# COMPUTER MEDIATED COMMUNICATION IN GRADUATE DISTANCE EDUCATION: A QUALITATIVE CASE STUDY



CATHERINE L.M. BRUCE-HAYTER

# COMPUTER MEDIATED COMMUNICATION IN GRADUATE DISTANCE EDUCATION: A QUALITATIVE CASE STUDY

by

Catherine L. M. Bruce-Hayter, B.A.(Hons.)

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## Abstract

The purpose of this case study was to explore and portray the computer mediated communication (CMC) experience of distance graduate students, faculty and staff in the pilot offering of the course entitled Education 6104 - Foundations of Program Evaluation (E6104) at Memorial University of Newfoundland during the Fall semester of 1995. E6104 was a new graduate education course at Memorial University and for the first time in graduate distance education at Memorial University, CMC was integrated into the course through the use of electronic mail (E-mail). Participants were required to engage in on-line small group and class discussions regarding assigned readings throughout a six week period. Additionally, students were encouraged to communicate with fellow participants, faculty and staff via E-mail. Data were gathered through semi-structured interviews of all participants, an attitude survey administered via E-mail and the regular post, and through a content analysis of all course E-mail forwarded voluntarily to the researcher throughout the study by all participants. Participants included the seventeen students, the professor and two on-site coordinators (staff). All respondents but one student indicated that they enjoyed the experience and considered it successful and most worthwhile. Benefits and limitations of the application of E-mail in this environment, from the respondents' perspective, are noted, and recommendations are made concerning E6104 and future applications of E-mail in graduate distance education.

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Special thanks is also extended to the seventeen students and two coordinators of E6104 who so willingly took the extra time out of their busy schedules to participate in my study and openly share their experiences with me.

Last, I would like to thank the Canadian Forces and the Training Development Branch for providing me with this opportunity for post graduate study - a rare opportunity in these economic times but one that is highly recommended.

## Dedication

This thesis is dedicated to three very special people. First of all, to my young son, Michael, who put up with a busy Mommy and often asked when I would be finished university. I will make up for the trips to the playground missed, the "playing" catch and all the other fun activities we have missed together during the past two years. Second, my husband Bill who assumed full household responsibility and provided endless support and encouragement during many overwhelming moments - THANK YOU. Third, to my octogenarian father, Michael Bruce who continues to be my life's inspiration and role model and whose everyday life's teachings surpass that of all educational institutions.

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# CHAPTER I

## Background of the Study

### Introduction

The purpose of this study is to explore and portray the computer mediated communication (CMC) experiences of graduate distance education students, faculty and staff (two on-site course coordinators) in the pilot offering of the course entitled Education 6104 - Foundations of Program Evaluation (E6104) by Memorial University of Newfoundland during the Fall semester of 1995. The intention is to provide a rich description of the respondents' experiences as well as to provide recommendations for improved application of CMC in E6104 and in similar distance education settings

### Background for the Study

The course investigated within this study, E6104 is a new graduate education course at Memorial University of Newfoundland. This constituted only the second formally approved graduate distance education course offered by Memorial University under the School of Graduate Studies distance education regulations. Additionally, for the first time in graduate distance education at Memorial University, computer mediated communication (CMC) was integrated into the course through the use of electronic mail (E-mail).

Initially, in the Faculty of Education at Memorial University there were two Program Evaluation courses: E6510 - Evaluation and E6522 - Evaluation within Instructional Development. E6510 was a required course for the Master in Education

(M Ed.), Curriculum and Instruction program, and had been offered for approximately fifteen years. E6522 was an elective on all graduate programs and was a departmental requirement for the M.Ed. in the Educational Communications and Technology program It had been offered for approximately eight years (Dr. M. Kennedy, personal communication, April 8, 1995).

In the 1992-1993 timeframe, all graduate programs and their requirements in the Faculty of Education were cancelled and new programs were developed. Following the approval of the new programs in 1993, it was noted that courses in program evaluation were omitted from all programs. Subsequently, a faculty member submitted a proposal to the School of Graduate Studies to develop a graduate program evaluation course - E6104. At that time it was also decided, given the geographical dispersal of students in Newfoundland, to offer this course by distance education (Dr. M. Kennedy, personal communication, April 8, 1995).

E6104 is designed to broaden the scope of evaluation knowledge and to provide the skills to design evaluations based on various evaluation models. The course incorporates the evaluation of all training and educational programs in all settings. As the background of graduate students is so diverse (nursing education, military training, private institutional post-secondary education and community/health education, as well as the traditional school system), this course has been designed to meet individual student needs. E6104 is a packaged course, designed to be largely self-paced, with a set of inter-linked materials in print-based instructional formats, audio-taped lectures, videotapes and

computer assisted instruction. In addition to the computer-assisted instruction module, the computer was used to integrate the CMC component within the course. Participants were required to engage in on-line small group and class discussions regarding assigned readings during a six week period. Additionally, students had the opportunity and were encouraged to communicate with fellow participants and faculty through E-mail via STEM-Net - the province-wide educational network.

## Significance of the Study

"The key to successful and expanded development and use of CMC in distance education lies in the people participating in it, including students, teaching professionals, administrative support personnel, and network service providers. The future is bright. The options and opportunities are emerging. The pioneers are showing the way" (Lewis, Whitaker, & Julian, 1995, p. 28). The use of CMC in distance education is growing steadily since its inception a decade or so ago. Memorial University, which has been at the forefront in distance education in Canada, is joining the pioneers in implementing this information technology in an educational field that demands greater interaction amongst its participants. The study of the experiences and use of CMC in E6104 will provide some insight and help in determining the applicability and value of CMC in E6104 as well as in future graduate distance education courses.

Secondly, faculty and administrative staff of educational institutions have been apprehensive of the notion of graduate distance education courses at all. One of their

major concerns has been the lack of seminar-like discussions and reduced level of such discussions among students and faculty in the distance setting. This study also explored the use and value of formal on-line discussion groups, which were intended to replicate on-campus discussions.

Lastly, the results of this study and lessons learned will be useful to the military as it ventures into the realm of distance education/distributed training for which CMC has already been determined to be a major requirement. The researcher, a Training Development Officer in the Canadian Forces (CF), is interested in distance education and CMC in the distance education setting, as the CF is currently exploring the possibilities of Distance Education, in the form of Distributed Training, within the military. The CF is one of, if not the largest training institutions in Canada. It is anticipated that the results of this study and the lessons learned will have direct application in other settings and, in particular, in the military.

## Limitations of the Study

This study focused on only one graduate distance course, and specifically on the CMC portion of the course. Ideally, it would be valuable to study the use of CMC in various graduate distance courses; however, this was the only course using CMC offered within the timeframe of the study.

This thesis encompassed the study of CMC in a pilot offering of the course. It would be desirable to study CMC in several offerings of E6104. However that would have

created impractical delays to the study's timeframe. Notwithstanding these limitations, the study of the CMC component of E6104 can contribute to the body of knowledge regarding the integration of CMC into distance education courses conducted at the graduate level.

## Definitions of Key Terms

The following are some of the terms and definitions that will be used throughout this study:

**Distance Education:** Holmberg (1986) defines distance education as "the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises, but which, nevertheless, benefit from planning, guidance and tuition of a tutorial organization.... The main characteristic is non-contiguous communication" (p. 2).

**Computer Mediated Communication (CMC):** Santoro (1995) refers to CMC as a "set of functions in which computers are used to support human communication.... At its narrowest, CMC refers to computer applications for direct human-to-human communication. This includes electronic mail, group conferencing systems, and interactive 'chat' systems" (p. 11).

**Computer Conferencing:** Harasim (1987) describes computer conferencing as "essentially a group communications medium enabling groups of people to exchange ideas and opinions and to share information and resources" (p. 12). She states that conferencing systems generally provide for electronic mail and conferencing communication opportunities.

**Asynchronous Communication:** Santoro (1995) defines asynchronous communication as "communication in which the participants need not be online simultaneously" (p. 17).

**STEM~Net:** "STEM~Net is a computer network for active professional K-12 and rural public-college educators in Newfoundland and Labrador". It is also available for use to full-time Memorial University Education students and faculty as well as selected distance education courses (STEM~Net Questions & Answers - Fall, 1995 [on-line], p. 1).

**LISTSERV:** "LISTSERV is the software that manages electronic discussion groups or computer conference distribution lists" (Berge, Collins & Day, 1995, p. 218).

## Organization of the Study

This thesis has five chapters. Chapter I provides the background information, significance of the study, its limitations and the definition of key terms. Chapter II presents a review of the literature on distance education, computer mediated communication, and

computer mediated communication within distance education. Chapter III contains the methodology including a description of the qualitative case study, the data collection strategies employed, administration of the study and data analysis procedures.

Chapter IV presents, in descriptive form, the CMC experiences by respondent groups, largely in their own words, covering their overall experience, benefits and problems of using E-mail in the distance setting and their recommendations for improvement; a summary of the student attitude survey regarding their CMC experience; and a content analysis of the E-mail transcripts collected throughout the semester. Chapter V summarizes the study, draws conclusions about the experience and offers recommendations for improvement and further research.

# CHAPTER II

## Review of the Literature

### Introduction

This chapter presents an overview of the literature reviewed concerning distance education, computer mediated communication and the application of computer mediated communication within distance education. The chapter concludes with the literature's implication for this study.

## Distance Education

### Defining Distance Education

Distance education is a relatively new term which was adopted to replace the original term correspondence education as the latter implies the written word exclusively (Holmberg, 1983, 1995). Holmberg (1986) suggests that correspondence education is at the root of distance education and indicates that "other terms including distance education, distance study, and distance teaching were often tied to correspondence education even though distance education has only gradually become the accepted term ... a more neutral term. It can be considered a wider, more inclusive designation" (p. 1). Independent study is another term used to describe distance education in the United States (Holmberg, 1983). Holmberg observes however that the term correspondence education is still employed by many today even with the multi-media design (1983). Keegan (1990) endorses the term distance education and recommends it as the only term for international usage.

Verduin and Clark (1991) suggest that the term distance education was probably first used in 1892 in the University of Wisconsin course catalogue. However, it was only reintroduced to the United States in 1987 by B. Holmberg and M. Moore at a meeting of the International Council for Correspondence Education.

Distance education continues to be defined somewhat differently throughout the literature, although definitions or descriptions by Keegan (1983, 1986, 1990), Holmberg (1981, 1986) and Garrison and Shale (1987) predominate. Keegan (1990) presents his revised version of the 1983 definition which was based on a number of definitions cited from the French government (1971), Holmberg (1977), Peters (1973) and Moore (1973). For Keegan (1986, 1990), distance education is characterized by:

> - the quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);
> - the influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach-yourself programmes);
> - the use of technical media - print, audio, video or computer - to unite teacher and learner and carry the content of the course;
> - the provision of two-way communication, so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and
> - the quasi-permanent absence of the learning group throughout the learning process so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes. (1990, p. 44)

Garrison and Shale (1987) choose not to define distance education per se but do propose three essential criteria of the distance education process:

1. Distance education implies that the majority of educational communication between (among) teacher and student(s) occurs noncontiguously.

2. Distance education must involve two-way communication between (among) teacher and student(s) for the purpose of facilitating and supporting the educational process.
3. Distance education uses technology to mediate the necessary two-way communication. (p. 11)

Willis (1993) sums up distance education as basically education that:

> takes place when a teacher and student(s) are separated by physical distance, and technology ... is used to bridge the instructional gap. To be effective, the technology of distance education should remain relatively transparent, allowing the instructor and students to concentrate on the process of teaching and learning. (p. 4)

Schlosser and Anderson (1994) in their review of the literature acknowledge that there are several definitions of distance education as the term has been used by many programs for many audiences using a variety of media. They suggest that one definition may be suitable for one situation but not another and accept Keegan's combination definition as the most widely known.

## Historical Perspective of Distance Education

Holmberg (1977) states that the rationale for distance education is:

> To give those a chance to study who could not go to an ordinary school or university for financial, social, geographical or medical reasons. Correspondence education was and is a means of providing adult education, based on belief in education for its own sake and also for improving social status. (p. 17)

Willis (1991, 1993) and Holmberg (1986, 1995) trace the historical roots of distance education to the early 1700s when correspondence-based courses were offered in the United States via the postal service. Subsequently, public lectures were offered in rented facilities in the early 1800s. The traditional correspondence course gained international popularity by the 1870s with courses offered in Sweden, England, Germany,

Canada and the United States. In the mid-1800s a foreign language correspondence school opened in Berlin, Germany. Universities and private schools offered correspondence studies to elementary, secondary, higher education and vocationally oriented students by the early 1900s (Willis, 1993).

Also, according to Kaufman (1986), "distance education has its roots in the tradition of print-based correspondence study, using the postal service for two way communication between teachers and learner" (p. 296). He indicates that this is still the predominant model of distance education throughout the world. Bates (1993, 1995), Schrum (1992a) and Willis (1993) agree noting that print was the primary technology used in the majority of worldwide distance education even at the end of the 1980s. Unfortunately, this contributes to many limitations in distance education: "isolation of distance learner, lengthy waiting periods for feedback an assignments, inability to cater to extremely wide variability in learner backgrounds and abilities, limited access to library instruction for psycho-motor objectives" (Kaufman, 1986, pp. 296-297). Bailliu (1991), Bates (1990, 1993), Dunnett (1994), Garrison (1989, 1990), Harasim (1987), Kaye (1987) and Tkal (1992 ) agree with Kaufman.

Two landmark events responsible for significant changes in distance education were the establishment of the University of South Africa as a distance-teaching university in 1962 and the founding of the Open University in the United Kingdom in 1969 (Holmberg, 1986; Shale, 1987; Willis, 1991). The Open University introduced a new era in distance education through its application of broadcast media (television and radio) for the

delivery of distance education (Garrison, 1990). In 1972, Athabasca University in Canada was mandated to provide study programmes incorporating technology and homestudy techniques (Willis, 1991). Australia, Europe and Canada have taken the lead in distance education over the last twenty years (Willis, 1993). Schlosser and Anderson (1994) state that the history of distance education is relatively brief noting two characteristics which have marked its development: "First, there has been the adoption of increasingly sophisticated communications technologies as such technologies have become available. Second, distance education has developed in each locale in accordance with local resources and the philosophy of the organizations providing instruction" (p. 13).

Evolution of Distance Education Models and Modes of Delivery

Lewis et al. (1995) describe distance education in basic terms as: "the delivery of the educational process to receivers who are not in proximity to the person or persons managing or conducting the process" (p. 14). They report that from this paradigm, distance education has experienced various stages of change in the delivery modes and the models of learning. They refer to works of Taylor (1992) and Miller (1992) in briefly describing these various models for distance education.

According to Taylor (1992) and Miller (1992), as cited in Lewis et al. (1995) the correspondence model is teacher-directed which attempts to replicate traditional classroom context via course notes for individual students who have only minimum interaction between teacher and student. In the 1980s this model was adopted for televised instruction

in the United States. A single person is often responsible for the design and content of correspondence programmes.

The multi-media model combines print, audio, video and computer-based instruction augmented by the telephone, teleconferencing or computer conferencing as required. This model does not try to reproduce the traditional classroom context but rather uses a highly structured, interactive programme. It is more complicated and requires a team approach to design. It is teacher directed but under the students' control. That is, students can work at their own time, place, pace and approach to the materials. The British Open University is a prime example of an institution employing this approach (Lewis et al., 1995).

The telelearning model uses audio and video conferencing and broadcast television to expand and replicate the classroom. However, to use these technologies students must forego the benefits of time and location independence. A significant team approach is required for the delivery management of such programmes, yet the content and management of instruction returns to the teacher. It is a return to the teacher-directed model of learning (Lewis et al., 1995).

Bates (1993), Garrison (1993) and Nipper (1989) speak of three generations of distance education, with each building on the previous one. The first generation comprises primarily correspondence schools which employed mainly printed or written material and used the postal service extensively. Student to instructor and instructor to student feedback was slow and infrequent and was often comprised of only the instructor's

comments on written assignments. Garrison (1993) and Bates (1993) report that this remains the predominant paradigm today. The second generation of distance education is often referred to as "multi-media distance teaching" (Nipper, p. 63) or "teleconferencing" (Garrison, p. 18) and includes the large, autonomous institutions using a variety of media including broadcast, cassettes and to a limited extent computers (Nipper, 1989; Bates, 1993). Although time and location independence is sacrificed, Garrison suggests that students gain more in the quality of the interaction.

The third generation of distance education combines information technologies and telecommunications. Garrison (1993) highlights CMC as the most promising and dominant computer application of this generation. CMC facilitates communication. However, as it is chiefly text-based, it lacks the spontaneity of oral communication. Garrison points out that CMC, like teleconferencing, requires careful planning and a different but continued involvement of the instructor/facilitator.

Nipper (1989) and Garrison (1993) recognize that the emphasis for the first and second generation was on the production and distribution of teaching/learning materials and that communication with and among learners was marginal to non-existent. According to Nipper, the recognized need for communication and interaction in distance education led to the use of computer conferencing in distance education in Denmark, and hence their third generation distance education model.

Lauzon and Moore (1992), on the other hand, foresaw the integration of computer conferencing and computer-assisted learning as the "fourth generation delivery system for

distance education" (p. 31) succeeding correspondence courses, audio conferencing and computer based training for individual instruction. According to Lauzon and Moore, this system is "capable of both asynchronous group and individualized instruction and integrates the communications network with computer-based instruction" (p. 31). They adapt Garrison's (1986) representation of technology and media in distance education to include their fourth generation of delivery systems (cited in Lauzon and Moore, 1992).

| Generation | First | Second | Third | Fourth |
|---|---|---|---|---|
| Medium | Correspondence | Teleconferencing | Computer-Based | Computer-Based |
| Message/ Communication Channel | Print/Visual | Audio/Audiotory | Video, Audiovisual, and Audiotory | Video, Audiovisual, and Audiotory |
| Delivery System | Mail | Communications Network | Computer Terminal | Computer Terminal and Communications Network |
| Method of Instruction | Individual | Group | Individual | Individual and Group |
| Mode of Delivery | Asynchronous | Synchronous | Asynchronous | Asynchronous |

Figure 1. Technology and Media in Distance Education. Note. From "A Fourth Generation Distance Education System: Integrating Computer-Assisted Learning and Computer Conferencing," by A. C. Lauzon, and G. A. B. Moore, 1992, (Adapted from Garrison (1986, 27). In M. Moore (Ed.), Distance education for corporate and military training (p. 31), University Park, PA: The Pennsylvania State University. Copyright 1992 by The Pennsylvania State University. Reprinted by permission.

