Lessons from the Field:
computer conferencing in higher education

MARGARET FOLEY McCABE
University of Reading, United Kingdom

ABSTRACT This article explores the tensions between the potential of computer conferencing as represented by theoretical models and its actual uses in higher education. An overview of the literature highlights major themes that run throughout this body of research, including claims that the medium: 1. provides a democratic environment due to the equal access afforded to participants; 2. enhances active learning and collaboration; 3. shifts the role of the teacher from classroom leader to facilitator of learning; and 4. encourages more thoughtful participation due to the text-based, asynchronous nature of interaction. Against this backdrop, case studies of courses taught through The New School for Social Research’s on-line programme provide empirical data that challenge many of these claims. A discussion of teaching practices related to student participation and perceptions of computer conferencing is also offered to serve practitioners and teacher education efforts.

Introduction

In recent years computer conferencing has grown in popularity as a vehicle of distance education. While preserving the freedom associated with asynchronous communication and providing wide access to low-end technology users, computer conferencing allows students and teachers to participate in group learning and interact ‘many-to-many’ (Harasim, 1989). As a mediating tool, computer conferencing facilitates two-way interaction among participants, thus enabling a classroom situation to be simulated on-line.

The virtual classroom has many explicit and implicit characteristics that distinguish it from its face-to-face counterpart and present new challenges for educators. According to researchers and theorists in the field, computer conferencing does not represent a mere shift in venues; rather it introduces
a new set of social dynamics, problems and opportunities for teachers and learners. Dramatic claims are made about its potential to break down traditional barriers of education, connecting students to resource-rich, collaborative and democratic environments. While such assertions may be promising to educators and students, they also represent a tendency within the literature to confuse the medium's technical potential with it as an approach to teaching and learning.

This article explores the tensions between the potential of computer conferencing as represented by theoretical models and its actual uses in higher education. An overview of the literature is offered to highlight major issues and themes that run throughout this body of research. Against this backdrop, case studies of courses taught through The New School for Social Research’s on-line programme provide empirical data that challenge many trumpeted claims.

Thematic Overview of the Literature

Characteristics and Attributes of Computer Conferencing

On a technical level, computer conferencing is part of a software family known as ‘groupware’. It allows groups of people to participate in a shared discussion by posting messages which are stored on a central host computer for others to retrieve and comment upon. Harasim (1989) has identified five key attributes that distinguish computer conferencing as a unique tool for education. She lists:

- many-to-many communication;
- place independence;
- time independence (that is, time-flexible, not atemporal);
- text-based;
- computer-mediated interaction.

This list is cited throughout the literature on on-line education. Related to these collective characteristics, researchers and theorists suggest computer conferencing presents a new paradigm (Kaye, 1989), a new domain of education (Harasim, 1989) and a new learning environment (Roberts, 1988) that is distinct from other forms of distance education and face-to-face learning.

Equal Opportunity for Participation

A number of scholars hail computer conferencing as a medium that offers equal opportunity for participation and thus challenges the traditional power relationships between teachers and students, shifting control from the teacher to a more democratic group orientation (Rice & Love, 1987; Harasim, 1987 and 1989; Kaye, 1989). Claims of this nature are generally based upon studies of response levels and distribution of turn-taking in
computer conferences. For example, Harasim (1987) studied computer-conferenced seminars at New Jersey Institute of Technology, and found that teachers contributed proportionally fewer responses than students and far less than classroom-based instructors. She states: ‘In a face-to-face class, an instructor might monopolize 60-80% of verbal interaction, while a computer-mediated communication instructor might only contribute 10-15%’ (p. 120).

Riedle’s (1989) study of patterns in computer-mediated discussions at the University of Alaska also found that teachers contributed only about 22% of the overall class discussion (p. 216).

A study by Graddol (1989) at the Open University in the United Kingdom (UK) supports Harasim’s findings about the relative horizontal distribution of responses in their courses which use CoSy computer conferencing software. Graddol attributes the distribution to the relative ease of turn-taking in an asynchronous, text-based environment:

> Turn-taking in CoSy does not require skills or special management in the same way as in face to face interaction. There is no such thing as an interruption and there is no way in which one participant can prevent another from taking a turn... A clique of participants cannot bounce the conversation between themselves and, in principle, any person can always contribute next. (p. 239)

