

Student Support and Computer Mediated Communication in Distance Education

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Abstract: Computer mediated communication offers a number of advantages to distance educators in providing faster and more interactive channels for student support. Experience in the use of this technology in Europe, Canada, the United States and Australia suggests that both students and tutors benefit. This article presents a classification of potential applications for student support in distance education.

Résumé: Les avantages sont nombreux pour l'enseignement à distance d'adopter l'informatique comme moyen de communication puisqu'elle fournit un support plus rapide et interactif aux étudiants. Les expériences sur l'utilisation de cette technologie en Europe, au Canada, aux États-Unis et en Australie nous montrent que les étudiants autant que les enseignants peuvent en profiter. Une classification des demandes éventuelles pour cette nouvelle technologie dans l'enseignement à distance est présentée dans cet article.

According to Nipper (1989), in a "third generation" distance education environment, radio and television will probably be superseded by cooperative learning, using computer mediated communication (CMC), much in the way that correspondence courses are being superseded by courses using multi-media and mass-media delivery techniques.

It is self-evident that the success of distance education is highly dependent on the availability of communications technology. However, it would also seem that human factors have a major contribution to make.

In this paper CMC will be presented as an efficient vehicle for providing student support in distance education. The perspective adopted is similar to that expressed by Kaye:

CMC will not in every case replace teachers, texts, telephone tuition, or residential seminars - for the majority of learners it will complement these earlier technologies, and in so doing vastly enrich the distance education experience. And for particular groups -the

housebound, the handicapped - CMC may well become the major lifeline to interactive learning opportunities. (Kaye, 1989, p.9)

Education at a distance has several general characteristics. In distance education, knowledge is transported instead of learners; communications represents an important vector in this function. In addition, the teaching process is typically organized through a division of labour; course planning and development is carried out by one team, delivery and tutoring by another. In well-designed distance education, the learner is offered a choice in modes of support. Another general characteristic of distance education is teachers and learners rely on informal contracts to meet objectives within a given period. Finally, self-instruction is viewed as an important activity for the learner (Dieuzeide, 1989).

COMPUTER MEDIATED COMMUNICATION AND DISTANCE LEARNING

Computer mediated education or "on-line education" (Mason & Kaye, 1989; Henri, 1988) is accomplished through the transfer of text and data from a central computer, independent of the constraints of time and distance. It requires a telephone line, a modem, a microcomputer, wordprocessing software and communications software. There are three types of on-line service currently being used: electronic mail for the exchange of short messages between subscribers to a bulletin board service; computer conferencing as a medium for synchronous or asynchronous communication among members of a group; and on-line database for access through a terminal or microcomputer to schedules, menus, bibliographies, directories, data banks, etc.

Computer mediated communication is used in distance education as a means of facilitating group discussions, as well as encouraging learner autonomy and strengthening peer motivation. As a communications medium, CMC may replace scheduled telephone conferences or individual telephone calls between tutors and students, and allow participants to share relevant information within the group without the constraints of time and availability (Kaye, 1987; Mason, 1990). However, CMC may not entirely replace face-to-face or written communications because currently available communication technologies provide limited graphics transmission, and lengthy documents are not easily read on an 80 character, 25 line screen display (Mason, 1990). Postal service and facsimile transmission continue to be a better alternative for many documents (Kaye, 1987; Hailes, 1985; Montgomerie, 1987). Human factors, such as nonverbal communication, are also difficult to simulate in CMC, limiting the range of communication available (Hiltz, 1990).

Channels for Student Support in Distance Education

Many elements can comprise channels for student support, and for the

purpose of this analysis, the elements will be categorized as didactic materials, tutoring, peer interaction and didactic resources.

- ✦ *Didactic Materials*: textbooks, assignments and study guides developed in such a way as to encourage profound learning (Willen, 1988) and better integrate student concerns about course content (Paul, 1988);
- ✦ *Tutoring*: guidance, counseling and advocacy (Abrioux, 1985; Lebel & Michaud, 1989);
- ✦ *Peer Interaction*: facilitating cooperative learning (Amundsen & Bernard, 1989; Wangdhal, 1981) and responding to affiliative needs (Boyd, 1985); and
- ✦ *Didactic Resources*: facilitating access to main computer, libraries and experts in order to reduce feelings of isolation (Wangdhal, 1981; Willen, 1981; Thompson, 1989).

Roles of Student Support in Distance Education

Institutions have two goals in providing student support for distance education: assist the learners in their pursuit of knowledge, and foster their personal quests for autonomy. To that end, the following support services are provided:

- ✦ Methodological support as a basis for the acquisition of knowledge and skill;
- ✦ Metacognitive support based on conscious control and organization of cognitive processes;
- ✦ Emotional and motivational support including preferences, negative and positive feelings towards persons, ideas and things;
- ✦ Administrative support or assistance through institutional processes and procedures, technical assistance (Lebel & Michaud, 1989, p. 35-36; Lebel, 1989).