Bates (1993) predicts that by 2010 telecommunications-based technologies will have become the primary delivery mechanism for distance education. He offers the following reasons for the increasing importance of technology in distance education:

- a much wider range of technology is becoming more accessible to potential distance education students;

- the costs of technological delivery are dropping dramatically;
- the technology is becoming easier to use, both by teachers and learners;
- technology is becoming more powerful pedagogically;
- distance education institutions will find it increasingly difficult to resist the political and social pressures of the technological imperative. (p. 213)

Two-way Communication and Interactivity

Barnard (1992) depicts the general concern of education to be communication, while that of distance education is asynchronous communication. Here the learner and instructor are separated by time and/or distance. Citing Moore (1990), he concludes that "distance education consists of all arrangements for providing instruction through print or electronic communications media to persons engaged in planned learning in a place or time different from that of the instructor" (Barnard, 1992, p. 139).

Holmberg (1977) discusses the importance of two-way communication in distance education in particular written, recorded and telephone communication, although he does refer to the limited use of computer communication in mainly business administration simulations. Farr and Schaeffer (1993) support two-way communication in distance education for all objectives other than simple information passing. In fact, according to them "if the objective mandates dialogue or discussion, then two-way communication also is mandated" (p. 53). Two-way communication is effective "for enhancing thinking skills, promoting understanding of concepts and principles, increasing problem-solving skills, promoting positive attitudes, and developing values" (p. 54). They recommend audio teleconferencing, audiographics, the regular mail, two-way video conferencing and asynchronous and synchronous computer conferencing to facilitate this communication.

"One of the major challenges associated with distance learning and training has always been how to achieve a high level of interaction both among students and between students and teachers" (Dunnett, 1994, p. 197). Garrison (1989) agrees noting that attrition rates in correspondence education were high and were probably due to a lack of "imaginative methods of facilitating mediated communication between teacher and student" (p. 57). Meeks (1987) concurs, reporting that certain academic studies have revealed a dropout rate of 70%, blaming the lack of communication with the teacher and fellow students as the cause.

Willis (1991, 1992, 1993), Garrison (1990), Garrison and Shale (1990) and Holmberg (1981, 1995) also accentuate the importance of two-way communication and interaction in distance education. Willis (1993) reports that students learn best when they can interact with fellow students. Bates (1993) and Nipper (1989) agree, noting that interactivity between learner and teacher, tutor or fellow learner and between learner and course material increase learner effectiveness. Bates emphasizes the use of two-way technologies in distance education as they permit interaction between learners and teachers or tutors and more importantly among distance learners. Garrison stresses that "education is a collaborative experience which necessitates mediation by others as well as recognition and validation of learning" (p. 41).

Bates (1990) describes two different contexts for interaction: individual and social. Individual mainly refers to the interaction between the learner and the learning material. Social interaction involves the interaction between two or more individuals about the

learning material. He identifies three forms of social interaction in distance and open learning:

- interaction between the learner and the originator of the teaching material;
- interaction between the learner and a tutor, who mediates between the original material and the learner, by providing guidance or assessment;
- interaction between the learner and other learners. (p. 6)

Bates explains that the first type is rare but that it should increase with interactive technologies. The second type has been the most common accomplished chiefly by written correspondence and limited face-to-face meetings. The third type is most important and has been the most ignored in distance education. Garrison and Shale (1990) affirm that "the one thing to be certain of is that the quality and effectiveness of education at a distance is directly attributable to the degree and kind of interaction between teacher and student, as well as between student and student" (p. 123).

Bates (1993) points out that until recently the telephone was the only means of open-ended two-way communication under the students' control permitting them to interact with tutors and fellow students. Costs were high. However, CMC enables "two-way communication at a distance, at asynchronous times, at relatively low cost, between students, regional tutors or even central academic staff" (p. 230). Willis (1993) suggests using E-mail or some other appropriate interactive technology to encourage small group and individual communication. Bates proposes that CMC may have revolutionary implication for distance education, freeing students from "centralized control of pre-prepared and constricted curricula" (p. 230).

Berge and Collins, in their introduction to volume one of the three volume series entitled "Computer Mediated Communication and the Online Classroom" report CMC's current instructional support as follows: "CMC provides electronic mail and real-time chat capabilities, delivers instruction, and facilitates student-to-student and student-to-teacher instructions across a desk or across the world" (p. 2). Consequently, many paradigmatic shifts are enabled in education, particularly the shift from "teacher-centered distance education to student-centered distance learning" (1995, p. 2).

Mason and Kaye (1990) offer three key ramifications of CMC for distance education based upon their analysis of the current research:

- The breaking down of conceptual distinctions between distance education and place-based education, primarily because of the opportunities that CMC provides distance learners for discussion, collaborative work, and the development of autonomy in learning, and also because of the potential for building a sense of community among the participants in large-scale distance education institutions
- The changing of traditional roles of faculty, adjunct tutors, administrative and support staff
- The provision of an opportunity, ... to create a network of scholars, "space" for collective thinking, and access to peers for socializing and serendipitous exchange. (p. 23)

In summary, in the words of Eastmond and Ziegahn (1995) "one of the appeals of computer-mediated instruction for distance education is the provision of an instructional environment that is more open ended and group oriented than the 'stand alone' distance media of written correspondence ..." (p. 61).

## Computer Mediated Communication (CMC)

### Defining CMC

In "Mindweave: Communication, Computers and Distance Education", Mason and Kaye (1989) refer to CMC as "a medium for communication - a medium which, whilst being essentially one of literary discourse, is also one of interactive, reflective and asynchronous group communication" (p. 1). Smith, Kim and Bernstein (1993) describe CMC basically as "communication among individuals facilitated by computer hardware, software and a hardwire or telecommunications link" (p. 80). Similarly, Lewis et al. (1995) define CMC in its simplest form as "the process of exchanging thoughts, ideas and information via a computer keyboard and screen connected to other computers. The computer keyboard and screen enable the communicator to enter and receive information" (p. 16).

### Historical Perspective of CMC

The first primary function of computers in the corporate world was the manipulation of numbers. In the early 1960s, banks, financial corporations and insurance companies installed the computer for bookkeeping and payroll purposes. At that time researchers were also commencing to explore the manipulation of textual data with the computer. From there came the advent of direct access storage devices (DASD), or disc drives which allowed for better access to data. Prior to this time, tape was used for long term storage and access was sequential only. The discovery of random access storage

greatly increased the potential for text manipulation and on-line operation. With this, researchers started to ponder the use of computers for communication among people. Initially, simple message-passing utilities on large centralized systems were used for interpersonal communications (Rapaport, 1991; Wolfe, 1990; McCormick & McCormick, 1992).

According to Rapaport (1991), electronic versions of the mailbox was the next step in the evolution. The familiar, metaphoric electronic mail (E-mail) commenced between two people, each with individual "electronic" mailboxes. Subsequent improvements to E-mail included the ability to forward mail to another person, with or without attachments, the ability to send a message to many mailboxes and employ many-to-many communication. This means of communication approximated that of future computer conferencing systems. Although E-mail has evolved, it "still lacks the more fluid structure of true conferencing systems" (Rapaport, p. 2). Nonetheless, by the 1970s E-mail had proven itself as an adequate medium for many of the purposes of the telephone (Rapaport).

The first conferencing system originated as a result of American President Nixon's wage and price freeze in 1971. This created a great demand for communication and co-ordination among private industry, labour groups and government. Dr. Murray Turoff was commissioned by the Office of Emergency Preparedness to design a computer version of the telephone conference call to co-ordinate activities of the various departments involved and to manage the reporting and distribution of information. This project

culminated in the prototype computer conferencing system known as EMISARI, the Emergency Management Information and Reference System (Rapaport, 1991). According to Harasim (1990), Turoff designed conferencing "to structure human communication for information exchange and effective problem solving" (p. 41).

From there, the evolution continued to include these and other systems: EIES (Electronic Information Exchange System), developed in 1977 by the New Jersey Institute of Technology (NJIT); PARTICIPATE, the first conferencing system to offer branching developed by Source Telecomputing Incorporated; CONFER, developed by the University of Michigan in 1977; and, CoSy, a conferencing system developed by the University of Guelph, Canada in mid-1980s (Romiszowski & de Haas, 1989). The union of computers and telecommunication made the computer conference possible in 1970s. Yet, the first conference in the social sciences was not held until the early 1980s (Santoro, 1995).

According to Santoro (1995), the personal computer (PC) was developed as a home entertainment system. It was only during the 1980s and early 1990s, that the evolution of the PC and the development of commercial information systems such as CompuServe and America On-line changed the status of the PC from being an oddity to a home appliance like the VCR and microwave oven. Also at this time came the public bulletin-board systems and free or inexpensive software (Freeware/Shareware) which provided the home user with wide access to information technology.

Categories of CMC

CMC is comprised of several components or categories and each has its own distinguishable purpose. Throughout the literature, different authors interchange terms to describe these components, causing some confusion. For example, Rapaport (1991) states that CMC consists of electronic mail, computer conferencing, bulletin board systems (BBS) and information retrieval systems. Smith et al. (1993) refer to the various forms of CMC such as electronic mail, bulletin boards, conferencing and chats. Harasim and Johnson (1986) and Harasim (1990) speak mainly about computer conferencing inclusive of E-mail.

Santoro (1995), however, describes three broad categories of CMC based on the nature of the human-computer interaction and the role of the computer in the mediation of human communication. These include computer-based conferencing, or simply conferencing which comprises E-mail, interactive message systems (chats) and group conferencing systems, as well as informatics (information retrieval systems) and computer assisted instruction (CAI). Tkal (1992) also includes E-mail, BBS and computer conferencing under CMC but differentiates CAI as a different technology system. In this study, the focus was on CMC as a mediator rather than a processor of information.

Electronic mail (E-mail). E-mail is defined as "mail or communications that are sent and received through electronic, nonpaper methods" ( Barron & Orwig, 1993, p. 173). One of the most commonly used forms of CMC, E-mail involves a human computer user composing and sending a message on-line to another computer user. The receiver has

several options: read it, delete it, save it, print it, reply to it or forward it to someone else (Santoro, 1995; Tkal, 1992). Often thought of as one-to-one communication (Harasim & Johnson, 1986), most E-mail programs allow one-to-many communication as well (Santoro, 1995). For almost two decades E-mail has been used on mainframe computers. Its current expansion in popularity results from the interconnection of hundreds of thousands of computers by electronic data transfer networks like Internet and the adoption of E-mail standards. The latter permits the transfer of E-mail from one kind of computer system and its software to another without losing any information (Jost, Green, Florini, Grabowski, & Romiszowski (1990); Quarterman, 1990; Santoro, 1995; Shedletsky, 1993).

These authors describe E-mail as easy to use, which has enhanced its usefulness for human communication. However, Tkal (1992) in her technology survey report for the Open Training and Education Network in New South Wales indicates that some E-mail systems can be complex.

E-mail permits fast asynchronous communication, which means that users need not be on-line at the same time, and its delivery is instantaneous (Florini, 1990). Most mailer programs contain useful E-mail management features such as automatic return addressing for replies, the ability to define group nicknames (aliases) for ease of using distribution lists, storage and easy retrieval of received E-mail and automatic redirection of incoming E-mail to another user (Jost et al., 1990; Kaye, 1987; Santoro, 1995; Tkal, 1992).

E-mail is very convenient for managing communications when the user does a lot of work on the computer (Santoro, 1995; Smith et al., 1993). Santoro gives the example

of forwarding a draft report to a colleague for review via E-mail versus having to print, send through postal service and then have to wait days for it to reach its destination.

Information transferred via E-mail has been limited to text mostly. However, today advances are being accomplished whereby pictures, sound and almost any type of data which can be encoded onto a computer file is transferable with some pre and post transfer processing of the data (Santoro, 1995; Tkal, 1992). CMC is largely text-based however digital voice and video are becoming increasingly more available through computer networks (Bates, 1995; Wells, 1992).

Additionally, E-mail is largely used for social communication (Berge & Collins, 1995). Although early critics believed it would be dehumanizing and too mechanical, Santoro (1995) cites Rice and Love (1987) who remarked that "CMC systems can facilitate the exchange of socioemotional content" (p. 18). Kaye (1987) refers to the humanizing potential of this technology which permits discussion and interaction within educational systems which desperately lacked these features. Additionally, McCormick and McCormick (1992) cite Naisbitt (1982) who argues that the computer does not dehumanize users but rather facilitates communication.

Computer conferencing systems. Santoro (1995) subdivides computer conferencing into three primary forms: electronic mail (discussed above), group conferencing systems and interactive message systems. The purpose of each is to support direct human-human communication. Rapaport (1991) situates what he calls text-based computer conferencing in its wider domain of teleconferencing, which is in turn part of office automation

technologies.

Santoro (1995) refers to group conferencing systems as "an extension of E-mail" (p. 18). E-mail also allows for the electronic message to be sent to a group of users as long as one knows the individual E-mail addresses or an alias address. The group conferencing systems were designed to handle special problems of group-oriented conferences such as managing large and changing membership lists, offering efficient distribution of E-mail among members and providing for retrieval of prior messages (Rapaport, 1991; Santoro, 1995; Tkal, 1992).

There are many types of group conferencing systems three of which are described by Santoro (1995): E-mail exploder, BBS and conference management systems. The E-mail exploder has two main functions. It manages the group distribution list as in the Listserv programs. With this system, if the group permits, users may join or leave the group at any time without a group member needing to keep track of the membership status. As some listserv groups have thousands of members, this is essential.

Secondly, employing its exploding functions, the exploder copies any member's contribution to the conference and sends it to all of its members. Individual members join in the group by sending their input to the exploder which in turn copies the input to the rest of the group members. This is referred to as one-to-many communication (Harasim & Johnson, 1986). An archive is maintained of all prior conference transactions which allows new members to read in to the discussion (Quarterman, 1990; Santoro, 1995).

The Electronic Bulletin Board System (EBBS or simply, BBS) is a second common approach to group conferencing systems. It simulates the traditional bulletin board (Barron & Orwig, 1993). A user may post messages to any number of subject areas. Users may read the messages and choose to respond to the group or the originator of the message. Usenet NEWS, a collection of newsgroups, is one example of a BBS (group conferencing system). Tkal (1992) states that the purpose of BBS is "to offer an information-sharing service to special interest groups" (p. 10). The BBS can take many forms such as E-mail for private messages, BB messages for special groups, questions and answers for technical assistance, access to public domain software, computer games and contests. Its applications include provision of feedback, instruction and tutoring to remote students and access to remote colleagues and experts who collaborate on-line (Rapaport, 1991; Santoro, 1995; Tkal, 1992).

Third, Santoro (1995) talks about the conference management systems which actually impose a structure on the conference and allow a form of many-to-many communication. This structured approach permits application of some database management systems' features, for example, thread management where thread refers to a line of discussion. Thread management simplifies the following of certain discussions by allowing users to isolate the thread of interest and then track the beginning of that thread to its current contributions. Due to this structured approach, conference management systems can be somewhat easy to learn and use. Examples of conferencing management systems include DEC VAXNotes, CoSy, Caucus, Participate, Confer, and EIES (Kaye,

1987; Santoro, 1995; Tkal, 1992). Kaye notes that some of these systems were originally developed for government, military, business, university researchers and scientists.

The conference management system described by Santoro is what most of the literature refers to as computer conferencing or simply conferencing (Florini, 1990; Rapaport, 1991). Jost et al. (1990) and Romiszowski and de Haas (1989) report the popularity of the term 'computer conferencing' arose from the primary use of CMC as a conferencing system. "Computer conferencing opens up the possibility of group communication and collaborative work, regardless of space and time constraints" (Kaye, 1987, p. 187). Harasim (1992) lists five key attributes of computer conferencing: "a medium for many-to-many communication, place independent, asynchronous, text-based and computer mediated" (p. i).

Tkal (1992) explains that computer conferences are arranged into subjects so that communications can be organized and not just kept as isolated messages. This avoids the sequential reading of all messages which is the case with BBS (Harasim & Johnson, 1986; Tkal, 1992). The mainframe-based conferencing software organizes the communications and keeps track of all communication since a participant's previous log-on (Tkal).

Harasim and Johnson (1986), in their report on the educational applications of CMC for Ontario teachers and trainers, liken computer conferencing to a group meeting that is held electronically. Unlike face-to-face meetings, participants are not gathered at the same time and place but rather are linked to a common space for discourse and exchange at their convenience (Meeks, 1987). Messages are disseminated asynchronously and stored

until the recipient is ready to deal with them. According to Harasim and Johnson, general features of computer conferencing systems include text editing, good searching capabilities for conference items, external database access for some systems, electronic mail, as well as the permanent record of proceedings maintained throughout the conference. Lauzon and Moore (1992) sum up computer conferencing "[it] provides a meeting place that has no physical or temporal boundaries" (p. 28).

Interactive Messaging. The third form of computer conferencing described by Santoro (1995) is interactive messaging wherein the computer system allows computer users to communicate synchronously. This requires that users be on-line simultaneously. The communication flow resembles that of a telephone. Due to the interaction involved, this form of conferencing has become known as interactive messaging (Santoro) or chats (Smith et al., 1993).

Santoro (1995) gives two examples of interactive messaging: the UNIX "talk" program and the Internet Relay Chat (IRC) system. The UNIX "talk" program allows two users to "talk" in real time (p. 21). "When a connection is established, each user's screen is split horizontally, and the two communicants type simultaneously with their output appearing in separate windows" (Sudweeks, Collins & December, 1995, p. 206) Conceptually, the IRC is like a citizen's band (CB) radio in that it is a multiple user chat system where people use "channels" to discuss issues of interest (Sudweeks et al., 1995, Feenberg & Bellman, 1990).

Who Uses CMC?