A study by Kinner & Coombs (1995) of courses taught through Rochester Institute of Technology also found that the text-only feature of present computer conferencing equalizes status among participants, concluding that, ‘Shy students participated more readily, and students who normally dominate a discussion find it does not work in a CMC [computer-mediated communication] setting’ (p. 66). Berge & Collins (1995) reflect on these findings and contend that text-based, asynchronous communication lends itself to a more democratic distribution of participation:

> The consequent reduction in social cues leads to a protective ignorance surrounding a person’s social roles, rank, and status. Further, it is impossible to know if another person took several hours to draft a one screen response, or several minutes. Responses are judged by the ideas and thoughts conveyed, more so than by who is doing the writing. As a result, the lack of social cues and the asynchronous nature of the medium affords those with physical limitations or personal reticence the possibility of participating fully and equally in communicative activities within a mainstream environment. (p. 4)

The reported potential of computer conferencing to promote high and equal levels of student participation is advantageous to teachers who favour group
collaboration and student-centered discussions. However, research on this issue is young and several studies contradict egalitarian claims. For instance, an early study by McCreary & Van Duren (1987) found that individual participation varied widely among students. They postulate the following explanation: ‘Observations reported on nearly 20 academic conferences indicate that student conferencing behavior in general may be influenced by academic level, curriculum area and relative status of conference participants’ (p. 111).

Riedle’s (1989) observations of student participation in computer-mediated discussion concurs with McCreary & Van Duren’s findings: ‘As in most traditional classes, some students participated more than others’ (p. 215).

Grint (1989) conducted a series of interviews with twelve students from the UK Open University to explore issues related to patterns of student response. His findings question the claim that computer conferencing breaks down hierarchical status:

Some of the most frequently asserted advantages of CMC are the flattening of hierarchies, the consequential expansion of participation, and the channeling of attention away from the messenger and onto the message. The interviewees had some sympathy with this point, but generally seemed to have adopted systems for reconstructing status.

(p. 191)

The removal of physical and verbal cues may reduce initial social bias, but, Gunawardena (1991) contends, ‘as the conference progresses, participants attach certain characteristics to messages, and this leads to differences in the status of participants’.

Kerr & Hiltz (1982) also found that ‘active cliques’ of students within computer conferences tended to monopolize conversation and inhibit other members from joining in. In the conference transcripts they analyzed, 50% of the comments were made by 10% of the participants. Philips & Pease’s (1987) examination into inhibiting factors of student participation revealed that entry into a formed group can be difficult for latecomers and ‘weaker’ students found it hard to converse on the ‘same intellectual level’ as the more active members of the class (p. 49).

**Active Learning, Collaboration and Constructivism**

The group interaction made possible through computer conferencing has generated interest in this medium as a tool for active learning, collaboration and constructivist teaching. Gunawardena (1991) suggested that
computer-mediated communication is particularly suited to collaborative learning because ‘the medium facilitates information exchange and provides the shared space essential for group work’ (p. 3). In fact, the literature on computer conferencing is heavily biased toward such learning models (Wells, 1992).

Hiltz (1994) points to ‘active learning’ as a prerequisite for collaboration and claims that computer conferencing necessitates active participation by ‘forcing’ students to physically and mentally engage in the process of retrieval and addition of information to and from the system: ‘The computer forces responses and attention from the participants. They cannot just sit there passively and ‘tune out’; they must keep doing things in order to move through the material and activities of the conferences’ (p. 12).

Other research documents students’ increased depth in comment (Harasim 1989; Fey, 1992) and offers evidence of students’ investment and intellectual activity in conference dialogue. These studies suggest that the self-pacing made possible through asynchronous communication and the act of articulating one’s thoughts in writing promoted thorough and well-formed responses on-line.

Jonassen et al (1995) link the collaborative potential of computer conferencing to constructivist teaching and learning. The authors claim that the new technologies have contributed to a movement away from a traditional objectivist paradigm that views education as the transmission of information from teacher to student, to one that views knowledge as a personally constructed world view. Jonassen asserts that the collaborative potential of computer-mediated communication makes it an ideal tool for constructivist teaching. He proposes that distance educators can and should take advantage of this potential and encourage students to make their own meanings through collaboration with others: ‘Through the process of articulating covert processes and strategies, learners are able to build new and modify existing knowledge structures. Collaboration is the focus of constructivist distance learning activities’ (p. 13).

