all. This was also an observation made by the online tutor in relation to not only the participants, but also in relation to her own time. All participants felt that this might be helped somewhat by starting a new activity on a Thursday or Friday, giving them the weekend ahead to start to tackle the task set, rather than on a Monday as had been set-up by the CDT. It is imperative that the CDT addresses this issue so students do not view online activities as an extra burden, rather than an important part of the learning process.

However, three of the participants also felt the time structure imposed by the activities had a positive side in relation to their time management;

"This was more focussed…forced you to be more organised…didn't have the time to, to meander [laughs], get side-tracked…" (S2)

Flexibility and time management issues need to be addressed with future students so that they are fully aware of the potential drawbacks and benefits of a medium that is potentially less flexible than paper-based DL.

Online Learning in the Future

Only one participant (S1) indicated a preference not to study another module in this way since S1 prefers to learn alone using paper-based materials. However, S1 appeared to recognise the value of having contact with other learners;

"…the best side of it was the, the contact with other people…" (S1)

S1 also indicated that a less structured communication with others might suit someone with S1's learning style, but concern that this ("lurking") might not be acceptable also emerged;

"… I enjoyed sort of going on and just reading things without putting anything up myself…probably a cheat's way of doing it…" (S1)

However, this learning from the learning of others, i.e. vicarious learning (Lee and McKendree, 1999) should not be ignored as a legitimate way of learning for some learner types, although direct participation by other learners is essential for it to be facilitated.

The other three said that they would be happy to study in this way again, but they all felt, to varying degrees, that it was important for participants to meet f-2-f on at least one occasion during the PgDCP, for example;

"… you need to have met them so you know who you're 'talking' to…"(S3)

S4 did not agree with S3's sentiments entirely, but still felt that some f-2-f contact was necessary;

"… I would like to meet them, definitely, but…you get so much more out of the online working than you would ever do in the f-2-f…" (S4)

Evans (1994) and Thorpe (2002b) have observed the benefit of CMC groups meeting f-2-f at least once.

These comments express a potential need in our learners to meet at least once, near the beginning of the course, to establish some sort of bond. Overall, the comments indicated that ACMC is an *additional* valuable medium for our learners that can complement what we already use.

Two participants suggested that a less structured environment might suit some individuals better. However, published literature is very persuasive that structure is required to motivate students to participate online. In this study, the unstructured Cafe-bar area was little used by participants.

All felt that DoMM should continue to develop online learning for the PgDCP, offering it as an option to begin with. One participant also commented that this type of forum would be useful for inter-professional learning. It could potentially be a tool for breaking down barriers between health professionals and help to overcome the difficulties and logistics of getting different health professional groups together to learn and share experiences.

CONCLUDING DISCUSSION AND RECOMMENDATIONS

Limitations of the Evaluation

While this evaluation is limited in relation to the sample size of the pilot group and the biases that could be introduced by a self-selected group, it enabled in-depth interviews with the participants, as well as observation of their online participation. This process provided the CDT with honest and valuable feedback that we can use to continue our development of this module/ACMC, and that are potentially useful to others developing online learning.

The participants identified similar aspects of benefit to those that Harasim (1987) identified with her learners in relation to;

- Increased interaction in terms of quantity and quality,
- Better access to group knowledge and support,
- Increased motivation

and there were many similarities with the positive and negative feedback that McMurray and Dunlop (1999) had obtained from their pilot study.

Recommendations and Strategy for the Future

Based on this evaluation, in particular the pilot group's comments about flexibility and time, the CDT's strategy in the short-medium term for the PgDCP will be: (i) to adopt a cautious approach to the implementation of online learning; (ii) to offer ACMC as an optional medium for this module in the first instance. Further evaluations with current students, and a full evaluation of the implications for the DoMM's resources, will be conducted.

We also need to be mindful of research that shows computer conferencing to be relatively unpopular with students (Simpson, 2000), and that the best learning medium varies for individual students (Moore and Kearsley, 1996; Lockwood and Gooley, 2001).

We also feel there is a need for evaluation of the quality of students' actual learning online since the CDT are principally interested in the medium as a way of improving, or at the very least delivering the same quality of, learning. The feedback from participants who took part in this pilot presentation of the online module, together with observations from the CDT, tentatively suggests that ACMC does improve the quality of student learning. It also provides the opportunity for learners to express a difference of opinion in a non-threatening environment, and lends itself to a more equal relationship between learner and tutor. However, further research is required. If in reality ACMC does not facilitate at least equal, or more efficient and effective learning than our current media, then we should question whether our investment, and the investment required by the learners, in online learning can be supported.

References

Brown, A. (1997a) "Designing for learning: What are the essential features of an effective online course", *Australian Journal of Education Technology* **13**(2), 115–126.