Santoro (1995) briefly discusses the pervasion of information technologies into the world. He cites Chesebro and Bonsall (1989) who indicate that between 1977 and 1987 twenty to twenty-five per cent of American households commenced using personal computers. Additionally, Santoro refers to Parat (1974, 1977) and Ehrenhalt (1986) who noted that 28% of the US labour force work in the information sector of the economy and another 24% work as information processors in the industrial sector.

Santoro (1995) emphasizes the American interest in this technology within education. He refers to Senator Gore who introduced Bill 272 which authorized the National Education and Research Network (NREN) in 1991. This bill, according to Santoro, revealed the "recognition of a national telecommunication infrastructure as being as important to the US economy as the interstate highway system" (p. 12).

According to Santoro (1995), there are no typical users but he describes three representative types of users and their work and technical environments. These are persons working in the information intensive professions, personal users (families or hobbyists), and students. Shedletsky (1993) agrees and adds that faculty, K-12 educators, business people and students from elementary to graduate schools are among the growing numbers of CMC users. For students, the drop in cost and increase in power of microcomputers and modems have made it possible for many of them to own personal computers. They are used for word processing, courseware, database development and access to E-mail and group conferencing, which support educational objectives (Santoro, 1995).

## Application of CMC in Distance Education

> In a climate of increasing demand and costs-- and stable or decreasing resources--educators are looking for innovative, cost-effective means of educational delivery. Within higher education, computer-mediated communication (CMC) has been found to be a cost- and educationally effective way of connecting students and faculty (Thompson, on-line, 1995).

### Introduction

Computer mediated communication (CMC) is considered the educational trend of the last decade or so (Harasim, 1986). "Electronic education" (Naisbitt, 1984 cited in Harasim, 1986), "virtual classroom" (Hiltz, 1986), "online education" (Harasim, 1990), "cybernetic teaching" (Phillips, 1995) and "network education" (Myrdal, 1994) are just some of the terms coined in the literature to refer to the educational application of this communication medium. Harasim (1992) uses the umbrella term 'online education' to encompass primary and secondary school applications as well as university, college or adult training applications of CMC. According to Harasim (1990), on-line education was used as an extension of distance education or a variant for the classroom. Cartier and Schofield (1991) state that CMC is implemented in distance education to facilitate group discourse, encourage learner autonomy and enhance peer motivation. For the purposes of this study, CMC incorporates all of these terms in its distance education application.

Universities throughout North America and Europe are offering credit and non-credit courses using the computer as their communication device (Harasim, 1986). Figures 2 and 3 provide some insight into the use of CMC in undergraduate and graduate

education in the late 1980s and early 1990s. According to Romiszowski and de Haas (1989), the British Open University's (BOU) integration of the CoSy conferencing system into a year long course of approximately 1300 students in 1988 was probably the biggest educational application of CMC at that time.

Santoro (1995) reports that the support of instructional communication is an expanding use of group conferencing systems or computer conferencing. He indicates that at Penn State University there are over 90 courses which incorporate private NETNEWS groups for such things as course announcements, discourse and other reasons. During his seven years of using conferencing to support a course, Santoro remarked that students

**Undergraduate Subject Areas Using CMC**

| Content Area | Institution | Source |
|---|---|---|
| Computer science | Open University | Mason 1989 |
| | NKI (Norway) | Paulsen 1989 |
| | NKS (Norway) | Soby 1990 |
| | Dutch Open University | Meurs & Bouhuijs 1989 |
| | Rochester Institute of Technology | Bissell et al. 1987 |
| Foreign language labs | University of Arizona | Smith 1990 |
| Group performance skills | Pennsylvania State University | Phillips, Santoro,& Kuehn 1988 |
| History | Rochester Institute of Technology | Bissell et al. 1987 |
| Humanities (archaeology) | Jutland Open University (Denmark) | Lorensten 1989 |
| Physics (special relativity) | University of West Florida | Smith 1988 |
| Probability and statistics | Royal Danish School of Ed. Studies | Larsen & Malmberg 1991 |

Figure 2. Examples of Undergraduate Subject Areas Using CMC. Note. From Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching and Institutional Issues (p. 4) by Wells, R., 1992, University Park, PA: The Pennsylvania State University, American Center for the Study of Distance Education. Copyright 1992 The Pennsylvania State University. Reprinted with permission.

**Graduate Subject Areas Using CMC**

| Content Area | Institution | Source |
|---|---|---|
| Computer Science | Nova University (Master's, Doctorate)<br>Brisbane College of Advanced Ed. (Diploma) | Scigliano, Josyln,& Levin 1989<br>Scriven, 1988 |
| Education | OISE | Davie, 1988; Harasim, 1986 |
| Distance Education | Deakin University (Certificate, Diploma, Master's)<br>Athabasca University (Master's) | Thompson, 1991 |
| Engineer training | U.S. Army Research Institute | Hahn et al., 1991 |
| Management | Lancaster University | Hardy et al., 1991 |
| Media Studies | Connected Education (Master's) | Levinson, 1989 |

Figure 3. Examples of Graduate Subject Areas Using CMC. Note. From Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching and Institutional Issues (p. 5) by Wells, R., 1992, University Park, PA: The Pennsylvania State University, American Center for the Study of Distance Education. Copyright 1992 The Pennsylvania State University. Reprinted with permission.

"embrace the technology and quickly adapt it to their own purposes" (Santoro, 1989 in Santoro, 1995, p. 20).

Eastmond and Rohfeld (1993) report positively about their experience and that of their students' with using computer conferencing in several graduate distance education courses at Syracuse University. On-line activities included full and small group discussions, guest discussants, brainstorming and polling. Rapid feedback and increased interaction with peers and specialists were observed. Feeling generally positive about their experience, students particularly liked the flexibility and convenience of CMC, but did miss

face-to-face interaction. Kearsley, Lynch and Wizer (1995), having reviewed several studies of on-line learning in graduate education, conclude that on-line activities are well suited to graduate level education.

Harasim (1987), in reporting on her educational experiences using CMC, describes computer conferencing as "essentially a group communications medium enabling groups of people to exchange ideas and opinions and to share information and resources" (p. 12). Conferencing is intended to facilitate group interactivity communication at members' convenience. Furthermore, its asynchrony provides for convenient access and some amount of control in interacting with and through the medium (Harasim, 1987; Schrum, 1992b; Tkal, 1992). Harasim (1992) lists a number of group learning activities which have proven effective through CMC:

1. Seminars,
2. Small group discussions,
3. Learning partnerships,
4. Small working groups,
5. Team presentations/ moderating by the learners,
6. Simulations or role plays,
7. Debating teams,
8. Peer learning groups,
9. Informal socializing: the online cafe,
10. Mutual assist for help,
11. Access to additional educational resources. (pp. ii-iii)

Tkal (1992) lists three educational applications of computer conferencing: (1) graduate courses which emphasize discussion and exchange; (2) distance education for such things as tutorial support, optional tutoring method, discussion format for part of a course; and (3) as a delivery mechanism for fully on-line courses. Hiltz (1986) echoes this

support and potential for using CMC in teaching and learning.

Instructors' roles. According to Bates (1995), Berge and Collins (1995), Davie (1988), Davie and Wells (1992), Harasim (1987, 1990), Heap (1992), Kaye (1989), and Nipper (1989), CMC is purported to promote the collaboration, cooperation, sharing of ideas and to be an equalizing medium. This undoubtedly will change the role of teachers and students. Teachers will become facilitators and guides as they can no longer be perceived as sole experts and information providers. Students are no longer passive learners but are participants, collaborators in learning. Davie and Wells (1992) report increased interaction between instructor and students as a significant result of this change in the instructors' role.

Studies of graduate level courses (Davie, 1988; Harasim, 1987), where CMC had been integrated, have further revealed these findings about the instructor's role. Harasim found that the instructor was active introducing and focusing discussions, supplying information, probing, raising issues, synthesizing points, contributing to and developing themes and then associating these to the subject and literature. Davie indicates that the instructor structures the experience, encourages involvement, summarizes periodically, helps keep the discussion on track and acts as a key role model through his/her own input to the discussion.

Romiszowski and de Haas (1989) offer these suggestions for the facilitator or instructor:

1. keep the main discussion on track by providing leading questions;
2. if the discussion starts getting off track, refocus;

3. if a distracting topic appears that is generating interest, create a branch so that the competing conversation is separate but optional;
4. focus effort by suggesting that students look deeper into topics when applicable;
5. provide summaries of what has been transpiring by drawing together main themes. (p. 10)

Educational application of E-mail. Although the literature chiefly reports on the use of conferencing systems in education of which E-mail is a component, the use of E-mail alone has also proven to be an effective teaching supplement (Jost et al., 1990; Kaye, 1989; Poling, 1994; Romiszowski & de Haas, 1989; Shedletsky, 1993; Welsch, 1982). Welsch found that using E-mail even in an adjunct mode to a course resulted in a much more interactive class.

Jost et al. (1990) selected E-mail use over computer conferencing to conduct CMC distance conferences and seminars in their Instructional Design, Development, and Evaluation Department at Syracuse University. The rationale given was that E-mail was a simpler and more available alternative to a specially structured conferencing system which was difficult for students to learn. Romiszowski and de Haas (1989) also found this to be the case.

Poling (1994) and Shedletsky (1993) both report on the on-campus use of E-mail which is equally valid for distance education. They recommend the use of E-mail for those teachers who want to get closer to their students even on campus. For a few more minutes each day, teachers can open up a line of communications with their students not available in the traditional classroom.

Poling outlines the process of integrating E-mail into the teaching of university courses. To get started, students will require access to the university's main computer

account and a user identification (user id) and initial password (students create their own password once they are on-line). Poling (1994) notes that at his university, Clemson University in South Carolina, students are taught the use of E-mail in their computer literacy course, which is a new general education requirement. He commences the semester by having each student send him an E-mail message. Although this can be a frustrating experience for the first timer and the non-computer literate student, Poling (1994) and Shedletsky (1993) found that after a short time students become quite comfortable with the process.

Class lists or "alias lists" (Poling, 1994, p. 54) can be set up as mail distribution lists which allow the professor to send a message to everyone in the class, saving time and effort. This does not prevent mail distribution to an individual student however. Templates can be set up for repetitive communications informing students of their grades, for example. Folders can also be created where the instructor can save messages to specific locations. It is recommended practice to set up a folder for each class and maintain all messages, sent and received (Poling).

Poling (1994) lists nine areas where the use of E-mail is most effective: answering questions from any student, counselling, issuing class assignments, making class announcements, administering periodic quizzes, having direct communication with an individual student, posting grades, posting helpful hints regarding homework and upcoming tests and receiving excuses for absenteeism. Poling rates students' questions as the most valuable and useful aspect of E-mail. For example, students who would never ask

a question in class due to shyness or feelings of intimidation readily ask very pertinent questions on-line (Bates, 1995; Boston, 1992; Romiszowski & de Haas, 1989; Shedletsky, 1993). Furthermore, Bates (1990) and Kaye (1989) point out the potential for immediate feedback to students' assignments via E-mail versus the long turn around time of the post.

General Benefits of CMC in Distance Education

Case studies of the application of CMC in distance education are somewhat limited and more are called for in the literature. Harasim (1987) and Davie (1988), who are frequently cited, introduce two studies which explore the advantages of integrating CMC into education by presenting their findings from the students' perspective. These authors and others (Hiltz, 1988; Lyness, Albrecht & Raimond, 1992; Wells, 1992) espouse numerous benefits to the educational application of CMC in the literature. Also, Heller and Kearsley (1995) strongly recommend the use of CMC (BBS) in graduate distance education and include a quote from one of their students "I can't imagine taking a distance education class without it" (p. 136).

Time and distance independent. One of the greatest benefits is that it is distance independent and time independent or asynchronous. Therefore it is possible to free instruction from the constraints of time and distance (Bates, 1995; Coltar & Shimabukuro, 1995; McInerney, 1995). Harasim (1987) reports that many students considered the experience highly motivational as they enjoyed CMC (computer conferencing) to surmount distance and temporal limits. Harasim (1990) cites Hiltz (1986) and her own former

research (1986) wherein users reported that the asynchrony of CMC contributed to their learning effectiveness. The flexibility of CMC increases the opportunity for all students to participate in on-line activities (Eastmond & Rohfeld, 1993; Harasim, 1990; Lewis et al., 1995).

Increased interaction. Increased interaction among students and with the instructor impacts positively on learning. Additionally, improved quality of the interaction over classroom interactions has been noted (Bates, 1995; Kurland, 1984). Santoro (1995) cites Hiltz (1986), a "pioneer in the application of conferencing to instruction" (p. 20) who often noted that there was an increase in communication within a learning group as a result of computer use. Boston (1992) agrees having found in four years of "modem delivery" (p. 45) of instruction that the exchanges between instructor and students and among students are indeed richer.

Harasim's graduate students reported that they experienced not only greater but more intense interaction among themselves and with the instructor (1987). Harasim (1990) cites Rice (1984) who indicated that increased interaction could enhance quality decisions. Lewis et al. (1995) consider frequent interaction permitted by CMC as one of its major strengths for distance education noting that interaction between instructor and students and among students is realized with little effort and great spontaneity. As a result of this increased interaction among distance students and between them and the professor, the sense of isolation often felt by students and faculty is reduced (Bailliu, 1991; Bates, 1995; Berge & Collins, 1995; Harasim, 1987; Kaye, 1987; Kurland, 1984; Tkal, 1992).

Sense of community. Students reported not only much greater communication but also increased cooperation within the group compared to their classroom experiences. There was a strong sense of community which contributed to the overall enjoyment and participation in these courses (Boston, 1992; Welsch, 1982). Harasim (1990) states that competition for speaking time is reduced and thereby this may promote student cooperation. Boston also refers to the real sense of group identity formed through the use of group discussions and the viewing of instructor-to- student interactions.

Quality responses. Opportunity exists for students to consider their responses and to provide more coherent and well-thought-out discussion comments and ideas, hence avoiding the 'on-the-spot' reaction. Participants can respond when ready and when it is convenient (Heller & Kearsley, 1995). Control over the nature and time of the interaction as well as control over the reading of responses contributes to better quality replies (Harasim, 1987, 1990). Rohfeld and Hiemstra (1995), in reporting on their experiences at Syracuse University, found that although their distance students did miss face-to-face interaction somewhat, students believed that through CMC they provided more thoughtful comments and ideas to on-line discussions versus their on-campus counterpart.

Equity of participation. Equalization of users is reported. CMC empowers users with disabilities, physical impairments, speech impediments and for reticent students, their shyness and fear of talking in large groups are diminished (Kearsley et al., 1995). According to Harasim (1987), Davie and Wells (1992) and Kaye (1989), students report a more democratic environment as a major advantage of CMC. Both Harasim's and Davie's

students preferred the equal opportunity to verbalize their opinions without being cut off. Furthermore, air time was not limited where often in the classroom the more verbose and articulate student would monopolize the discussion (Harris, 1994). The more reticent students and those for whom English was a second language especially found this to be the case. Overall, students perceived the lack of physical and status cues, gender and race contributed to more equitable participation in the courses (Mason & Kaye, 1990; Rohfeld & Hiemstra, 1995). Additionally, without the social and physical cues, emphasis is placed on content versus the person or personality, providing for a more equitable learning environment (Berge & Collins, 1995; Davie, 1988; Harasim, 1987, 1990; Heller & Kearsley, 1995; Mason & Kaye, 1990; Romiszowski & de Haas, 1989).

Convenience of access. Convenience of access from home, school or office is welcomed by busy students (Berge & Collins, 1995; Davie, 1988; Harasim, 1987; Heller & Kearsley, 1995; Lyness et al., 1992). Freedom from commuting was emphasized especially by the part-time students who go to class after a day at work. Others valued bringing school into their own comfortable setting (Harasim, 1987). Convenience of access from CMC's 24 hour a day availability increases the flexibility of education for students and faculty. Almost self-paced in nature, the asynchronous communication allowed students time to read, reflect, research and compose a response in their own time, when they were prepared. Students could work around their own schedules giving them more control over their learning (Barron & Orwig, 1993; Wells, 1992).

Greater learner control. Greater learner control over the learning situation is emphasized (Bates, 1995; Berge & Collins, 1995; Davie, 1988; Harasim, 1987, 1990; Lewis et al , 1995; Rohfeld & Hiemstra, 1995). Students particularly appreciated having more control over their own learning. They felt they could work on-line at times convenient to their peak learning periods and lifestyles. They too particularly liked working at times when they were more energetic and had uninterrupted timeslots. Again, their control over the time meant they could avoid conflicts with family and other commitments (Harasim, 1987; Davie, 1988).

Greater student responsibility for own learning. Self-discipline is promoted requiring students to take more responsibility for their own learning (Burge, 1988; Eastmond & Ziegahn, 1995; Lewis et al., 1995). Eastmond and Ziegahn (1995) agree with Burge that the need exists for self-responsibility in distance learning. Consequently, adult learners are encouraged to be more self-directed, to take advantage of their own experiences and strengths. CMC permits them to apply their newly acquired knowledge and skills to their own situation.

Basic computing skills required. Only elementary computing skills are required for students and faculty using E-mail (Poling, 1994; Shedletsky, 1993), computer conferencing (Harasim, 1987; Florini, 1990), and the BBS (Heller & Kearsley, 1995; Kearsley et al., 1995). Despite the ease with which students learned to use the technology, all authors recommended an introductory training session on the medium, technical support throughout the course and a user friendly manual. Heller & Kearsley (1995) go so

far as to state that the fact that many of their graduate students go on to use BBS in their teaching or professional lives is justification enough for the use of CMC (BBS) in graduate education, given the importance of computer networks in the future

Permanent record. The ability to read the discussion and to keep a written, permanent record of the discussion contributed to the effectiveness of the discourse More effort was exerted by students to produce well-thought-out and coherent comments and ideas (Davie & Wells, 1992; Harasim, 1987; Harris, 1994; Kaufman, 1986) Davie and Wells stress that this record challenges students to be more accountable for their responses and to be more precise in expressing their ideas and comments. Boston (1992) found that instructors also had to be more precise and clear in their thoughts when responding on-line. Instructors claim that this clarity of thought and concise presentation also proved beneficial for their on-campus teaching. Harasim (1987), Davie (1989) and Kaye (1989) state that the permanency of CMC communications permits students to reread and review the information at times more convenient to them and as often as necessary. Boston (1992) and Kaufman (1986) also found that students enjoyed printing off their electronic correspondence for ease of reading and reading at times more suitable to them.