**Shifting Role of Teacher**

Notable researchers on computer conferencing assert that the asynchronous group interaction of the medium demands a shift in the teacher’s role from information presenter to facilitator of discussion (Kerr, 1986; Harasim, 1989;
Unlike traditional classroom activity, in which the teacher directs the instruction, leads the lessons, prompts responses, and paces the class, on-line group learning is student centered and requires a different role for the teacher, of facilitator rather than lecturer. The teacher plans the activities but then follows the flow of the conversation, offering guidance as needed rather than strictly adhering to the preplanned agenda or syllabus. (p. 174)

The above quote is representative of many such claims in the literature. The rhetoric tends to simplify complex and varied teaching and learning models prevalent in classrooms today (physical and virtual) into two polarized camps: traditional, didactic, teacher-centered instruction that supposedly dominates face-to-face classrooms versus active, collaborative, student-centered learning environments possible through computer conferencing. While this rhetoric may help to dramatize the authors’ points, it does little to help understand the complex pedagogical issues involved and factors related to or influenced by the medium.

Moore & Kearsley are more cautious in their comparisons between face-to-face and distance environments. They contend that teachers who favor student interaction and group discussion in their classrooms often have an easier time adapting to the on-line environment. They state: ‘The most fundamental point for instructors to grasp about computer conferencing is that … it is primarily suited to inter-learner interactions, such as discussions and collaborative activities rather than didactic presentation of content’ (Moore & Kearsley, 1995, p. 142).

Written lectures presented as long blocks of text are discouraged in favor of shorter messages that inspire student response. Moore & Kearsley (1995) contend that:

Interactive teaching is really a ‘mental set’ that requires teachers to think about inducing knowledge rather than instilling it. (p. 133)

Mason (1989) asserts that an effective computer conference moderator has three categories of responsibility: organizational, social, and intellectual. The organizational function includes planning and managing the conference activities. The social role involves establishing and maintaining positive relationships and learning environment. The intellectual role entails promoting student participation and helping to summarize and connect students’ contributions.
Implications of Asynchronous Written Communication

Rapid, yet delayed, exchange of written communication creates a unique form of expression. Feenberg (1989) proposes that the juxtaposition of personal exposure which results through on-line participation and the relative anonymity of faceless contact creates a ‘new social space’ that has its own set of dynamics. People are able to manage the presentation of their identity in more deliberate ways, taking time and editing messages to convey a certain tone. Thus, the on-line personality, Feenberg contends, is profoundly modified through self-conscious editing.

Reflective thinking is a positive outcome of text-based interaction cited by researchers. Harasim (1990) contends that written communication is a ‘meta-cognitive skill’ that gives occasion ‘to make explicit to oneself the aspects of an activity that are usually tacit’ (p. 49). That is, the act of writing forces one to articulate, with enough clarity to be understood by others, personal thoughts and in so doing, helps the writer to examine their own reasoning process.

Computer conference software stores all contributions in a database for participants to retrieve and review at their convenience. The transcript, as an evolving artifact of the on-line discussion, is a significant resource for learning. Harasim (1990) found that students reported increased attentiveness to written contributions over verbal exchanges in face-to-face classrooms and found the transcript offered complete notes that were impractical to track in a live discussion. Mason & Kaye (1989) suggest that text-based communication lends the opportunity for students to improve their writing skills. However, in a study of factors related to students’ ‘readiness’ for computer conferencing, Eastmond (1993) found that the medium ‘presupposes the ability to read, write and type well’ (p. 21). Instead of presenting an opportunity for equal and unbiased participation, the narrow bandwidth of written communication may present a formidable barrier for weaker writers.

Another potentially negative aspect related to text-only communication is the ‘information overload’ (Harasim, 1990) that results from the volume of text that accumulates as the discussion progresses. Students also perceive a loss of personal contact and clarity of message due to the lack of physical presence, voice intonation, gesture and other tacit cues (Harasim, 1989; Moore, 1992). Feenberg (1989) relates the loss of tacit information to the ambiguity of context.
discussed earlier and suggests that it makes humor, irony and subtle nuances of meaning difficult to convey and often misunderstood. The traditional academic emphasis of evaluation on written work (papers, essays, etc.) may also cause participants to be overly self-conscious about the quality of their on-line messages and inhibit spontaneous expression. Davie (1989) addresses this issue:

I think that for graduate students, the problem seems to lie in the perception that leaving a note in the conference is an act of publishing, rather than an act of speech. As a student confronts the issue for the first time (or maybe at any time) life scripts relating to significant other’s reactions to one’s written work are activated. We become overly concerned about how others will view our writing. (p. 80)

Unlike face-to-face conversations in which we can monitor the reactions of others to our words, on-line communication does not offer such immediate or rich feedback. Thus, perceived risk and vulnerability can be higher in asynchronous written exchange. Davie (1989) discusses other issues related to ‘fear of publishing’ including anxiety and self-censorship due to the permanent record of one’s contributions stored in the systems database, the future use of the transcript, and intellectual property rights of participant/authors of the emergent text.