Brown, S. (1997b) *Open and Distance Learning: Case Studies from Industry and Education* (Kogan Page, London).

Burton, S. and Anderson, C. (2002) "Using the Internet to develop and international learning community of pharmacists", *Pharmacy World and Science* **24**(5), 172–174.

Calder, J. (1994) *Programme Evaluation and Quality* (Kogan Page, London).

Chambers, E. (1992) "Work-load and the quality of student learning", *Studies in Higher Education* **17**(2), 141–153.

Dillenbourg, P. and Schneider, D. (1995). "Collaborative Learning and the Internet", http://www.tecfa.unige.ch/tecfa/research/CMC/colla/iccai95_1.html [March/2000].

Evans, T. (1994) *Understanding Learners in Open and Distance Education* (Kogan Page, London).

Harasim, L. (1987) "Teaching and learning online: issues in designing computer-mediated graduate courses", *Canadian Journal of Educational Communications* **16**(2), 117–135.

Harasim, L., Hiltz, S.R., Teles, L. and Turoff, M. (1995) *Learning Networks: a field guide to teaching and learning online* (Massachusetts Institute of Technology, Cambridge, MA).

Hill, J.R. (1997) "Distance Learning Environments via the World Wide Web", In: Khan, B., ed, *Web-Based Instruction* (Educational Technology Publications, New Jersey).

Hislop, G. (2001) "Working Professionals as Part-time On-line Learners", *Journal of Asynchronous Learning Networks* **4**(2), http://www.aln.org/alnweb/journal/Vol4_issue2/le/hislop/LE-hislop.htm [31.5.01].

Holmberg, B. (1995) *Theory and Practice of Distance Education*, 2nd Edition (Routledge, London).

Klemm, W.R. and Snell, J.R. (1996) "Enriching Computer-Mediated Group Learning by Coupling Constructivism with Collaborative Learning", *Journal of Instructional Science and Technology* **1**(2), Article 1. http://www.usq.edu.au/electpub/e-jist/vol1no2/article1.htm [09.05.00].

Lee, J. and McKendree, J. (1999) "Learning vicariously in a distributed environment", *Active Learning* **10**, 4–6.

Lockwood, F. and Gooley, A. (2001) *Innovation in Open and Distance Learning. Successful development of Online and Web-Based Learning* (Kogan Page, London).

Mason, R. (1998) *Globalising Education. Trends and Applications* (Routledge, London).

McConnell, D. (2000) *Implementing Computer Supported Co-operative Learning*, 2nd Edition (Kogan Page, London).

McMurray, D.W and Dunlop, M.E. (1999). "The collaborative aspects of online learning: A pilot study" *Ultibase Articles* (*paper presented at the 6th International Literacy and Education Research Network Conference on Learning*), *Malaysia*. http://ultibase.eu.rmit.edu.au/Articles/online/mcmurry1.htm [02.05.02]

Moore, G.M. and Kearsley, G. (1996) *Distance Education. A Systems View* (Wadsworth Publishing Company, Belmont, CA).

Morgan, A. (1993) "Dialogue in open and distance learning", *Improving your Students' Learning. Reflections on the Experience of Study* (Kogan Page, London).

Nipper, S. (1987). "Third Generation Distance Learning and Computer Conferencing", http://www.cdl.open.ac.uk/mindweave.chap5.html. [February/2000].

Pettit, J. (1998). "Second Generation Good, Third Generation Better?", In: Szucs, A. and Wagner, A. (eds.) *Universities in a digital era—transformation, innovation and tradition: roles and perspectives of open and distance learning*. Proceedings of the 7th European Distance Education Network (EDEN) Conference, 1, 248–251.

Proctor, M. (1993) "Analysing Survey Data", In: Gilbert, N., ed, *Researching Social Life* (Sage Publications, London), pp 218–238.

Salmon, G. (2000) *E-Moderating. The Key to Teaching and Learning Online* (Kogan Page, London).

Simpson, O. (2000) *Supporting Students in Open and Distance Learning* (Kogan Page, London).

Stenerson, J.F. (1998) "Systems Analysis and Design for a Successful Distance Education Program Implementation", *Online Journal of Distance Learning Administration* **1**(2), http://www.westga.edu/~distance/stener12.html [06.03.02].

Thorpe, M. (2002a) "Rethinking Learner Support: the challenge of collaborative online learning", *Open Learning* **17**(2), 105–119.

Thorpe, M. (2002b) "Supporting learners in ODL systems", *Open University*.

Wegerif, R. (1998) "The social dimensions of asynchronous learning networks", *JALN* **2**(1), http://www.ain.org.alnweb/journal/vol2_issue1/wegerif.htm [25.08.00].