Access to group ideas. Students perceived the greater access to group knowledge and fellow participants provided a diverse and vast resource not normally available in site-based education which increased their learning (Harasim, 1987; 1990). Bates (1995) suggests that adult learners have a lot to offer to fellow colleagues and are often specialists in their own fields and that through CMC students can capitalize on this knowledge and

experiences for their own benefit. Wizer and Lynch (1995), as cited in Kearsley et al. (1995), report that the most common benefit mentioned by a group of 117 graduate students involved in on-line learning at George Washington University was "the power of online communication for sharing ideas and experiences with fellow students and faculty" (p. 41). In fact, Wells (1992) states that CMC's capacity "to support group work might be one of CMC's greatest contributions to education" (p. 8).

Writing skills developed. Text-based instruction encourages development of writing skills which is essential in education especially in post secondary education (Harasim, 1990; Mason & Kaye, 1990). From a cognitive perspective, students now have more time to reflect upon and compose their response before offering it, unlike in face-to-face and telephone discussions. Students admit more attentiveness to the written word versus the one verbally given (Bates, 1995; Berge & Collins, 1995; Schrum, 1992b; Kaye, 1989).

Technical advantages. There are also certain technical benefits of CMC such as ease of circulating and archiving files and documents (Berge & Collins, 1995; Kaye, 1987). One-to-many and many-to-many communication allows efficient and expedient communication with entire classes for distributing assignments, giving general feedback and answering questions (Harasim, 1987; Welsch, 1982).

Student support services. "A trend in student support as well as instruction is the growing interest in the use of technology in order to provide delivery of services to the distant learner" (McInnis-Rankin & Brindley, 1986, p. 79). Bailliu (1991) and Bates

(1995) agree. Bates considers "*ready access to help and support*" through CMC as one of its many instructional benefits (p. 210).

> In summary, Mason and Kaye (1990) comment about the many attributes of CMC:
>
> CMC ... can provide vastly enhanced opportunities for dialogue, debate, and conversational learning. Furthermore, it provides a real sense of community and affiliation ... without the visual and status-determining cues of face-to-face exchanges. This tends to produce a relatively democratic atmosphere where individual contributions are valued on their own merit. The content of the message becomes the primary focus, which can lead to an ideal situation for developing the tools of critical thinking. (pp. 16-17)

Limitations and Challenges of CMC in Distance Education

Computer conferencing and E-mail offer enormous possibilities in their educational applications. However, there are certain limitations and potential barriers to electronic learning which must be recognized when designing these applications (Bates, 1995; Garrison, 1990; Harasim, 1987, 1990; Kerr & Hiltz, 1982; Wells, 1992).

Information overload. Information overload is often reported by students and faculty in this electronic milieu. It can be difficult to decide what information to keep and what to discard (Tagg, 1994). Harasim's students reported a heavy reading load and becoming frustrated by the voluminous inboxes (1987). Responding to students can become time-consuming for the instructor who must now read and reply to all students' E-mail, which can be numerous (McInerney, 1995). Boston (1992) reports that instructors new to the medium have a tendency to "over-participate, to drown in transactions until they find a proper balance" (p. 56). As it is text-based communication, on-line discussions often result in volumes of reading material which is further exacerbated by the other course

readings. "Overwhelmed" and "overwhelming" are frequently used to describe the reading load (Bates, 1995; Harasim, 1990).

Students and faculty often report having to spend more time on on-line courses versus traditional courses noting the former to be more demanding overall. Students have to play a more active part in the on-line discussions than in the traditional classroom where they can often passively take notes (Boston, 1992; Harris, 1994; Hiltz, 1988, 1990). Faculty report spending up to one to two hours a week on-line per course to answer students' questions, to provide feedback on assignments and to moderate discussions (Kearsley et al., 1995).

Heller and Kearsley (1995) report on their use of a BBS for graduate distance education at George Washington University for several years. The BBS is used for three main purposes: assignments, sharing of information and for questions and answers. Due to faculty schedules and demands and increased student to professor interactions through the BBS, they found that the BBS could result in message overload for faculty. Hence, they hired a teaching assistant part-time to handle many of the questions which tended to be more administrative and procedural in nature.

Lack of feedback. Delayed responses and procrastination sometimes result due to the asynchronous nature of the medium. Many students report frustration with lack of feedback or slow responses (Davie, 1989; Harasim, 1987, 1990; Rohfeld & Hiemstra, 1995) and some even drop out as a result (Boston, 1992). Feenberg (1987) describes it as speaking into a vacuum. Anxiety results when students do not receive immediate responses

to their ideas. Additionally, students become annoyed with fellow students who respond to topics which are no longer current (Harasim, 1990). Harasim (1990) also cites Hiltz and Kerr (1985) who reported this tendency as well. She cautions that asynchrony is not equivalent to "atemporality" and that "timelines in discussing the current topic remain important" (p. 47).

Acquisition of new skills. New skills are required for students and instructors to use the computer and telecommunications (Berge & Collins, 1995; Jost et al., 1990; Kearsley et al., 1995; Kerr & Hiltz, 1982; Lauzon & Moore, 1992; Lewis et al., 1995; Schrum, 1992b; Wells, 1992). Harasim and Johnson (1986) report that not only new skills but also new attitudes and behaviours are required for this new medium. Similarly, Lewis et al. (1995) refer to not only new technical skills but also new cognitive and interpersonal skills to capitalize on the use of this medium. They state that instructors need skills to help create an open and flexible on-line learning environment. Harasim and Johnson emphasize that new attitudes towards communications and novel ways of self-expression are essential. Tkal (1992) indicates that students are now faced with learning the content as well as the context. Velayo (1994) refers to students' "computer anxiety" as a "debilitating force" in learning the telecomputing technology (p. 24). Lewis et al. caution against the "tyranny of expertise syndrome" (p. 27) where the masters of the medium forget what it is like to be a beginner. Furthermore, system software and operating manuals are sometimes not user-friendly nor accessible which result in intimidation of the new user and possible

system avoidance (Bates, 1995; Harasim & Johnson, 1986; Heller & Kearsley, 1995; Poling, 1994; Rohfeld & Hiemstra, 1995; Shedletsky, 1993; Welsch, 1982).

Harasim (1987) reports that 20% of her students on two courses were stressed during the first days or weeks of the courses while learning the new medium, although the majority learned within six hours. Wells (1992) cites Bang and Moller (1990) who indicate that students unfamiliar with CMC may need to be persuaded of the educational benefits of CMC, before they willingly participate on-line.

Text-based. Although considered an advantage in many ways, the text-based application of CMC is considered as a limitation for those individuals who have difficulty writing and using the computer (Berge & Collins, 1995; Kearsley et al., 1995; Wells, 1992). Participants may not feel comfortable contributing to on-line discussion as their comments and opinions are maintained in a database for future reference by fellow students, and, in the case of computer conferencing, by unknown conference participants (Harasim, 1990; Wells, 1992). Harasim adds that despite its benefits, much richness is lost in communication with the lack of facial expressions, gestures and voice. Additionally, those individuals with poor grammatical, spelling and keyboarding skills are hesitant to participate (Harasim & Johnson, 1986; Hiltz, 1990; Velayo, 1994).

Lack of academic discussion. Although CMC is ripe for academic discourse, Bates (1995) reports that unless the discussions are well-moderated, the discourse can degenerate to low level responses or mere chit chat. He cites Castro (1988) whose analysis of computer conferencing transcripts revealed that students' comments were mainly based

on personal experience and that they seldom developed the link between experience and the topic of discussion. Wells (1992), in her review of the literature of CMC in distance education, found that in the case studies she reviewed the researchers concentrated on the quantity versus the educational quality of the on-line exchange and recommended more research in this area.

Lack of non-verbal cues. Although recognized as a benefit to many, the lack of non-verbal cues and voice cues available in face-to-face discussions can also pose a problem with misinterpretation of tone or intent (McCreary, 1990; Myrdal, 1994; Harris, 1994; Poling, 1994). According to Myrdal, "fairly sterile interaction" and even monotonous communication can result due to the lack of gestures and facial expressions (p. 50). Boston (1992) agrees, noting that this issue needs further exploration. Some students miss the classroom social interactions and feel unsettled and disoriented in this electronic environment without visual, audio and non-verbal cues (Berge & Collins, 1995; Harasim & Johnson, 1986; Rohfeld & Hiemstra, 1995; Romiszowski & de Haas, 1989).

Lack of social and status cues. Some individuals in the absence of social cues become overly aggressive in their responses and publicly "inflammatory" (Berge & Collins, 1995, p. 4; Davie, 1989). This medium also involves new social relations some of which obfuscate the status symbols available in traditional communications. Although its anonymity professes more egalitarian communication, sometimes this lack of symbols can be threatening, particularly to those users in positions of authority and power. Certain

students and instructors feel more isolated without the social cues and with the lack of face-to-face interaction (Harasim, 1987; Harasim & Johnson, 1986).

Student and institution costs. Costs to educational institutions to buy, maintain, upgrade equipment and software as well as long distance and network charges can be prohibitive (Heap, 1992, Kaye, 1989). Additionally, costs to students for equipment and telecommunication charges may prevent their participation in such distance education (Schrum, 1992b; Tkal, 1992). Lewis et al. (1995) and Mason (1989) both caution that with CMC some of the operating costs shift to the students. Mason observed this shift particularly for the application of CMC at the Open University in the UK.

System unreliability. As computer systems are not 100% reliable, time can be wasted and inconveniences accrued while using the system (Berge & Collins, 1995; Schrum, 1992b). Boston (1992) and Davie (1989) found that delays securing access to the network was a primary problem for their students. Consequently, after a week or two, some students would drop the course from frustration. The installation of additional lines corrected a lot of these problems (Boston, 1992).

Technology "haves" versus "have nots". There is concern that CMC can extend the gap between the technology "haves" and "have nots" (Bailliu, 1991; Berge & Collins, 1995, p. 6; Garrison, 1990; Lewis et al. 1995). Berge and Collins caution that the gap between the technology "haves" and "have nots" must not be expanded in designing CMC applications in education. Garrison states that traditionally distance education has been upheld as a way of providing education for the under-privileged, the disenfranchised. He

forewarns that if distance education strategies and methodologies become too technologically based, then only those who can afford the technology will be able to participate.

Health concerns. Health concerns such as eye strain, muscle aches and fatigue have been reported (Harasim, 1987; Lauzon & Moore, 1992; Weisberg, 1993). Harasim's students indicated difficulty reading the computer screen for long periods as well as discomfort sitting for extended periods at the computer. Weisberg refers to ergonomics research conducted on visual display workstations as he considers this relevant to interactive learning workstations. In particular, he cites research regarding the potential hazards of electromagnetic radiation, musculoskeletal disorders, vision problems and psychosocial stresses. He presents several guidelines on how to design ergonomically proper "learnplace" stations (p. 1). Both Harasim (1987) and Weisberg (1993) recommend further research into this area as computers increasingly become part of the learning environment.

Loss of discussion control. Notwithstanding the fact that CMC allows for distance communication, instructors report losing some control over the discussion, unlike typical face-to-face discussions and it is more difficult to get discussion back on track (Jost et al., 1990). Similarly, Boston (1992) reports that instructors did lose some control as students can be at different points of a course. He notes however that the self-pacing for students through CMC can also be considered an advantage to many.

These limitations notwithstanding, the benefits of electronic communication in distance education far outweigh the barriers (Harasim, 1987; Myrdal, 1994). Nonetheless, the instructional application of CMC must be carefully planned and implemented (Berge & Collins, 1995; Davie, 1989; Garrison, 1993; Lewis et al., 1995; Harasim, 1986, 1990, 1992; Paulsen, 1989, 1995; Rohfeld & Hiemstra, 1995).

Factors in the Design and Facilitation of CMC in Distance Education

Berge and Collins (1995) caution against jumping aboard the technology bandwagon without educators and instructional designers carefully assessing the need for CMC, and designing and using CMC to meet course goals, delivery goals or both. Issues such as course goals, hardware availability and student readiness must be addressed. Lewis et al. (1995) agree stating that "sound instructional design based on a systems approach to learning" (p. 15) is paramount. Instructors need to be aware of how the technology helps achieve the goals of the course and know how to use that technology effectively (Bates, 1993; Berge & Collins, 1995; Lewis et al., 1995). Harasim (1992) states that "instructional design of online environments is one of the most critical factors in successful online education" (p. iii). Additionally, according to Eastmond and Ziegahn (1995), "resource allocation considerations- time, staffing, tasks, time frames, and budgets - undergrid all design efforts" (p. 79).

Based on the results of graduate courses conducted on-line (distance education) at the Ontario Institute for Studies in Education (OISE), Harasim (1986) reports the

following factors to consider in design:

1. *"Users must be highly motivated to use the system ..."* (p. 64). She suggests that students should possess a keen interest in the content of the conference and fellow on-line students to perpetuate the regular log-on and to get beyond the inevitable initial technical problems and/or frustrations. Potential candidates should be apprised about the required skills, expected on-line time, nature of participation and course requirements prior to course registration. Then they can make a more informed decision about enrolment.

2. *"Introductory face-to-face training was very important ..."* (p. 64). Harasim found that this up front training decreased learning time and increased students' confidence. It enhanced group dynamics and a sense of on-line connectivity. Students themselves considered this a critical criterion in their success.

3. *"Begin with basics ..."* (p. 64). Harasim recommends not to overload the new user; but to provide only the basic skills and concepts initially. Once users gain confidence in their abilities, they will naturally seek additional information and skills.

4. *"Planning and design of the sessions ..."* (p. 64) require considerable time and effort. The careful design of activities and materials ensure that the focus, procedures and assignments for all sessions are clear and easily understood. As a result, students will feel more self-assured and independent in their participation. "Ambiguity is difficult to overcome on-line" (p. 65).

5. *"Availability of a support person ..."* (p. 65) to bridge the gap between the familiar and unfamiliar is crucial to the programme's success. This person should be cognizant of

system and adult learning principles.

6. *"Regular and convenient access to a microcomputer and modem ..."* is almost a prerequisite for effective use (p. 65). Dependability and facility of use of the modem and software can determine the success or failure of the computer network. Students themselves recommend a "flexible modem/communications software package" to carry out their main operations - up/downloading files, saving to disc and printing (p. 65). These recommendations are supported throughout the literature (Davie, 1989; Paulsen, 1989, 1995; Rohfeld & Hiemstra, 1995; Tagg, 1994).

Romiszowski and de Haas (1989) suggest that when designing instruction for CMC both the learner and the strength of the medium must be considered. Active group leadership, technical support availability, group maintenance, accessibility to equipment and the proper learning climate are all crucial to effective learning using CMC. They cite Feenberg (1987), Davie (1988), and Romiszowski and Jost (1989) in offering the following strategies for creating that climate:

1. leave a personal welcome message for each student;
2. reinforce early attempts at participation;
3. reference students' responses in your comments;
4. send students individual (private) communication that provide feedback and suggest resource of possible relationships with other resources;
5. model expected behavior, concentrating on content and thought provoking ideas, rather than such things as keyboarding skills and formatting. (p. 9)

Additionally, clear guidelines as to what is expected of students must be provided. Guidelines concerning frequency of participation and how to participate are critical (Romiszowski & de Haas, 1989). Boston (1992), Harris (1994) and Poling (1994) agree, indicating that it is critical that students receive positive and timely responses from the

instructor. Otherwise, the on-line students become discouraged and frustrated, possibly resulting in their quitting the experience.

Velayo (1994) points out one of the most crucial first steps to improving student motivation in the use of computer conferencing (CMC). He stresses that teachers need to help students become more "metacognitive" (p. 23) of the use of computer conferencing. In other words, instructors should explain to students why the technology is relevant and how it will enhance their learning. Barron and Orwig (1993) emphasize that a productive reason for people to communicate in the first place is essential to the effective use of E-mail (CMC).

Bates (1995), Harasim and Johnson (1986), Kerr and Hiltz (1982) and Velayo (1994) submit that students need help in surmounting the difficulties associated with telecomputing technology. Velayo (1994) and Harasim (1986) suggest the allowance of a free-flowing discussion for the first few weeks without the emphasis on grammar and format. This way students can become accustomed to the technology and get to know fellow participants before delving into the more formal aspects of the CMC requirement. Furthermore, Rohfeld and Hiemstra (1995), Bates (1995) and Harasim and Johnson (1986) recommend that system software and operating manuals must be user-friendly and readily available to students.

Harasism (1986) also offers the following factors as important to the establishment of the "network" aspect of the computer learning milieu:

1. *"the facilitative role of the conference moderator instructor"* (p. 65) - as conference moderators, the instructors provide a sense of direction to the discussions with limited intervention. They also serve as consultants, offering advice only when requested.

2. *"a co-operative group learning approach"* (p. 65) - a sense of on-line community must be stressed throughout the course. Instructors should be non-judgmental, emphasizing participation and encouraging students to take more responsibility for their learning. From the beginning, group learning must be emphasized through core and informal conferences where students can request and provide assistance to each other as well as share ideas and information.

3. *"availability of some conferences designated informal 'chat' spaces"* (p. 65) - this will promote socialization amongst the participants thereby enhancing the on-line community spirit and make the system fun.

In summary, Barron and Orwig (1993) state, "technology presents enormous opportunities and challenges to education" ( p. 5). They suggest that appropriate use of the technology can enhance student motivation, exploration and instruction but advise however that CMC is "only a tool" (p. 15) and that educators must carefully integrate its effective use in the curriculum. Santoro (1995) summarizes the use and potential of CMC in this way:

> It is important to keep in mind that we are both the creator and the object of the creation of CMC. In the final analysis, the potential for benefit or harm stemming from CMC will be up to the humans who design, implement, and use it. On the plus side, CMC technology can permit the worldwide sharing of information in ways that seemed inconceivable only a few decades ago. On the negative side, the potential exists for a massive invasion of privacy and the creation of a two-tiered society comprised of those with network access and those without it. (p. 26)

## Implications From the Literature

The literature mainly deals with case studies, the technicalities of CMC, instructor role changes, communication and some instructional design considerations. Although case studies generally deal with small populations and therefore the results may not be generalizable, they do provide concrete evidence and guidance regarding the successes and limitations of the current and future application of CMC in distance education.