Problematic Issues in the Literature

The research on computer conferencing is relatively new to mainstream educational literature. As the above review reflects, the issues addressed in this narrow yet growing body are widespread and frequently ill-defined. There is a tendency within the literature to confuse the potential of computer conferencing as a medium and a tool of education with it as an approach to teaching and learning. The problem of confounding medium and method becomes even more confusing when the discussion of computer-mediated communication is tied to a particular educational paradigm (namely collaborative learning models and constructivist teaching, as is commonly stressed throughout the literature). Authors occasionally point to teaching strategies and student input as salient factors in determining the extent to which the potential of the medium to promote collaboration was actualized. However, most lose sight of these factors in their conclusion, favoring dramatic claims about the medium’s inherent promise for progressive education. The following quote by Harasim (1990) illustrates the assumptions driving much of the research and the circular logic that is used to reaffirm the premise that computer-mediated communication is predisposed to learner-centered education:
Despite the medium's inherent support of a learner-centered environment, there is still a possibility that old patterns of teaching and learning will predominate. Tutors who were meant to be facilitators and resource people, available to be consulted when needed, might end up, with the complicity of their students, reproducing the social role of the classroom teacher as authority figure. This goes against the potential of [computer-mediated communication] for promoting the educational use of 'many-to-many' communication because it puts the teacher at center stage. (p. 27)

Is it not possible that computer conferencing, like other classroom tools, is simply at the service of its users and therefore dependent upon the educational approaches employed? Similar questions surround claims about the egalitarian nature of the medium and the shifts in teaching roles that are proposed.

Eastmond (1993) noted these discrepancies in the research and conducted a series of observations of computer conferences and unstructured interviews with the participants to investigate common claims made in the literature. His findings conclude:

The study indicates that many features of computer conferencing promoted in the literature - interactivity, collaboration, reflection, and self-direction are not inherent in the medium, instead this medium can be passive, didactic, competitive, spontaneous, and other-directed. Student participation, course design and instructional style are some of the salient factors that impact whether these elements emerge. The promise of computer conferencing for increased reflection, collaboration and intellectual amplification are largely dependent on the individuals who meet in these 'electronic classrooms'. (p. 18)

Eastmond’s findings demonstrate the schism in understanding that surrounds computer conferencing’s potential and actual use in education.

A Case Study of On-line Classrooms

The bias in the literature on computer conferencing toward collaborative, constructivist teaching models obscures the range of possible uses of the medium as a tool of education. A research project was conducted by McCabe (1997) at The New School for Social Research’s on-line programme to explore this range and document empirical evidence about computer conferencing’s effect on the complex process of teaching and learning. The study looked at three diverse courses taught through a text-based computer conferencing system over eight-week semesters. The research questions focused on the curricular designs, the teaching practices employed and the on-line interaction that occurred within and across the three courses.
The Sample

The New School for Social Research is located in Greenwich Village in New York City. The on-line programme is part of the University's Adult Division that caters to older, nontraditional students who are often completing their degrees while working or caring for children. At the time of this study, the New School's on-line programme used a highly customized version of a commercial software called Caucus. Classes ranged in size from six to nine students. The students were from twenty-three to fifty-eight years old and lived in cities across the United States. Communication was achieved entirely on-line and participants were required to log on at least three times a week.

The three sample classes were selected from a pool of fifty-eight courses offered to represent a range of approaches to curriculum design and on-line teaching. The first course, ‘Foundations of Feminism’, was conducted as a traditional lecture and discussion model. It was highly structured and followed a predictable routine. Each week the teacher assigned readings, posted a lengthy lecture and added questions which the students were required to answer. The second course, ‘Hypertext Poetry and Fiction’, was a writer’s workshop that focused on the technique of writing in hypertext and critique of published works. The ‘Hypertext’ teacher had extensive experience with communications technology and designed his course to take advantage of new dimensions made possible through computer conferencing. For instance, he invited hypertext authors and publishers to join the on-line discussion as guests, pointed to many resources on the World Wide Web, and incorporated additional software into his course. Unexpectedly, the third course, ‘Introduction to the New Media Age’, turned out to be a negative case study that was useful by comparison. The course was intended to explore the prevalence and significance of digital information on American society. However, the teacher’s lack of preparation and participation during the research period made visible the potential pitfalls in communication that can occur through this medium.