Hart (1987), of the Open Learning Agency, also distinguishes between the essential contributions of “orgware” as adequate organizational arrangements, and “teachware” as adequate and effective use of hardware and software.

Student Support in Distance Education Using Computer Mediated Communication: Research Findings

To date, most of the research in the use of CMC in distance education has been limited to certain developed countries: Australia, United States, Great Britain, Canada and Norway (Naidu, 1989). Computer mediated communication has been tested in a number of educational settings: with small groups (Hiltz, 1986; Harasim, 1986; McCreary & van Duren, 1987; Boyd, 1987; Beckwith, 1987) and with larger groups (Mason, 1989; Kaye, 1987; Bates,

1986). Although computer mediated communication has been around for at least fifteen years (Meeks, 1985), the predominant problems continue to be the reliability of equipment, the lack of satisfactory software and few user-friendly environments (Naidu, 1989; Harasim, 1987). In the matrix below, the interaction between channels for student support and roles of student support is presented. Examples of the use of CMC as the medium of support, together with comments on its successes and limitations, and their sources, are shown in the cells of the matrix. This matrix is based on theoretical presentations (Henri, 1988; Boyd, 1987,1989; Kaye, 1988) and on case studies (Hart, 1987; Archer, 1989; Nipper, 1989; Mason and Kaye, 1989; Kaye, 1989; Harasim, 1986, 1987; McCreary & van Duren, 1987; Davie, 1988, 1989).

On the whole, it would appear that student support roles are well served by CMC. The most apparent improvement seems to be an increased interaction amongst tutors, students and their peers (Harasim, 1987). Electronic messaging offers an effective alternative to real-time communications, such as the telephone, where scheduling can be a problem for both tutors and students. However, for large groups it would appear to be difficult to persuade more than a third of the students to actively participate, even when training and equipment are made available (Mason, 1990). It may well be that only the more sociable students are comfortable with this new medium, the others tending only to "lurk" (Harasim, 1989).

A recurrent theme in the literature relates to the special qualities expected of distance instructors and tutors: contextualization of student input, frequent browsing through messages, group motivation and frequent feedback. Are these not also the skills necessary for the face-to-face teacher? One of the main arguments in favour of CMC is its flexibility in comparison with scheduled telephone access or postal communications. Also, CMC may offer a viable alternative to the typically intensive summer course which puts the student under considerable stress. However, the successful application of CMC techniques to distance education appears to be linked to the involvement of the educators themselves in the training process (Harasim, 1989). Good results have been achieved in the use of CMC in training health professionals and financial managers (Henri, 1988; Hiltz, 1988; Kaye, 1989).

A number of casestudies have also shown that instructional activities can be carried out quite successfully using computer conferencing (Hailes, 1985; Harasim, 1987; Hiltz, 1988). "On-line instruction" can either be teacher-directed or learner-centred, depending on the situation. The "virtual classroom" can become more like the extension of the campus rather than the traditional distance education environment in which there is a separation of learning and teaching in time and in distance.

A New Paradigm for Student Support in Distance Education?

Are we experiencing the development of a new paradigm in distance education, as proposed by Nipper (1989), and are we beginning to experience a third generation distance learning environment? There are some encour-

Table 1
Potential Uses of Computer Mediated Communication for Student Support in Distance Education

<i>Channels for Student Support</i> (Willen, 1981; Thompson, 1989; Paul, 1988)	<i>Didactic Materials:</i> Assignments, Textbooks Study Guides	<i>Tutoring:</i> Guidance, Counseling; Computer conferencing as a mediator	<i>Peer Interactions:</i> Proctors, Cooperative Learning	<i>Didactic Resources:</i> Bookstore, Library, Mail, Computer
<i>Roles for Student Support</i> (Lebel & Michaud, 1989)				
<i>Methodological:</i> (Lebel, al. 1989) "Orgware" (Hart, 1987)	CMC for cooperative writing courses (Davie, 1988, 1989) Lack of compatible hardware (Hiltz, 1988; Harasim, 1987)	CMC free from time & space constraints (Kaye, 1988) Restricted to the literary skilful (Boyd, 1989)	CMC facilitates group interactions and discussions, small group voting capacity (Henri, 1988; Bates 1988, Lamy, 1985)	Access to databases, electronic mail
<i>Metacognitive:</i> (Lebel, al. 1989) "Teachware" (Hart, 1987)	CMC convenient for written communication, more reflective, analytical (Hiltz, 1988)	CMC requires new skills: tutor must be host, chairperson, contextualizer, "weaver" (Archer, 1989)	Session planning is essential (Harasim, 1986) Participation of everyone in group (McCreary & van Duren, 1987)	Strategic organization is necessary
<i>Emotional & Motivational:</i> (Lebel, al. 1989)	CMC assists students in submitting assignments sustains persistence & develops more favourable attitude towards communication (Hiltz, 1986)	CMC more interactive than other communications media such as telephone, correspondence, more room for varied input from tutors, peers; even help among tutors (Nipper, 1989)	CMC fosters egalitarian access, less efficient than face-to-face, more efficient than telephone or meetings (Mason, 1989) Possible time lags in reactions	Accelerated access and feedback from centralised services
<i>Administrative:</i> (Lebel & Michaud, 1989) "Orgware" (Hart, 1987)	Electronic messaging capability (Kaye, 1989) Distance & cost limitations (Boyd, 1987) Need for organizational change (McCreary, 1989)	CMC efficient for training tutors & keeping them informed (Kaye, 1989) (Mason & Kaye, 1989)	Group "cafes", chatting places, take care of grapevine functions E-mail mode	No need for queuing, no time constraints (Boyd, 1987) Two weeks of training essential (Hiltz, 1986)