As mentioned previously, there are a myriad of terms used to describe this innovation in distance education and education in general: on-line education, cybernetic teaching, electronic university are but a few. The use of these different terms throughout the literature is confusing. Additionally, Harasim (1990) differentiates between distance education and on-line education. She explains that distance education is mainly concerned about the individual learner and that the interaction between teacher and student is limited. However, on-line education comprises many-to-many communication and a collaborative learning style. Regardless of the terminology employed, the benefits and limitations of the educational application of CMC in on-line education, electronic learning or distance education are equally valid and repeated throughout the literature. As Myrdal (1994) points out for what is called network education (characterized by geographically dispersed and isolated students), the pedagogy of CMC in distance education is only in its initial stages and that for now, it "must presumably build on pedagogy of distance education, in addition to education theory in general" (p. 49).

Most of the literature on the application of CMC pertains to the use of computer conferencing and only a limited number of studies report on the use of E-mail (some of which concern on-campus education). The literature espouses numerous benefits (increased interaction, relief from isolation, convenience, place and time independence to name a few) and challenges (for example, information overload, lack of verbal cues, computer and writing skills requirement, demanding) of the instructional application of CMC in distance education and particularly in graduate distance education to students and faculty (Harasim, 1987; Davie, 1988; Heller & Kearsley, 1995; Kearsley et al., 1995). In any case, CMC is seen to promote the essentials of graduate education - critical thinking and discussion and collaboration (Heller & Kearsley, 1995; Harasim, 1990; Mason & Kaye, 1990). It does not appear to matter which category of CMC is utilized be it E-mail, BBS or computer conferencing: the main benefits and limitations of each are essentially the same barring the differences in the actual technology.

Throughout the literature, sound instructional design from the start and a valid reason to use the medium are thematic. The chief objective must remain to improve the learning environment for the distance learner. Increased interaction between learner and faculty and among learners to effect quality education is the predominant message throughout the literature on distance education today. CMC can provide that. Asynchrony and place independence are essential to maintain the flexibility and convenience of distance education. Harasim (1990), Davie (1988), McCormick and McCormick (1992) and others call for more research into the theory and theoretical perspectives on the design and use of

CMC in education and also for a sharing of that information along the way. In fact, Davie recommends more case studies be conducted as they are "ideally suited for in-depth explorations of the perceived effects of differing educational strategies" (p. 58). Merriam (1988) agrees.

Electronic communication is not a panacea nor the only medium required in distance education. CMC poses many challenges to the learner and the instructor as well as the institution. Nonetheless, as noted in the literature, its benefits far outweigh its drawbacks for the distant education environment (Myrdal, 1994; Harasim, 1987). CMC is a tool, and one of many media available to improve the learning environment for the distant learner and faculty or facilitator.

Through the increasing use of CMC in distance education for improved interactivity, many-to-many communication and more group oriented learning, the current models of distance education will necessarily evolve to encompass the benefits derived from CMC application. The bottom line for the use of CMC in distance education is best stated by Eastmond and Ziegahn (1995): "the ultimate aim of instructional computer-mediated communication (CMC) is to provide a good learning experience for students ..." (p. 59).

# CHAPTER III

## Methodology of the Study

### The Case Selected for Study

Education 6104 - Foundations of Program Evaluation (E6104) is a new graduate education course at Memorial University of Newfoundland and was offered by distance education for the first time in the Fall semester, 1995. For the first time in graduate distance education at Memorial University, computer mediated communication (CMC) was integrated into the course through the use of electronic mail.

This study was conducted to investigate the computer mediated communication (CMC) experiences of graduate distance education students, faculty and staff. Its purpose was to provide a rich description of their experiences, and to provide certain guidelines and recommendations for the effective implementation of CMC in distance education in the future.

E6104 is a packaged course, designed to be largely self-paced, with a set of inter-linked materials in print-based instructional formats, audio-taped lectures, videotapes, computer assisted instruction and formal on-line discussions for the CMC component within the course. Participants were required to engage in on-line small group and class discussions regarding assigned readings over a six week period. The discussions were focused around 11 questions provided in the course manual to which students had to respond directly as well as react to the inputs of fellow students. Additionally, students were encouraged to communicate informally with fellow participants, faculty and staff by

E-mail. The course manual directed the use of all course materials including the sequence of the course, outlining suggested dates and time lines for assignments, readings, exams and the formal on-line discussions.

## Qualitative Case Study Research

The researcher selected the qualitative case study as the most appropriate approach for the exploration and data collection of the respondents' experiences regarding the use of E-mail in the distance education environment. Miles and Huberman (1994) state:

> Qualitative data, usually in the form of words rather than numbers, have always been the staple of some fields in the social sciences, notably anthropology, history, and political science. In the past decade, however, more researchers in basic disciplines and applied fields (... educational research ...) have shifted to a more qualitative paradigm. (p. 1)

Merriam (1988) agrees noting that the field of education has come to regard case study research as a "legitimate methodological option ... to explore the processes and dynamics of practice" (p. xi). LeCompte and Preissle (1993) list case study analysis as one of the seven research models used by social scientists. They consider this approach "appropriate for intensive, in-depth examination of one or a few aspects of a given phenomenon" (p. 33).

In particular, Merriam (1988) presents the qualitative case study where qualitative data collection and analysis techniques are employed. According to Merriam, "a case study approach is often the best methodology for addressing these problems in which

understanding is sought in order to improve practice" (p. xiii). Yin (1984) also endorses the case study for "... [its] unique strength is its ability to deal with a full variety of evidence - documents, artifacts, interviews and observations" (p. 20). Merriam summarizes a qualitative case study as "an intensive, holistic description and analysis of a single instance, phenomenon, or social unit" (p. 21).

## Data Collection Strategies

> The most common categories of data collection used by ethnographic and qualitative researchers are observation, interviewing, researcher-designed instruments, and content analysis of human artifacts.... Content analysis of human artifacts includes collection of archival material as well as analysis of physical traces. (LeCompte & Preissle, 1993, p. 158)

According to Merriam (1988) researchers use different terms to refer to the written materials and other means of data collection outside of interviews and observation. Merriam refers to written materials as "documents" (p. 104) where LeCompte and Preissle use "human artifacts". For this study involving distance education, the researcher used interviewing extensively, plus participant observation, a researcher-designed attitude survey and a faculty/student profile form (adapted from Janes, 1993). In addition a content analysis of 1521 E-mail transcripts (documents) produced by students, faculty, staff and the researcher was completed.

Observation. The researcher acted as a participant observer throughout the course. She took responsibility for establishing the E-mail distribution list, and setting up course aliases for the formal on-line discussion groups. She also offered E-mail assistance and technical support to students and the professor. Participation included monitoring all

E-mail correspondence as it occurred through the carbon copy procedure, and monitoring respondents' activities and interactions through observer field notes. The purpose of the researcher's role as participant observer was to support the data gleaned from the other sources through triangulation of methods.

Interviewing. The primary interactive method of data collection used for this study was interviewing. According to Merriam, "interviewing is necessary when we cannot observe behavior, feelings or how people interpret the world around them.... Interviewing is also the best technique to use when conducting intensive case studies of individuals ..." (1988, p. 72). Patton (1980) states "we interview people to find out from them those things we cannot directly observe.... We cannot observe feelings, thoughts and intentions.... The purpose of interviewing then is to allow us to enter the person's perspective" (p. 196). Hence, the researcher considered that the interview would be the most appropriate method of data collection for this study.

Merriam (1988) describes three types of interviews: highly structured, semistructured and unstructured. To determine which type of interview to employ, Merriam suggests that the amount of structure desired must be first determined. She explains "on a continuum, highly-structured questionnaire-driven interview would be at one pole and open-ended, conversational formats at the other" (Merriam, p. 73). Merriam states that in highly structured interviews, the questions and their asking sequence are predetermined, noting the oral form of a written survey as the most structured interview. The unstructured interview is exploratory and used when the researcher is unfamiliar with

the case under study and therefore, ill-equipped to ask pertinent questions. She explains when to use the semistructured interview:

> In the semistructured interview, certain information is desired from all the respondents. These interviews are guided by a list of questions or issues to be explored, but neither the exact wording nor the order of the questions is determined ahead of time. This format allows the researcher to respond to the situation at hand, to the emerging worldview of the respondent, and to new ideas on the topic. (1988, p. 74)

Merriam (1988) recommends the more open, less structured interview for qualitative case studies. The researcher selected the semistructured interview to elicit information regarding respondents' experiences. "Ideally, verbatim transcripts of recorded interviews provide the best data for analysis" (Merriam, 1988, p. 82). All interviews in this study were tape-recorded with respondents' permission and later transcribed verbatim by the researcher for analysis.

Content analysis. A content analysis was conducted of the E-mail transcripts produced by all respondents during the course. Prior to study commencement, the researcher disseminated two letters to all respondents. The objective of the first letter was to introduce the researcher and the proposed study. The letter was enclosed with the professor's initial correspondence to students in August, 1995 (see Appendix A). A second letter was distributed to all respondents in September detailing the purpose and nature of the study as well as requesting their participation in the study (see Appendix A). Participation involved one or all of the following: the forwarding of respondents' formal and informal E-mail pertaining to the E6104 to the researcher; the maintenance of a researcher-solicited journal or log of their thoughts, feelings and ideas about the CMC

experience; and/or, their agreement to an interview upon course completion. All respondents agreed and did forward their E-mail to the researcher throughout the course. No one completed the journal due to work commitments and ensuing lack of time. All respondents agreed to be interviewed.

Surveys. Additionally, the researcher designed and administered a brief attitude survey to all students near the end of the course (see Appendix B). Its purpose was to obtain a snapshot of students' feelings toward the use of E-mail in the distance setting. These data were later used to triangulate interview data. The survey was disseminated both electronically and by regular post, giving students an optional means of returning the survey. A stamped, self-addressed envelope was enclosed with each survey to facilitate return by the latter method.

The student profile form was adapted from Janes (1993) and used to gather students' demographics data and background regarding distance education as well as E-mail familiarity and access (see Appendix B). As it is common practice for the Continuing Studies Division of Memorial University to distribute and collect this information, and to avoid duplication in the interest of the students, it was agreed that the researcher's student profile would be used by the Division for E6104.

Interview guide. A short interview guide was developed to ensure that certain topics were covered sometime during the interview (see Appendix B). This framework was flexible and open-ended allowing the interviewees to drive the interview. Bogdan and Biklen (1992) support this flexibility in using an interview guide. "Even when an interview

guide is employed, qualitative interviews offer the interviewer considerable latitude to pursue a range of topics and offer the subject a chance to shape the content of the interview" (Bogdan & Biklen, 1992, p. 97).

Sample Group

The sample group consisted of all course students, the two on-site course coordinators from the Faculty of Education and the professor who was responsible for the course design and conduct of the pilot offering. As there were seventeen course graduates and four students who dropped out during the course, it was considered feasible to interview all students. Course dropouts were interviewed by telephone upon dropping the course.

## Administration of the Study

The study occurred during the fall of 1995 and the winter and spring of 1996. In addition to the study, the researcher provided E-mail assistance for students on-line and initiated the electronic interaction with the students at the professor's request. The professor relocated to British Columbia just prior to course commencement and was not available electronically until end September due to logistic and technical difficulties. (The formal CMC component commenced in early October.) As students' E-mail addresses are not provided with course registration information, the researcher tracked them down through on-line investigation and STEM-Net staff assistance. All but one student had a STEM-Net account, albeit all were not active accounts. The researcher built a course

distribution list and initiated on-line contact with the students in early September to welcome them to the course, to offer assistance with E-mail, and to provide them with fellow students' E-mail addresses. Once the E-mail address list was finalized for the students, faculty and coordinators, STEM~Net staff provided a group alias for the course which facilitated one-to-many communication.

Respondents' E-mail correspondence was forwarded to the researcher throughout the course. To effectively organize and manage the volume of E-mail, the researcher created 50 electronic folders, namely two per respondent for incoming and outgoing correspondence, as well as two for the alias E-mail and two for STEM~Net staff. Additionally, the researcher printed off all received and sent E-mail regularly to commence preliminary content analysis, noting communication patterns and content. The researcher was on-line seven days a week for the most part and often two or three times daily to monitor discussions and interactions and to provide E-mail assistance as required.

All interviews were conducted in January, as the researcher did not want to impinge on students' busy schedules just prior to the holidays in December (the course ended officially on December 19, 1995). Twenty interviews in total were conducted at this time: seventeen student, two coordinator and the professor. Nine interviews were conducted face-to-face with the local students and coordinators. The researcher conducted telephone interviews with the professor and the remaining distance students. The interviews varied in length from 25 to 90 minutes, averaging approximately 40 minutes per interview.

## Data Analysis Procedures

"Data analysis is the process of making sense out of one's data" (Merriam, 1988, p. 127). Although no prescription is available in the literature on this intensive task, Merriam (1988) and Patton (1980) provide useful guidelines on how to approach it. Merriam explains that data analysis is ongoing throughout data collection. Data have to be arranged "according to some scheme that makes sense to the investigator and then indexed accordingly" (p. 126). Patton suggests assembling the raw case data, constructing a case record - "this is a condensation of the raw case data organizing, classifying and editing the raw case data in a manageable and accessible package" (p. 304) and then writing the case study narrative which can be presented chronologically or thematically or a combination of the two. Merriam refers to this case study narrative as the case study report. The researcher applied both authors' guidelines during data analysis.

# CHAPTER IV

## Report and Analysis of Results

### Introduction

The purpose of this study was to explore and portray the computer mediated communication (CMC) experiences of graduate distance education students, faculty and on-site coordinators of the course Education 6104 - Foundations of Program Evaluation conducted at Memorial University of Newfoundland during the Fall semester of 1995. The intention was to study the students', faculty's and staffs' overall experiences inclusive of benefits, problems encountered, and recommendations for future application of E-mail in a distance setting. Additionally, the researcher's objective was to determine respondents' backgrounds in distance education and E-mail familiarity, and to provide a case study report for future educational reference regarding the implementation of CMC (E-mail specifically) in graduate distance education.

### Organization of Findings

The data were collected in five ways: observation, semi-structured interviews, faculty/student profiles, an attitude survey and course E-mail transcripts provided voluntarily by all respondents. Observation permitted the researcher to track the discussion process and to identify problems with the use of the software and the system. Semi-structured interviews of the seventeen students, two on-site coordinators and the professor consisted of only broad questions or introduced a general topic area to facilitate

the interview process. The respondents directed the interviews and were free to steer the interview according to their thoughts and ideas. There was no prescribed order to the interviewer's questions or areas for discussion.

Student profile forms, used to gather demographic data as well as computer and E-mail background information, were distributed to the students by the Continuing Studies Division of Memorial University prior to course commencement. These were returned to the course coordinating staff who provided photocopies for the researcher, with students' permission.

Near completion of the course a short attitude survey was distributed to the students through the regular post and electronically. Three students responded via E-mail and the rest by conventional means for a 100% response rate.

Students, faculty and on-site coordinators all voluntarily forwarded their E-mail correspondence pertaining to the course to the researcher for the duration of E6104. This, plus the researcher's E-mail to the respondents, amounted to 1521 E-mail transcripts for document analysis (see Appendix C for sample E-mail transcripts). The respondents have been identified as Students 1 to 17, Coordinators 1 and 2, and "the professor" to maintain confidentiality.

## Demographic Data

Students participated from coast to coast of Newfoundland including seven local students, six from Labrador and the remainder spread out across the island. With two

exceptions, all students were enrolled in a Master of Education programme, having all completed a Bachelor of Education, and the majority having also completed a second undergraduate degree. Two students had recently convocated with a Master of Education and were completing this course to receive their seventh grade teaching certificate.

Fourteen of the respondents were teaching in the K to 12 school system and one was a Guidance Counsellor in that system. One student was teaching in a community college, and another was self-employed. Teaching experiences ranged from three to twenty-one years. Two respondents were full-time students on academic leave during the Fall semester 1995 while fifteen were part-time students.

Students' rationale for enrolling in E6104 varied. Fourteen students were completing the course to fulfil degree requirements, two were taking it for the pay increase associated with seventh grade teaching certificate and one was studying the subject as it related to his thesis (in progress) in the area of Evaluation. Table 1 summarizes demographical data.

Course enrolment. Twenty-one students originally registered for the course. However, four dropped the course prior to the 'drop and add' deadline of 26 October 1995. The researcher conducted telephone interviews of these students to determine their reason for dropping out and to discern if it was related to the CMC component of the course. No one dropped because of the CMC requirement. Reasons for leaving the course included sickness, change of programme and two students left due to personal commitments.

Table 1

Demographics of Case Study Students in Pilot Offering of E6104

| Students' Demographics | N |
|---|---|
| Age Range | |
| 25-30 | 9 |
| 31-40 | 3 |
| 41-50 | 5 |
| Gender | |
| Female | 9 |
| Male | 8 |
| Location | |
| Local | 7 |
| Labrador | 6 |
| Other (spread across the island) | 4 |
| Educational Background | |
| BEd | 4 |
| BEd BA | 7 |
| BEd BSc | 3 |
| BEd BPE | 1 |
| BEd MEd | 2 |
| Pre-course E-mail Familiarity | |
| Yes | 9 |
| No | 6 |
| Limited | 2 |
| Access to E-mail | |
| Home | 12 |
| Remote (workplace or campus) | 5 |
| Previous Distance Education Experience | |
| Yes | 7 |
| No | 10 |

## Students' Account of Their Experience Using E-mail in Distance Education

### Students' Background in Distance Education and E-mail

During the interviews, it was part of the researcher's objective to ascertain the distance education background of this group, and, for those who had prior distance education experience, to have them compare their earlier experience with that of E6104.

Additionally, the interviewer wanted to determine the students' previous experience and knowledge of E-mail prior to starting E6104 and to gain an appreciation of the students' access to E-mail for the course. Although some of this information was provided in the student profiles at the course outset, and through researcher's observations, the researcher wanted to confirm the data and to find out first-hand from the students.