Data Collection and Analysis

Transcripts of the class discussion and in-depth interviews with all the participants served as primary data sources. The teachers were interviewed at the beginning of the semester to discuss their teaching philosophies,
curricula rationales, and expectations. All of the students and the teachers were interviewed at the conclusion of the courses to report on their experience. Background data sources included student pre-course surveys and course handouts; these provided descriptive information about the participants and evidence of the planned curricula.

The transcripts of the on-line discussion were analyzed in several ways. First, a simple map of participation patterns and word counts of each contribution indicated who was speaking to whom and how much each person added to the dialogue. Each course transcript was then analyzed using more qualitative methods to capture the nature of the interaction. In response to interview questions, the participants described how the teacher and students tended to contribute to the on-line discussion. These descriptions served as the basis for defining categories to code the transcripts. The following categories were used to describe the teachers’ input:

- to structure and explain the procedures for classroom communication;
- to provide information;
- to give feedback and praise students’ efforts;
- to direct discussion to task;
- to encourage follow-up responses and promote participation.

Students’ input was described using the following categories:

- answer in response to the teacher’s questions or request for information;
- ask questions;
- initiate new topics.

In each class, participants named one or more students who tended to act in the role of teacher. In these cases, the students’ contributions were described in terms that fit within the categories used to code teachers’ remarks. Contributions were then sorted according to individual participants and analyzed to identify differences and patterns in the ways each contributed. A case study was constructed for each course separately, describing the curriculum design, the participants, and the on-line interaction. Finally, cross-case analysis looked at similarities and differences in how each of the teachers performed the tasks of teaching and how these practices related to the students’ participation.

Discussion of Findings Related to the Literature

Teachers’ Beliefs and Practices Shape the On-line Environment

The central finding of this study was that computer conferencing can support a range of learning environments, from a traditional teacher-led symposium to a student-centered collaborative workshop. Importantly,
participants attributed this variety to the teachers’ beliefs and practices rather than factors related to computer conferencing directly. All three teachers reported that their essential approaches to teaching did not change between the on-line and face-to-face situations. They disputed the notion that the medium of computer conferencing dictates a shift in their role to facilitator rather than leader of classroom discussion. The range in learning environments observed across the three courses demonstrates this point. One of the teachers adamantly believed in her responsibility to lead as the class ‘expert’ and directed her course accordingly. On the other end of the spectrum, the writing workshop teacher believed that students’ contributions were at the heart of his course and encouraged a free flow of student critique and collaboration. The connection between teachers’ beliefs and practice is well documented (Bussis et al, 1976). It should not be surprising, then, that a shift to a new technical environment does not sever this important link. Whether computer conferencing is thought of as a tool, vehicle or domain of education, it is clear that the users – the teachers and students – ultimately dictate the kind of learning environment that emerges. Therefore, assertions about computer conferencing as an inherently democratic environment or collaborative tool seem to misdirect attention from the method to the medium.

The Effects of Asynchronous Written Communication

Findings of this case study regarding the effects of an asynchronous, text-based environment support much of what is reported in the literature. Participants valued the asynchronous nature of communication because of the flexibility it provided within their personal schedules. Students and teachers noted that the individualized timing allowed for more deliberate and thorough responses than typical of face-to-face encounters. However, a few students found the time delays between postings made the conversation disjointed and the momentum difficult to maintain. The following student’s comment is representative of experiences reported:

I think that it’s a mix, both positive and negative. The positive aspect of it is that anybody can really deliberate about what they want to say. You have the opportunity to edit yourself and be more contemplative. And that does lead to somewhat of a higher level of discussion in some respects. And the other sense is that you don’t have the kind of spontaneity the way you do with a group in a room together ... The way
people play off each other. I think maybe you lose some of that. (McCabe, 1997)

Participants reported a similar range of feelings regarding the text-based nature of the communication. All of the students in the writers’ workshop said that it was an appropriate, even preferable means of discourse for their content area, noting that it promoted thoughtful, well-constructed contributions. Most students in the other two courses agreed with this, but some complained that the task of writing was often a time burden and felt inhibited by the need to organize and edit their thoughts. The teachers and students also commented on the benefits of the emergent course transcript as a permanent record of classroom interaction.