aging signs. In developed countries, computer mediated communication is increasingly being adopted as a new medium for student support, especially for tutoring and cooperative learning (Harasim, 1989). In certain cases, on-line instruction (predominantly computer conferencing) has been used on a regular basis (Hiltz, 1988; Harasim, 1989). Conferencing software is becoming more user-friendly and thus it facilitates increased participation (Meeks, 1985; Myer, 1985). This is not particularly surprising; the end use is a function of the medium, thus increased group participation and interaction are the obvious outcomes of a system designed specifically for the purpose.

Harasim (1989) suggests that "on-line" education should become a "new domain" of investigation and teaching. She argues that its main attribute, collaborative learning based on a many-to-many mode of interaction, is different from traditional distance education which relies on a one-to-many (broadcast) or a one-to-one (tutor/student) mode.

But there is a price for access to this new, perhaps utopian, paradigm. Bates (1986) and Mason (1989) both caution that the implementation of CMC at the Open University has resulted in the transfer of some of the operating costs to the student, thus raising a further economic obstacle against socio-economically disadvantaged individuals for access to education. For example, in one particular course, the student assumed the cost of the hardware and telephone charges (in the UK, there are charges even for local calls). For the most part, students resented this extra burden. However, it is not clear how these costs compared with traveling expenses, time spent and general inconvenience of getting to and from a traditional educational institution. The Open University has been reluctant to extend the use of CMC because of long distance charges. However, there has been some success in providing nodes for local calls through the university network (Heap, 1990).

Distance education has, in most cases, been the domain of the highly motivated and educationally privileged adult learner. There is the possibility that computer conferencing, based on written communication, further widens the gap for socio-economically and educationally disadvantaged individuals (Boyd, 1987, 1989; Nipper, 1989). Today, only 15% of households in developed countries have computer facilities at home, and of these, most represent the better educated segment of the population.

It has generally been observed that there is a considerable increase in workload for tutors and students associated with CMC distance education. However, Paulsen (1989) points out that a pioneering effort always requires a greater contribution and that, over time, the workload will become more balanced. Mason (1989) foresees a situation arising in which tutors will have to decide whether to accept working in new environments such as those created by CMC or to demand more training and increased remuneration. However, it has been estimated that three hours of CMC for training per tutor would only add 1% to the total presentation costs (Heap, 1990).

CONCLUSION

In summary, the distinguishing feature of distance education using CMC is the environment it creates for cooperative learning. This would appear to present a number of advantages: reduced feelings of isolation, a chance of "deeper learning" (Entwistle, 1981), greater control over pacing, more varied student support and more rapid feedback. With these advantages, it offers a second chance to the adult learner, and more open access to high quality education from the best experts in the field.

But, its high cost, currently limited accessibility, literary character, lack of user-friendly software and transparent protocols, weaknesses in "noise reduction and filtering" (Boyd, 1987), and graphic limitations are all factors that are preventing this new medium from being adopted as the dominant paradigm for distance education,

Improved telephone technology based on digital signals, integration of voice and data, expert communication software, government regulation of telephone tariffs for educational use and distribution through satellite through digital encoding of data on commercial broadcast services are all technical innovations that will have a profound effect on student support systems within the next five years – even in developing countries. Using slow scan video transmission over telephone lines, learners, instructors and tutors will be able to see one another and leave pictures and text in E-mail boxes. However, this loss of anonymity could possibly inhibit the participation of the less confident learners.

The introduction of a third generation distance education environment will probably involve substantial changes in the behaviour of students, instructors and tutors. It will also introduce new opportunities in distance education that practitioners in the field should be ready to exploit.

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