Students' previous distance education experience. Seven students had previously taken courses, undergraduate or graduate, via distance. Their combined experience included both correspondence and teleconference distance education. Four of the seven students preferred E-mail to teleconference courses and all favoured E-mail to correspondence education. Unlike the teleconference, students liked the flexibility and 24-hour availability of E-mail.

Students had mixed reactions regarding the use of teleconferences in distance courses. Most found that teleconferences were restrictive as you "met" at specific times and places after which there was limited or no contact. Student 12 compared her E6104 experience as "similar" to her undergraduate experience with teleconference but certainly "better than a correspondence course". Student 1 commented that "every week we had to be there [teleconference meeting place]. It was like a class and I find [found] it very frustrating.... I didn't like teleconference." Student 2, however, preferred teleconference to E-mail because of the "immediate response ... which you can't get on the Internet." Student 7 further endorsed E-mail in distance education as it provides "that [contact which] is very important in a grad [graduate] course especially."

Students' previous familiarity with and access to E-mail. Nine students were already familiar with E-mail. They rated themselves as very comfortable to proficient users. Several commented that they had been on-line through STEM~Net since its inception approximately three years ago. Six students had no prior experience using E-mail and two had very limited experience.

The profile completed by each student at the start of the course requested their intended E-mail access plan for the course. Observations and interviews confirmed their actual plans and disclosed how access influenced their on-line participation. Fourteen students owned a computer and 12 of these computers were equipped with a communication capability. Students 5 and 16 commented that they thought of computers as "household items" today. In fact, Student 9 purchased a modem part way through the course to gain home access. Prior to this, he used a computer at his workplace which was a 45-60 minute commute from home. He noted that once he had E-mail access from home "contacting either students or [the professor] is [was] always a pleasure rather than a pain."

Five students required access remote from home. Student 13 was local and availed herself of the computers on campus while Students 4, 11, 14, and 17 used their workplace (school) computers. Workplace access was considered more of an inconvenience than a problem. Two students encountered some difficulty due to commuting distance to the school and the high demand among fellow teachers for computer time; in one case there was only one computer in the school. As Student 17 pointed out: "accessibility to a

machine [computer] that's convenient to the person who's using it was certainly limited.... a little drawback." Otherwise, students dealt with the normal connection frustrations associated with peak time busy signals or the system being off-line.

Overall Experience of E6104 Students

The interviewer's opening statement was designed to encourage students to talk freely about their experience involving the use of E-mail in this graduate distance course. For the most part, students were extremely satisfied with the experience and the majority commented largely in favour of the use of E-mail in this setting. A few first-time users reported initial frustrations and problems in learning E-mail protocols, but with one exception, they grew to like the experience as their knowledge and skill levels improved. Table 2 provides a summary chart of students' initial comments regarding this experience.

Experience of E-mail novices. Three students, Students 4, 10 and 12, found the experience very frustrating initially. They were all first time users of E-mail and Student 4 also had a computer access problem. In fact, Student 4 only actively joined into the E-mail portion of the course at the very end. Student 12 recalled, "in a panic of frustration", sending a desperate call for help message to the researcher, who provided E-mail assistance on-line. "Cathy, help! help! I'm going to give up!" She did not quit but persisted through her frustrations and became an avid supporter of E-mail. Student 10 depicted the initial frustration these three novices felt:

> I had times when I was totally frustrated as my husband will attest. Because it was E-mail, I would find that I would get frustrated very easily. Especially in the beginning and sometimes I didn't want to use E-mail to send my thoughts that way

> you know .... because you felt you were right there on the spot quote "on-line", "on-the-line!"

However, by the end of the course, they were extremely to fairly comfortable with E-mail and Students 10 and 12 were using it for various professional purposes.

Table 2

Selected Comments Illustrative of Students' Thoughts Regarding Their E-mail Experience

| Selected Comments |
|---|
| "Definitely worthwhile, most definitely!" |
| "Generally, it was super!" |
| "I liked it simply for the fact of talking to other students that was really, really great!" |
| "I enjoyed the communication aspect of it. I liked being able to contact people. To me it was as normal as a telephone call. I found it much more convenient because you could do it on your own time, you weren't at anybody's beck and call." |
| "I found it enjoyable and fairly easy to use. I had a good experience with it!" |
| "Lots of pluses with this [E-mail]. I really enjoyed it. Now I feel less intimidated and I can go on and communicate with other people. I really liked the experience. I think it was a great asset for the course." |
| "You felt like you had your finger on the pulse more. Because you get the E-mail no matter what. It's not going to get lost in the mail. So I felt that was security. I found E-mail was more prompt." |
| "Overall, I enjoyed it! I thought it was a great experience overall! I couldn't see how we could do a course without it, especially at the graduate or any level I think." |
| "I enjoyed it immensely. Especially when we got on to the little discussion groups." |
| "I almost feel like I take that machine [computer] out of the way. I don't think about the machine. It's like the person and me [I] and we're just discussing in a different media, that's all. I loved it!" |
| "It seemed you weren't that far away. I found it was really close in that respect." |
| "I'm glad we used the E-mail." |

Four students went from being highly intimidated novices to fairly comfortable users over the duration of the course. Student 10's comments are representative of this group.

> To start off I was not familiar with E-mail. So to me this was another dimension of the course, another unknown. Well you see a distance education course is a new phenomenon to me, working full-time and taking a course was brand new for me,

> learning E-mail was new. So I had panicky moments, yes. I was fairly intimidated originally. The other thing was I had a great time once I got to the point where I was reacting academically and backing up what I was saying with my readings and quoting from the readings. I had a wonderful time! But I wasn't there in September. I wasn't there in October. November I started to get there, ... I started to really twist my head around what I wanted to do with this E-mail thing.

She concludes the description of her experience more positively as did the other E-mail neophytes.

> It was absolutely worthwhile! I'm more comfortable through the experience of E-mail, [it] makes me comfortable with this as a technological medium. I'm not intimidated by it. I recognize that it's a tool and I'm the master here, not the machine. I think if I was to use it again in another course I'd be much more comfortable. Yeah, I'll use it again with much less timidity.

Experience related to an "electronic classroom". Interestingly, five students equated the experience to the classroom environment stating that they felt as if they were in a classroom as the course progressed. Others remarked that it became more like "an extended class" or "an electronic classroom" where students discussed issues back and forth. They did not feel like they were left on their own as is often experienced in distance courses. Student 15's description is reflective of what these students felt.

> It seemed like a regular course in my mind. Even though we were doing it by distance, [and] we didn't have to go to classes, it still seemed like a regular course minus having to go to class. I think that E-mail sort of even filled that void of not having the actual classroom, very much so.

Experience relieved the isolation factor. In fact, several students stressed the relief from isolation and the comfort and reassurance they felt just knowing that there were others out there with them. For instance, according to Student 16 "... you wouldn't feel like you're out there by yourself. I felt that anytime you could throw out a question and

somebody was on-line." Student 8, who felt isolated initially, in this her first distance education course, also witnessed the isolation fade with E-mail.

> I must say I did feel isolated in the beginning. I think it was where I was accustomed to doing so much work on campus and having the real faces in front of me. But much less so as time went on due to the E-mail definitely. I would attribute it to the E-mail and everybody else's willingness to use the E-mail.

Similarly, Student 4, who encountered much difficulty with access and with learning E-mail, found that E-mail alleviated her aloneness and added to her comfort level in the distance setting

> It kind of felt like not so alone and not so isolated, I didn't feel so isolated. I felt when other people would talk about it [discussion topic] through E-mail, it made me more sure that I was on the right track. Sometimes I would be just reading what people were saying back and forth sometimes not even participating. I was sort of listening I guess in a way. I found it made me feel more comfortable with what I was doing my own self. I wasn't all alone!

Experience of an E-mail "expert". Student 7, a self-proclaimed proficient user of E-mail, reported the experience to have been good and bad.

> Bad mostly in the sense that I found that a lot of people didn't know what they were doing with E-mail, which I expected. So I found I couldn't do a lot of things I wanted to do. And then I also found it took a lot of my time. It was good that I had the freedom to talk to people from a distance standpoint. I know I [have] got a lot of negative comments to say but I mean overall I would have to think of it as a positive thing, if improved upon and used the way it could be and should be used.

Dislike of the experience. Only Student 14 harboured a dislike for E-mail and indicated the telephone and cell phone as his preferences for student exchange in a distance course: "I did get some direct feedback from people on the East Coast because I have a cell phone and I could call them for nothing. I still much prefer the interaction of the

classroom, face-to-face repartee as it were, you get immediate feedback". However, he did recognize E-mail "as a necessity of the 90s" and further commented that:

> Looking at it from the point of view that it is a distance course, it's better than pure correspondence where everything is snail mail. Definitely better than that! There are people I'm sure who are quite comfortable using it and who enjoy using it. But, for me, my life is such that I don't have the time. But, all in all, it's better than nothing. I think it was for the most part pretty positive for some people.

Formal On-Line Discussions

The formal CMC component of E6104 extended over a six week period. It consisted of two separate topics for discussion of three weeks duration each. The entire class, as one large group, participated in the first discussion while the class was subdivided into smaller groups of four or five students for the second session. Instructions were provided in the course manual and the professor provided additional instructions on-line Group aliases were set up by STEM~Net staff to facilitate E-mail distribution

> The intent of the formal on-line discussions was:
>
> to try and encourage the exchange of ideas among students and instructor (s). You will be expected to address the issue ..., as a group, over the next three weeks ... Please try and reflect your readings in your responses, and not have the discussion degenerate into uninformed or semi-informed opinions.... Since the key word is communication, please ensure that you read what the others have said, and that you consider the opinions of others in framing your future responses. We should all learn from each other here. ([the professor], personal communication on-line, 4 October 1995)

Usefulness of the formal on-line discussions. In this section, the interviewer's objective was to determine how students felt about the usefulness of the formal E-mail component of the course. Students relayed mixed feelings. The majority of them (ten)

found this aspect of the course very useful. The discussions were related to course objectives, kept them on track with course material and helped them get acquainted. For instance, Student 12 stated that she found the discussions "really excellent!" and that they stimulated her thinking. Student 1 felt she had to be prepared before discussing on-line but the formal discussions were "really helpful!" and that she "really liked that!". Student 11's remarks are representative of the majority:

> I found it pretty good actually! The topics, first of all, seemed to be a bit hard to grasp because you were unfamiliar with them but after a while when you got into it and started talking about ethics [discussion topic] and things, it started to fall into place. I found it really good actually!

Students were pleased that the discussions reflected the course objectives and were "right in line with the course". They found that the various inputs were valuable and caused them to re-evaluate their own perspectives. More directly, many felt the discourse helped them prepare for the course examinations.

A predominant theme throughout the interviews was the comfort in knowing that there were others out there doing what you were doing and just having someone with whom to "talk". As Student 12 related: "I found it good in ... that there was discussion and you got to know the other students in the class and that there were actually people out there in the same kind of predicament as you were."

Keeping on track in a distance course was expressed as a concern, yet students felt that these formal discussions enabled them to do just that. As Student 15 noted:

> Definitely [useful]! One of the main things they [discussions] did was sort of keep you up on the materials, the readings, sort of made you have to do them, whereas I think maybe, [with] distance education courses ... you would put things off. But this discussion helped me in terms of keeping up with the readings and the work and that made things a lot better.

Seven students felt that the discussions were not useful. They treated the discussions more as assignments and contributed "just to get them done because it was a requirement." As Student 8 admitted:

> I didn't feel I was getting a whole lot out of that. I did it because it was a requirement but I don't really think that I learned a whole lot about the course.... I didn't perceive them as being particularly useful, I could be wrong. But for the time I put in I don't think it was really a valuable learning experience, not as valuable as other parts of the course.

These students were disappointed in what they perceived as limited real discussion and "very little interaction". They observed that students tended to give their responses to the questions without regard for other inputs as there was insufficient time to respond otherwise. Student 10 stated that she viewed the discussions initially as more "back and forth as if you were in a classroom." However, she noticed very quickly that everybody was writing very formally resulting in a "cold" learning environment. She then decided to hand write her responses and then "deliver" them through E-mail. Student 7's remarks are reflective of these seven students:

> Well, I enjoyed contributing but when I saw the word 'discussion' I see two ways. But what ended up and time being a factor, people read the question, then answered different times and you throw in your thoughts. I know [the professor] probably didn't get what she wanted to get out of discussions, far from it.

Group size preferences. Certain students also indicated a preference for the group composition. Some students preferred the small group discussions over the large group as they found the former to be more personal, warmer and had a lesser amount of E-mail to which one had to respond and read. Student 15 stated:

> I found the small group ones a lot better than the large. I liked those a lot more. It seemed within the small group, it became more of a personal thing, like the fellow students would respond, call you by your first name. It was more personal, so you

> sort of expressed your feelings towards the subject a lot more. I found in the larger groups, cognizant of the fact that there was going to be eighteen to twenty in the class reading all these comments, you tended to be a bit more hesitant.

Like the majority who enjoyed the formal discussions, Student 16 also found the large group "overwhelming" due to the volume of E-mail received. She also found the small group more personal and easier to keep track of people.

> All this mail comin' at [you] and reading it and figuring out who said what and why they said it. Like I had to read and reread. Like when we were in the small group, you could remember [who] said what. It was much easier to discuss. So too much, too much [in large group].

Three students strongly endorsed the large group. Lack of feedback from the small group chairpersons seemed to be the main reason for discontent. They were uncertain as to whether their ideas were actually summarized properly and forwarded to the professor. They received no feedback from their chairpersons which disturbed them. According to Student 6:

> [the] large group I think was better because you have [had] access to everybody and they have [had] access to our comments. Small group, the problem I had with that one, although you did the questions and you sent them to your chairperson, I'm not sure if they read them. There's no way for me to gauge whether or not my comments were used or disregarded ... because I have no idea what actually went to the professor. I had no feedback on that whatsoever!

Preference for group size was not an issue for others. For instance, Student 5 indicated: "I really didn't have any preferences. So the large group or small group in the course, were really just somewhere fitting in between with what I had worked on before anyway. So, for me, it wasn't a problem."

Impact on Learning of the Formal On-line Discussions

In this section, the interviewer's objective was to ascertain if students considered that the formal on-line discussions actually impacted on their learning in this course. Not unlike the issue of usefulness of these discussions, students presented mixed views on the impact of the formal discussions. Table 3 presents a summary of students' initial comments on impact.

Positive impact. The majority of students (ten) believed that the formal on-line discussions had a positive impact on their learning. Students largely considered that the discussions were thought provoking, stimulated their thinking and learning, caused them to reassess their ideas, and provided early practical application of their learning. Student 1

Table 3

Selected Students' Comments Regarding the Impact of Formal On-line Discussions on Learning

| Selected Comments |
|---|
| "Oh definitely [E-mail impacted], because you got a lot of good ideas. You pick up a lot!" |
| "I find [found] that sharing information back and forth. I get [got] a good opportunity to sit down and formulate my thoughts on paper first." |
| "Seeing all the application of the topics was good because you could really apply what you're learning at the same time." |
| "Oh definitely [impacted], they did. They really made me think, just the topic itself, really made me think about politics and ethics and exactly what they were." |
| "Yes, it helped me a lot!" |
| "Honestly, I don't think I learned anything new from the on-line discussions.... There wasn't much criticism offered by other students or different opinions. It seemed like everybody was along the same lines all the time." |
| "Right off the top of my head, I'd say I don't think it [E-mail] did [impact]." |

concisely summed up what students thought: "I find [found] that most of my thinking and the process of thinking, the process of understanding, most of it, was in the formal discussion."

Clarity of thought described how the discussions impacted in some cases. For example, Student 10 truly felt the formal discussions affected her thinking resulting in well-delineated and more articulate responses. She described this impact: "With me, it made me be clearer probably than I've ever been with my thoughts. To say something very succinctly, that's what the E-mail did for me."

Other students felt that the discussions helped them focus better on the main issues. Student 1's synopsis is representative of how others felt about this impact of the on-line discussions:

> It [discussion] focused more on one specific aspect of the course [which] I think was good. Those formal discussions [helped] put me back on track and focus on what the course was about, what I was supposed to get from this course. Reading with a purpose! So I find [found] the formal discussion very good because when I was reading I knew how to discriminate the information.

For some, the discussions helped broaden their perspectives on certain issues and enlightened their way of thinking. In the words of Student 4: "I found sometimes people would think of things that I never really thought about. I was seeing things in a different way than I did before." For others, their opinions were revisited and changed as a result of such open communication. Student 16 acknowledged: "So yes, you did learn from it, the same way you would learn in class. You're open to ideas and think 'I can change my mind on that'. So that did happen. Yes, I did indirectly learn through others."

No impact on learning. Six students did not feel the on-line discussions influenced their learning. They chiefly stated that the discussions did "reaffirm or reconfirm your learning," but that they "did not learn anything new." For instance, Student 9 remarked: "I don't think that I've added anything, other than to reconfirm my own opinions and that I'm not alone." Student 11's commentary reflected the opinion of this group:

> Honestly, I don't think I learned anything new from the on-line discussions. Most of the time I'd make a comment and I'd get a response saying, "I felt the same way!" There wasn't much criticism offered by other students or different opinions. It seemed like everybody was along the same lines all the time.

Although Student 2 did not find that the formal discussions impacted on her learning, she did find some comfort in viewing fellow students' responses to the discussion questions:

> Right off the top of the head, I'd say I don't think it did [impact]. I don't think it had any impact because there's so much else with the course. I don't see that I learned too much from the [on-line discussion] only to know that my examples were the same as everybody else's were. That's comforting I guess.

Interaction With Students, Professor and Course Coordinators

In this section, the interviewer's objective was to determine what the respondents felt about the ability to interact via E-mail with not only fellow students but also with the professor and the course coordinators in this distance setting. All students but one appreciated the ability to interact with each other, faculty and staff. In a few words, they described the interaction as "great", "excellent" and "absolutely super." Student 13 summed up how the majority felt: "I most definitely enjoyed the ability to interact!... I

don't know what I would have done without that [E-mail]." Student 4, on the other hand, was uncomfortable with E-mail and tended to use the telephone for her interaction.