Unequal Participation

While the characteristics of computer conferencing may indeed grant equal opportunity to participate, the potential is not always realized. In two of the three on-line courses studied there was a high level of interaction and satisfaction among the participants. However, participation patterns across the courses showed that a few students dominated the majority of on-line discussion. Fifty-seven percent of the total contributions were made by the two most active students in each class.

The study also found that teachers contributed far more than proposed in some research. Harasim (1987) contends that on-line teachers tend to contribute only 10-15% of the classroom dialogue. However, analysis of word distribution in this case study found that the teachers accounted for 30-50% of the total discussion. Again, the evidence suggests that the technology alone may not significantly alter teachers’ involvement.

On-line Teaching Practices: lessons from the field

The three teachers in this study employed a variety of strategies to achieve their curricular goals. A full description of these tactics would be too lengthy to describe here. Instead, a discussion of teaching practices related to on-line participation and students’ perceptions is offered to identify strategies that may prove helpful to future practitioners.

Frequent Participation

At a most basic level, the teachers' frequent participation was critical to the success of two of the three courses. These teachers logged on daily and estimated that they spent one to two hours a day – seven days a week – reading students’ comments, composing their responses and reviewing
course work. The students in these courses were appreciative of the teachers’ efforts and felt that they received more personalized attention than they had in traditional classroom situations. The third course suffered from sparse interaction, disjointed conversation and student dropout. Students attributed these ill effects primarily to the teacher’s lack of participation. The intense time demands on these teachers raise real issues about appropriate workload and compensation. It may be prudent to explore alternative curriculum designs to distribute the responsibility of leading the discussion more equally among the students. In any case, it is imperative that teachers establish a regular pattern of participation to coordinate and propel the on-line interaction.

Structured Curriculum

A fixed curriculum framework seems to encourage participation and enhance students’ experience. The teachers who set up a predictable structure for class communication enjoyed more interaction in their courses. Their students reported that the established framework lessened initial anxieties, helped them organize their time and participate with greater confidence. A predictable pattern of discussion, however, can become boring over time. To avoid this the ‘successful’ teachers designed special events at critical points in the semesters. One teacher invited in guest speakers to join the on-line discussion for periodic weeks; the other assigned ‘student presentations’. Such activities served to break monotony and reinvigorate students’ interest.

Explicit Norms of Communication

It seems that on-line classrooms are particularly susceptible to communication breakdown due to the novelty of the situation and the lack of nonverbal cues to inform participants about classroom norms. Teachers’ articulation of their social and academic expectations proved critical to overcome this problem. ‘Meta-talk’, or discussion about the communication process itself, was helpful for students to understand what was expected of them and how their posted messages were perceived. Findings of this study suggest that it is important for teachers to make explicit the rules of communication and to discuss, periodically, the on-line interaction norms that have emerged.

Technical Proficiency

Participants in all three courses experienced technical problems of various kinds. Not surprisingly, the people with greater technical experience found the medium to be less of a barrier and were able to devise strategies to work around problems. Conversely, three students with limited computing
experience dropped out. This suggests that there may be a threshold of technical proficiency that is necessary to succeed on-line. The teachers’ adeptness with the technology also ranged significantly. The one with the greatest experience exploited the potential of the system to integrate new resources and other technologies; the others did not. While the appropriateness of such integration remains tied to specific curricular goals, technical know-how may widen the realm of possible resources and strategies available to teachers. Teacher education and student orientation programmes will need to identify discrete technical skills required of the specific computer conferencing environment in order to assure that adequate proficiency is achieved.

Conclusion

The recommendations cited above are not necessarily unique to on-line teaching. Any classroom could probably benefit from a highly involved teacher with a well-structured curriculum, explicitly articulated expectations, and facility with tools of the trade. While computer conferencing clearly offers a new environment for teaching and learning, it is important to recognize that many, if not most, pedagogical concerns carry over from more traditional learning situations. The new technical environment does, however, present a unique opportunity for teacher education as it confronts novices and seasoned teachers with the need to re-examine their methods of instruction in order to translate them for the medium. It offers the occasion to highlight and make explicit the connections that align teachers’ philosophies of education, goals and curriculum designs.

Correspondence

Dr Margaret Foley McCabe, Faculty of Education and Community Studies, University of Reading, Bulmershe Court, Reading, Berkshire RG6 1HY, United Kingdom (mfmccabe@nildram.co.uk).

References


Wells, R. (1992) Computer-mediated Communication for Distance Education: an international review of design, teaching, and institutional issues, (ACSDE Research monograph No. 6). University Park: The American Center for the Study of Distance Education.