Most students found that E-mail provided quick if not instantaneous contact with course mates who were located all over the province of Newfoundland and Labrador and with the instructor in British Columbia. The professor and coordinators appeared to be always present and responded promptly to their queries for the most part. According to Student 10: "Anytime I asked for help through E-mail ... I got it right away. That's perfect! The support was there! And I knew it was there all the time." Student 15 noted ".. with no contact, I would have struggled more than I did."

A number of students found it more efficient than the telephone in terms of avoiding telephone tag with the professor as well as a more cost effective communication medium. The on-line interaction with the coordinators helped keep students on track with the course materials and to avoid procrastination of their academic work. Additionally, as Student 9 indicated, being able to contact the professor or colleagues individually or as a group was "very effective, very helpful and very useful."

Benefits of Using E-mail in Distance Education - Students' Perspective

Specific benefits of E-mail were noted by students. Generally, students offered benefits from the start of the interviews and continued to espouse the many benefits they discovered throughout the interview as they came to mind. Table 4 presents a summary of selected students' general remarks regarding the benefits of E-mail. As students also

mentioned in the descriptions of their overall experience, E-mail helped them to "not feel so alone", to feel "less isolated" and to have comfort in the on-line presence of fellow students whom they could reach easily, unlike other distance education courses.

Table 4

Selected Students' General Comments Regarding Benefits of E-mail

| Selected Comments |
|---|
| "I think it [E-mail] was excellent! I think it should be there. It should be mandatory!" |
| "It's [E-mail] definitely a benefit!" |
| "E-mail, by itself, I thought was a great thing!" |
| "I mean it [E-mail] does provide benefits in relation to just no E-mail on correspondence courses. That [contact] is very important in a graduate course especially." |
| "I think it's [E-mail] a definite! I think it [E-mail] should be that's all!" |
| "Convenience, quick and interactive! That's about three of the most positive things." |

Human contact and ability to communicate. By far the majority stressed the ability to communicate with each other and the human contact as the predominant benefit of E-mail. Not surprising, the human contact, which provided the comfort of knowing they were not alone and the awareness of how students were progressing in the course, received the most accolades under benefits. Student 15 explained:

> Mostly just the keeping in touch. You weren't on your own doing this thing. The contact with fellow students, the contact with the professor, and the coordinators that was a big benefit. Mostly just the human contact with these people realizing that you just weren't there by yourself to get through this thing. That was the biggest benefit, I think!

Student 16, a very strong advocate of E-mail in distance and on-site education, had this to say:

> Well definitely communication with the rest of the class. Getting a feel and a handle on what everybody else is thinking and to let you know there's other people

> out there thinking about the same concerns you have. It gave you confidence! It gave you a feeling that this is not total distance education here, we're not in the same room but we're all here in the same course. Definitely relieved your isolation!

Other students claimed that the contact which E-mail provided contributed to a known sense of being in a classroom. Instead of feeling "totally on your own" which is often the feeling described by distance students, they felt E6104 was more "like an extended class ... with the E-mail." Accordingly, Student 14 reported: "it makes you feel more like a class, makes you more aware of what's happening to other students" as the main benefit.

Easy access to faculty, staff and students. Not only did E-mail provide human contact but that contact was easily accessible and available 24 hours a day. Students felt they could go on-line for hours any time of the day or night. Students also observed that the on-site coordinators were available at "a flip of a coin" as E-mail is so quick and through E-mail they had greater access to the professor. Student 8's comments are representative of the majority:

> I think the ease of access to the instructors particularly and to fellow students too was really beneficial. You could be up in the middle of the night if you're doing your work and send out your messages and check your mail. It provided very easy access.

The 24 hour availability of E-mail was popular with most of the students. The majority were part-time students who worked full-time, and as one put it "had a life [besides]," so the availability of E-mail coupled with its asynchronous nature allowed this component of the course to fit into their busy schedules of jobs and families. Student 2 echoed the opinion of the majority on accessibility of E-mail.

> I figured, okay I can read this stuff and send my message whenever I'm ready, suppose its 2:00 in the morning, that's a good part too. When you have kids, as you

> know, sometimes 2.00 in the morning is the only time you're going to get anything done or you might get up at 6.00, get up early and do it.

Student 9 also felt that access was easy and that its frequency was limitless. He applauded the one-to-many communication ability of E-mail.

> I agree... that you do have 24 hour contact. You feel like at any time, it could be 3:00 in the morning, you can get up and E-mail somebody if it came in your mind.... The number of people that you can actually contact in particular being part of a group alias. You're sending one message but a number of people [receive it and] get a chance to respond to it.

This easy accessibility also contributed to the convenience of E-mail. Student 12 pointed out its convenience for contacting faculty versus its alternative, the telephone.

> If I didn't have E-mail, I'd have to call him [professor for another course], make sure that he was there when I called, when it was convenient for me to call, and when I thought to call. Whereas at 12:00 in the night if I think to E-mail ... [the professor], I can just E-mail them. There were lots of nights 2:00 in the morning I'd be there.

Equality and a greater willingness to participate. Five students admitted to being reticent in the classroom situation and consequently, reluctant to participate. For them, E-mail afforded the comfort level to participate willingly and equally to their fellow "classmates." Student 3 found this "to be a tremendous benefit" for him. His admission is reflective of the thoughts of his four fellow students:

> I find too with E-mail you can say more than you likely would in a classroom setting. Because I'm the type of person who's withdrawn in the classroom. I will interject now and then and say something, but I do not necessarily all the time involve myself in the discussion because half the time I'm so bloody nervous! I found with E-mail you could really get your point across and just say what you want to say without the nerves interacting. I found that was one real vast benefit for me personally!

These students were more readily inclined to offer a comment in this educational environment. They believed that with E-mail everyone feels free to participate and that

everyone's comments are "valid" and are "all taken into consideration." Additionally, students openly commended the equality aspect of E-mail. They felt with E-mail they could ask almost anything and that everyone had "an equal chance to respond to it." Students participated without the fear of being interrupted or cut off. In fact, they felt more equal to fellow students.

Exposure to other ideas and perspectives. These distance students truly appreciated the ongoing information sharing and idea exchange throughout the E-mail portion of the course. This exposure stimulated their thinking, caused them to evaluate their own perspectives and allowed them to analyze issues in a different light. Student 12 stated "I found that with different perspectives, it gave a different turn on different things, a different picture. It gave you more of an open mind to things. I found it really did stimulate the learning process and made me question a lot of things, a lot of issues."

Student 17 also believed that the on-line discourse broadened his perspective and provided ample food for thought. Through this medium the discussion inputs were available on-line and in print allowing sufficient opportunity for consideration and evaluation unlike the temporary nature of in-class discussions. He provided this explanation:

> You get 10, 15 or 20 different viewpoints that you can actually see, read, [and] you can run it off [print it]. If you're in a class, a live class, you get twenty viewpoints, you hear twenty viewpoints and when the day is over you remember two, yours and the other fella's who was wrong!... You just get feedback from so many different people.... The main benefit I would see that it made me focus more on what was a possible answer to a particular question as opposed to what I personally might think.

Time for reflection. Students felt they benefited from the opportunity E-mail allowed to consider fellow students' inputs before responding on-line. Instead of responding "off the cuff" as often occurs in class, students felt E-mail gave them "the time to sit back and if you didn't know or wanted to have second thoughts or you thought [of something] three days later" you could then respond. Some felt that upon the reflection of others' responses they could submit better informed answers to the issues at hand.

Permanent record. Many students acclaimed the permanency of E-mail. There was a permanent record of students' responses which they could review later in compiling their answer. Some students noted that it reduced notetaking thereby improving the normal workload of a campus class. As Student 10 noted:

> The other benefit was that the stuff was there on the screen so that if I wanted to go over [it] again, review what somebody has said before and I had done this a few times and it was really helpful. I would go back to their message and bring it up again. I could always go back and get it which is different than a phone call. When that's over, it's over! It's past!

Other students compared the on-line discussions to telephone conversations and in-class discussions where the information is only temporarily available and therefore mistakes are often made on recall and information is forgotten. With E-mail, however, the information is always available unless you delete it. Student 17 described it as having:

> A hard copy that you could take the information and run it off on the printer and there you got it in black and white. Whereas if you talk to somebody on the phone, if you start scribbling down you get it wrong, there's [are] mistakes. I found that [permanent record] to be very effective.

Quick response. Students recognized that E-mail was quick, almost instantaneous, for the most part. Frequently, they received answers to questions from coordinators or fellow students "within the same day or the next day". Student 7 remarked that there was

a "quickness to send it. Someone writes a message and sends it back to you, [you] got it right away!" Consequently, students often felt that help was just around the corner. Student 11 summarized this benefit accordingly: "if you run into trouble or you need help or anything, it's just a matter of typing in a message and you get an answer very quickly. That's probably the main benefit, if you need help, it's there!"

Clarity of thought. Student 5 and Student 10 emphasized that E-mail demanded clear thinking and well-written responses to the discussion questions to avoid confusion They reported that E-mail helped with the clarification of their thoughts Being cognizant of the fact that whatever they wrote would be disseminated to many people encouraged them to be prudent over their choice of words and writing style. Student 10 noted:

> The one good thing that I found about E-mail... [was] that when you sent out an answer, the fact that you have to write it down means there's a fair amount of thought has to go into it. You have to get your answers exact, so there's no misunderstanding.

Cost-free on-line service. A couple of students mentioned that the university's gratis on-line access for students (15 hours a month for E6104) was a key benefit to the use of E-mail. Students felt this open access encouraged discussion and interaction whereas if students had to pay there certainly would be a decrease in on-line participation. Student 8 reflected the feelings of the supporters of free on-line access.

> In this province [Memorial University] at the present time there's no charge for it. That's important too. Otherwise, if you're paying, it's again made it very much like telephoning. You wouldn't be able to do as much interacting if you had to pay every time you went on-line. That's a benefit too, that added to it.

Other educational benefits. Student 5 reported a side benefit as well as other potential benefits and uses for E-mail in learning. He believed that as most students of this

course were educators, they would be forced to get good computers, to become involved with information technology and to keep current through in-service and upgrade themselves which can be accomplished on-line at home. He suggested that professional development was right there for them. He half jokingly remarked that now "they can catch up to their students!"

Student 5 cited an example from his own on-line experiences and pursuits in seeking information as a far-reaching benefit of this medium.

> You have more options with a computer and with E-mail, this Evaluation Talk (EvalTalk) [LISTSERV on evaluation sponsored by the American Evaluation Society] that I mentioned for instance. You're getting all kinds of information and the most current from the best people in the world. It's there! It's current! You're getting instant feedback! You can't get it faster than that! The best and most current information [is available] from the top experts in the field.

Problems and Disadvantages of Using E-mail in Distance Education - Students' Perspective

In this section, the interviewer's objective was to determine if students encountered problems or recognized disadvantages with using E-mail in the distance setting. For the most part students felt there were few major problems and only minor disadvantages and frustrations. In the words of Student 14, one of the newcomers: "Nothing major. There was help there and you could get help and people were helping each other." Similarly, another novice, Student 10, had this to say: "the more I think about it talking to you, the more I think there were few drawbacks with it except that we were first on-line to use it, in line to use it as a medium for distance education." Not directly related to the CMC

component but possibly a factor in students' course experience, a number of students pointed out that they received their course materials late which added to their stress level by putting them behind before they even started.

Amount of information on-line. The main problem area centered around the volume of E-mail produced for the formal on-line discussions to which students had to respond and read. Students commented that on any given day there could be 40 to 80 E-mail messages awaiting them. This proved to be "very time-consuming" and "cumbersome" resulting in selective reading and response by the majority. The solution for many was to skim and scan the on-line material and attempt to respond to a few. Student 8's admission reflects the feelings of the others:

> I do agree with the bit about having a lot to read. I found I was just scanning that, all those responses to the different questions.... I skimmed it and scanned it! If I saw a point that was particularly interesting or one I hadn't thought of, you could note that in skimming and scanning and kind of respond to that. But I wasn't being very thorough overall with it. There was no need to be, the mark value which I consider fairly heavily, .. wasn't there so I didn't have the time.

Student 13 was local and her only access was at the university. Consequently, she did not have the opportunity to check her E-mail daily which she felt attributed partially to the E-mail buildup.

> The volumes of information that were there [was a problem]. Due to the fact that it might have been a number of days before I got in there. I remember one day there were ninety-something things to go through. I thought, "Oh my good Lord, how long am I going to be here?" I got through it! But I found after that I would go, "Yeah, yeah, next, next, click, next!" You start to scan. No way to read or respond to everything.

It became obvious throughout the interviews that students truly felt they could only browse the discussion inputs and respond only to a selective few to complete the CMC

portion of the course. They found the amount of incoming E-mail plus the requirement to react to same "overwhelming." "Overwhelming" especially at the start of each week was also Student 17's reaction to the E-mail component. His account of this "drawback" of E-mail reflects how others described it as well.

> I found on some days, especially on Mondays, because everybody got at the computer Saturday, Sunday or early Monday morning, you had umpteen pieces of mail as high as 20 or 25 pieces.... So I would say, "What's what, what's pertinent?" You read the first five and you got them pretty good and the last fifteen you say, "Well, I can't read all of that." You skim through it! So sometimes, just the volume of E-mail that you get is overwhelming!

Unfamiliarity with E-mail. Six students had no previous experience using E-mail and two had very limited experience. Initially, for most of them the learning process was frustrating and difficult, especially as they were learning E-mail as they went along and were largely part-time students in a distance course. As one novice, Student 13, recounted: "[it] took me a while to get on, to figure out what I was doing. I was all fooled up! I had no prior knowledge of it, so just trying to get on that was a problem!" Students felt pressured that they were expected to use E-mail even though many teachers had never used it before. So for their first introduction to it, in the words of Student 12, they felt that "being totally ignorant was really frustrating. Other than that, it was good!"

Their inexperience was evident in the anecdotes they shared with the researcher. The successful dispatch of a message was a major challenge for these novices because they often forgot the commands or more times than not inserted errors in message addresses. For example, Student 4 encountered the most difficulty and admitted that she felt "it was too much trouble to learn [at first] and I didn't even participate until the course was half

over." Her following remarks are representative of this group's inexperience

> I found I didn't know how to respond and a couple of times I responded and nobody got it. I made a response in the beginning and nobody responded back to me, nobody had it. And I wasn't sending it! What was happening, they [server prompts] used to say do you want to send it [E-mail] and I would log out. I used to think it was gone!

A number told comical stories about their overcrowded E-mail inboxes and their reactions to STEM~Net's requests to empty them. Students had accumulated up to "199 pieces of [E-] mail" and left them in their inboxes as they did not know what else to do. Students 12 and 13 respectively tell their story which resembles that of their fellow E-mail neophytes.

> Student 12:
>
> STEM~Net E-mailed me once and said you got too much information, so do up file folders or whatever. And I was like, "Yes, OK, file folders are the brown things that you requisition every year! Goes in the filing cabinet. How do I get it off the computer and into the filing cabinet?"
>
> Student 13:
>
> Oh I had a hard time with [the] number of messages in my inbox. I had 200 plus things there and STEM~Net said you have to put so many away and I thought, "How in God's name do I do that?" Lucky enough, the monitors were there in the lab at the time so between the jigs and the reels after an hour or something we managed to get so many of them poked into the inbox [folders] or whatever it was.

Student 5, already very familiar with E-mail, summed up what he saw as the chief problem of E-mail use for the course: "A lack of knowledge coming in of the technology was the biggest problem that frightened people half to death! And maybe that's why they felt that it should be worth more."

Workload non-commensurate with mark value for CMC component. Seven

students felt that the weighting (10%) of the CMC portion of the course was not commensurate with the workload it necessitated. They felt that for campus courses 10% is often allocated for attendance and that in comparison, for E6104 they not only "showed up" but that they also exerted much time and effort into the on-line participation for which they were not properly remunerated. Student 3 recalled his "only major complaint about it [E-mail]", which also summarizes how this group felt:

> I can tell you one thing that I didn't like about it [E-mail] - I really didn't like the fact that all that work was only worth 10%. I really thought that was a bit on the heavy side. I thought it was too much work for 10%. It was quite time-consuming at times!

Lack of feedback from professor and students. Five students complained about the lack of feedback from fellow students and the professor. Student 12 felt that feedback from the professor and other students was "the main [problem]." She found that feedback from students was especially difficult noting that only two people had actually commented on her discussion inputs. Although the professor responded to any E-mail sent directly to her by the students, these students believed she should have offered individual feedback concerning their formal discussion responses. As expressed by Student 14, they believed that the professor was "too much on the periphery and maybe a little less available to her people." They would have preferred for her to have been more directly involved in E-mail and to have had a greater on-line visibility overall.

Student 16 was also disappointed in the dearth of feedback on-line during the course. She reported that the experience was not bad because of this but that the professor should have been more available on-line. Furthermore, as the professor responded to only

certain students' input to the discussion, it was disturbing for those to whom she did not respond. Student 16 noted:

> [The professor] wasn't on-line everyday. Like I didn't find [the professor] as accessible as you or [the coordinators]. If she was going to be on-line, she could have been more visible. Like she could have answered everybody. I know that would take her a long time but it would have been worth it. Like you often wondered she didn't comment on my answer, she did on some. Like she said, "Well [so and so] said this..." and I thought, OK he's on track, does that mean I'm off track? She sent me mixed messages by not replying to everybody.

Technical problems. About one third of the students complained about periodically wasting time just trying to connect to STEM~Net as it was off-line or busy, losing the connection for whatever reason, the poor text editing ability of PINE - the electronic mail system used by STEM~Net, as well as the slowness of the Internet and node (technical connection) problems in Labrador. Student 3 described the Internet in Labrador as "so slow when we type the word 'the' it takes thirty seconds for it to go on the screen." They found the foregoing more of a frustration.

Students stated that sometimes the lines were busy and it could take ten or fifteen minutes four or five times a week to connect to STEM~Net. This resulted "in a tremendous number of hours trying to get access," hours of work which they felt went unnoticed by faculty. Student 8, an experienced E-mail user, observed some of the technical difficulties certain students were experiencing:

> Well, I know some people had trouble with the technical parts. That's more to do with the support services in the area they were dealing with. Like some of the dial-ups and stuff were difficult and people kept losing links. I had none of that.

The most proficient E-mail user in the course, Student 7, was frustrated by the fact that he could not send his responses to discussion questions to the class nor his

assignments to the professor as WordPerfect attachments which would have been more convenient. However, the majority of students and the professor were not familiar with attachment procedures. Student 7 complained that: "I thought, for instance, well I sent a document in WordPerfect to [the professor], and [a coordinator] wrote me back and said she [the professor] couldn't download it. So I was a bit bothered by that." Student 5, also an experienced E-mail user, acknowledged the technical difficulties but was not too bothered by them. "The technology sometimes is not as good as it could be. You get knocked out. It's just growing pains I see with the technology."

Although largely a new user himself, Student 11 encountered no problems and believed that difficulties only arose as a result of unfamiliarity with E-mail. He stated: "I would say the disadvantage would be any technical stuff, for people who were not really familiar with E-mail or who were afraid to try.... the only disadvantage - people that are not used to using it."

CMC component commenced "too much too soon". Many students noted that starting off the CMC component with the entire course involved in each discussion question was unmanageable. They felt "it could have been slower in the beginning." Student 16, a strong proponent of E-mail, expressed the group's sentiment: "too much too soon" and "... a bit overkill trying to respond to everybody." Nonetheless, she added: "I don't think there's any disadvantage to E-mail. I think it's a definite!"

Short timeframe for CMC component. A number of students felt the formal CMC portion of the course was too condensed and that it should run for the entire course and

not only over a six week period. They believed that this would ease the intensity of the on-line discussion and allow for more time to learn E-mail, if necessary, as well as more time for reflection and response. Student 15 summed up what others felt about the CMC timeframe:

> I think too the timeframe [was a problem]. It was supposed to run from this time to that time. I think it just should have run through the course. When you go on-line, you're on-line for the course type of thing. Some people may need more guidelines, like you should log on three times a week minimum, but for most people they log on daily. It should be just like a habit.

Late joiners to the discussions. A few students were late joining the discussion and submitted their inputs to the first set of questions when the rest of the class was working on the next set. Consequently, the other students found this frustrating as it led to confusion and tended to disrupt their train of thought. Student 15 best described how students felt about this:

> Sometimes I noticed we had passed a discussion question or topic for two to three weeks and all of a sudden you get three or four people who are still back on that particular one. It sort of got your train of thought back to these other questions again.... We were trying to proceed with another area. That was probably the only disadvantage I saw. Not a big disadvantage, just a little one.

The affective side of E-mail. A few students who enjoyed the experience did comment that they missed the face-to-face rapport of campus courses nonetheless. They acknowledged that this was typical of distance courses and not a fault of E-mail. Student 17, a new user and a real enthusiast about E-mail in distance education found:

> For me, that little personal contact is the thing I found to be missing. Now there's no way you can fix that. It's like talking on the phone, you got a sister in California, she's in California. So I guess the E-mail thing is the same way, you can make the best of it. It is an impersonal piece of technology.

Student 10 found: "It [E-mail] can be cold! It can give you impressions of people that are not accurate, you know. It's nice to see somebody use it informally, see somebody have a nice chatty comment that warms up the whole medium."

Final Comments and Recommendations - Students' Perspective

In this section, the interviewer's objective was to obtain final comments and recommendations students had regarding their experience using E-mail in the distance setting. All students emphatically recommended the continued use of E-mail in distance education. Even Student 14, who was not enthusiastic about the overall experience, felt that it was a "step in the right direction" for Memorial University. Table 5 provides a representative list of students' final comments and general recommendations. Other than the comments listed in Table 5, students' final commentary on E6104 concerned two areas: previous familiarity with the professor and graduate distance education in general.

Prior familiarity with the professor. Interestingly, seven students mentioned that they had previously taken courses from this professor which put them at ease right away in their electronic communication. As Student 5 stated: "I've never been disappointed in any of her courses. And as a matter of fact I highly recommend them!". Similarly, Student 15's remarks are representative of how these students felt: "I had done a course from [the professor] previously, so I was a bit familiar with her ... I could almost see [her] saying some of the things she said in her E-mail.... That was a great thing as well!"

Table 5

Selected Students' Final Comments and Recommendations

| Selected Comments and Recommendations |
|---|
| "I think E-mail should be a part of every distance course. I really do! ... otherwise there's no interaction between people." |
| "For the communication aspect of it. I found it really, really useful. And if I were going to do another course by distance education, I think I would look forward to it, if I could use the E-mail I don't think I'd want to do one just by basic correspondence." |
| "I think it's an excellent approach, especially for people who are spread out across the province." |
| "I would definitely have E-mail as part of a distance education course! The personal contact you can have with fellow distant students and professors is a definite plus." |
| "I definitely would take a course with E-mail in it! I would probably want to make it a part of it even if it wasn't.... I'd probably contact somebody and get one of those alias set up. I'd do it myself! I'd find out how to do it and I'd do it!" |
| "I think they should continue, definitely continue the use of it [E-mail]!" |
| "Oh it's much better now I'm prepared. I go in and I'm on TIC, that's Teachers in Cyberspace.... But if I hadn't been taking the course through E-mail, I never would have touched TIC. If I had an opportunity to do another one the same way I'd do it. Now back in November I may not have said that. It was absolutely worthwhile!" |
| "I am doing a [distance] course this semester and E-mail is not a big thing.... I'm already feeling really distant!" |
| "I'm going to start an after school group to talk to Olympic Athletes on-line. I want to keep my finger on the pulse!" |
| "Oh I think definitely it should be used again! People should use E-mail again. I think it's [there are] too many plus [es] and only a few disadvantages. They should have more courses like this. I think it's a great idea!" |
| "There's no communication [without E-mail]. I don't think it [distance education] should happen without E-mail, nowadays. That's pathetic! I think that [E-mail] should even be [in] undergraduate [distance education]. I think distance education should now be Internet education!" |

Graduate distance education in general. Many students applauded Memorial University for offering graduate distance education. Students who teach in rural Newfoundland do not have the opportunity to attend Memorial other than summer school, taking years to complete their Masters programmes. Students stated they believed in

lifelong learning but it is not readily available in rural Newfoundland without the distance education option. Students requested that more graduate courses be offered by Memorial and all stressed that E-mail should be a component. Student 9 wanted to allay any misconceptions people may hold regarding the standard of distance education and offered these final comments:

> With regard to difficulty, whether someone thinks that distance education courses are as rigorous as in-class, I think sometimes they're even more rigorous and they're just as complicated and just as difficult. [There's] as much information or material to cover as regular class. Very demanding!

In addition to the general recommendation of maintaining E-mail in distance education as presented in Table 5, students offered several specific recommendations to help improve the continued use of E-mail in the distance setting for E6104.

Assistance for E-mail novices. The most consistent recommendation of the group was best summarized by Student 17: "my basic suggestion would be that the students participating in this distance environment via E-mail should somehow be given some kind of instruction as to how to use E-mail (to the individual ... or to the group)." Students suggested that this assistance be provided in the form of a small booklet or handout which could be included with the course manual, a workshop at the university or formal on-line training sessions.

Students further stipulated that these instructions should cover the basics and not be complicated with computer jargon but described in plain language. According to the students, instructions should include: login procedures, inbox and sent-mail folder composition and manipulation, sending a message, replying to a message with and without

originating message text, creating folders, saving E-mail to folders, creating an address book, editing on-line, printing E-mail, uploading into E-mail and downloading to a disk.

Student 3 recommended that there be an E-mail resource person available on-line throughout the course. "I definitely recommend that some technician or some person available on a system like this that could give you regular feedback to any questions no matter what the nature of the question might be."

E-mail familiarity as a course prerequisite. A number of students recommended that familiarity with E-mail be formally specified as a prerequisite for E6104. Some students stated that E-mail instruction should not be the responsibility of the professor nor the coordinators but that students should be advised up front of the CMC requirement. Student 5 pointed out that:

> The course first of all is an evaluation course. It's not a computer course, so anybody coming in should have the skills of the computer. Put it as a prerequisite, if you're not familiar with this stuff, get familiar with it before you come in. Don't come in and expect the course to teach you how to use the Internet.

Earlier commencement of CMC component. Many students strongly recommended that the CMC component start earlier than five weeks into the course. In fact, most suggested "start the E-mail earlier in the year, much earlier." Student 5 proposed that: "It [E-mail] should be done almost immediately and have people right into the fire." Student 16 suggested that the course should be on-line for the whole time and that "E-mail should be part of the communication process" throughout the course. Her comments are representative of how many students felt: "Get on-line early! Get the professor on-line early!" Students believed that starting the CMC component from the onset of the course

would allow students more time to become familiar with the technology, to spread out the tasks of the course resulting in a more balanced workload, and to close the distance sooner.

Additional feedback from the professor. A number of students recommended that there should be more feedback from the professor. They indicated that the feedback need not be elaborate but used to acknowledge their input to the formal discussion individually, where possible, and to advise on the quality of their responses. For example, Student 2 suggested:

> I think it is very reassuring and comforting to hear from the professor even if it's a 'Yes, good response' or 'you're missing the point' or 'Good answer' or 'Poor answer'. Even if it's a sentence. More feedback! More feedback definitely!... to know that you made some impact, that would be, I think, the biggest thing.

Students realized that it would be impossible for the professor to reply to every single input from all 17 students and therefore recommended that the professor determine a fair method of feedback and then communicate that up front to the course. Students submitted that the professor needs to provide an explanation of how she intends to deal with their formal discussion responses. Student 16 offered this suggestion:

> maybe she could make some general comment like "I'll only respond individually if I feel you're off track" ... I'd feel much more comfortable about it, if she said something like "only if there was anything wrong with my [your] performance, then you will hear more from me" or ... "if you're not hearing from me, make the assumption that you're on track, keep going the way you're going."

Weighting and requirement of the CMC component. Seven students considered the workload of the CMC component far exceeded its assigned mark value. Students recommended that either the weighting be increased to 20 or 30% or that the discussion

requirement be reduced. Instead of each student having to respond to every question and to reply to fellow students' responses, they suggested that each student answer only one question per topic but have to comment on all inputs by fellow students. As Student 2 proposed: "everybody [be] responsible for one question but everyone else had to respond to that answer. It might have allowed a flow back and forth a little. You would have gotten just as much because you still would have had to do all the questions." Student 13's comments are representative of the group:

> With particular reference to CMC try to shorten the number of questions that we had to do. That would be a big one [recommendation]. Try to keep it a bit shorter. There was so much time that I spent on that for just 10%, it was just unreal. Either keep the same amount of questions and up that percentage or the other way, keep the percentage [10%] and lessen the number of questions that we had to do.

Formal On-line Discussions. The majority of students found the formal on-line discussions useful and that they positively impacted on their learning. Nonetheless, they did offer specific recommendations to improve these discussions. Most students preferred the small group and recommended in future offerings of E6104 that the small group should be the mainstay of the formal discussions. Students believed the small group would provide for more feedback from fellow students as well as help build students' confidence level with using E-mail.

Students suggested that the large group (full course) should be used informally for student introductions as per the format of the first day of class at most universities. The student introductions would comprise much of the information of the mail-in profiles, an outline of which could be supplied by the professor in the course manual. Students felt this would help warm up the medium very early in the course. A few students recommended

that both the small and large groups be maintained but that the CMC component start off with the small group to help people adapt to the medium slowly.

Student 16 recommended that clearer guidelines be stipulated regarding the professor's expectations for the responses to the formal discussion questions. She believed that there was confusion in this area and consequently, the professor was not fully satisfied with the progress nor format of the discussions.

A few students suggested that deadlines for responses to specific questions should be enforced somehow. Students who procrastinate and respond late cause confusion for those who are on track and make it difficult for them to stay on track.

Student 8 suggested that the formal discussions be dropped altogether and that E-mail be used for informal communication purposes only. She strongly supported E-mail in the distance setting but only on an informal basis. She did not find the formal discussions useful.

Electronic distribution of exams and assignments. Four students recommended that all written course work should be sent electronically to the professor versus the E6104 requirement to forward via the regular post. Students felt this was somehow in conflict with the essence of E-mail for the course and that E-mail dispatch was instantaneous and more assured than the conventional mail. As Student 6 put it: "One thing I was really surprised with, we were using E-mail, yet we had to send a hard copy to our professor as opposed to sending our final exam, midterm, [and] proposal as attachments, since we were using E-mail anyway."

Distance education graduate student list. Student 7, an avid supporter of E-mail in distance education as a result of this experience, suggested that Memorial University maintain a list of all graduate distance education students by course and provide that list complete with E-mail addresses to all said students upon course registration. He submitted that this would allow for the missing communication link in distance education for those who wish to avail of it.

Other uses of E-mail in distance education. Student 5 recommended additional uses of E-mail. He proposed that through E-mail more current articles pertinent to course content would be available through the Internet which could be forwarded to students Students could then be required to discuss these articles on-line throughout the course. Secondly, he proposed that the course could subscribe to EvalTalk which is a LISTSERV dedicated to the topic of Evaluation sponsored by the American Evaluation Society. Here the students could converse with world experts on evaluation. "Invite everybody into your classroom" he suggested. "It's a world-wide classroom and Memorial started the whole thing with the Internet. One of the first forums was Tele-medicine. The world started here. ... So we're at the cutting edge of it anyway, why not take it further!" Certainly, there are many possibilities with using E-mail in distance education. E6104 employed E-mail chiefly for course interaction both formal and informal among respondents.

## Summary of Students' Experience

Seven of E6104 students had previous distance education experience comprising

correspondence and/or teleconference education. All favoured the use of E-mail in distance education to pure correspondence education and the majority preferred E-mail over the use of teleconference as E-mail allowed for asynchronous communication and 24 hour availability. Students' prior familiarity with E-mail also varied. Nine students assessed themselves as comfortable users. Six students had never used E-mail prior to E6104 and two students had limited experience.

E-mail access was chiefly gained from students' personal computers at home. Fourteen students owned computers, of which twelve were equipped with communication capability. Four used their workplace (school) computers on an as available basis and a local student gained access via Memorial University's computer laboratory.

Overall, students commented highly in favour of the use of E-mail in graduate distance education. The majority considered E-mail an asset, a necessity in distance education. Students described their experiences as "super", "definitely worthwhile" and a "great experience." Only one student, a new user, did not enjoy the experience personally but did recommend E-mail's continued use in distance education. Generally, E-mail novices persisted through the learning curve frustrations and became avid supporters of E-mail. Many students depicted the experiences as an "extended" or "electronic" classroom. The use of E-mail helped close the distance, relieved the isolation and provided comfort in the distance setting.

Students relayed mixed reactions regarding the usefulness of the formal on-line discussions. The majority found the discussions useful as they stimulated their thinking,

kept them on track, caused them to re-examine their own ideas, helped prepare them for course exams and opened the communication with fellow students. They believed that the discussions positively impacted on their learning.

Others felt that the discussions were not useful, too time-consuming and offered limited, if any, learning value. They believed that the discussions only reconfirmed previous knowledge and had no impact on their learning. The majority preferred the small group discussion versus the large group (entire course) as the former was warmer, more personal and more manageable.

All students, with one exception, enjoyed the ability to interact, electronically with fellow students, faculty and staff. Students not only used E-mail for the formal CMC component of the course, but also used it for course administration matters, E-mail assistance, clarification of assignments and exams, as well as friendly discourse. Students commented that interaction with fellow students was fairly immediate and that the professor and coordinators were available at any time to offer help and guidance as required. Student 4, however, admitted a preference to the telephone for communications and did not take the time to learn E-mail until near the end of the course.

All students found E-mail advantageous and offered many benefits for its application in a distance setting. The most predominant benefits were the ability to communicate (to have human contact) and the easy accessibility to faculty, staff and students. Students enjoyed immensely the opportunity to communicate readily with the above which proved to be comforting and reassuring in this distance setting. The social

contact largely relieved the feelings of isolation typical of a distance course. Furthermore, the majority found that the 24 hour availability of E-mail, its asynchronous nature and its one-to-many communications capability effected flexible and convenient interaction opportunities.

Additionally, students found E-mail quick to instantaneous, allowed opportunity for reflection of discussion questions and provided for good information sharing and idea exchange. Students found the exposure to a variety of opinions and ideas thought-provoking, stimulating and increased their learning. Others mentioned that E-mail also forced them to be more clear in their thinking and articulation of their discussion responses to avoid confusion for fellow classmates on-line. A number of students, who admitted to being inhibited in the classroom environment, felt more inclined to participate in the electronic classroom which provided equal opportunity for all and a sense of equality with fellow students.

Many students acclaimed the permanent record of E-mail communications. This afforded them the opportunity to review responses in slow time and to offer more considered responses as a result. Compared to in class discussions and telephone conversations, the on-line discussions are maintained until deleted allowing for full recall and review of all respondents' contributions.

The fact that Memorial University, through STEM-Net, offers a cost-free on-line service to its students was considered very important. Students purported that this encouraged their interaction and discussion.

Lastly, Student 5 submitted that having a CMC component to a graduate distance course for educators forced educators to get involved in informational technology and provided a means for them to keep current in their field. The student pointed out the untapped (in E6014) but far-reaching educational benefit of using E-mail and the Internet to explore any topic in any field receiving the most current available information from world experts.

There were few major problems identified with using E-mail in this setting. Students referred to difficulties encountered as mainly "small" disadvantageous or frustrations. The volume of E-mail produced for the formal on-line discussions proved to be the main problem for E6014. Students were expected to respond to 12 discussion questions individually and then react to all inputs from their classmates. Students found this overwhelming, too time-consuming and unmanageable. For the most part, students skimmed and scanned responses and reacted selectively.

As previously mentioned, eight of the students had limited (two) or no experience (six) with using E-mail prior to E6104. These students recounted many initial frustrations and difficulties while learning E-mail during the course.

A number of students complained about the mark value of 10% for the CMC component. Students felt that this was not commensurate with the amount of effort and time they dedicated to the formal discussions. Seven students observed that although the professor responded quickly to any direct E-mail communication, they were not provided

with sufficient feedback on discussion responses. The lack of on-line visibility for the discussions left them wondering about the adequacy and correctness of their inputs.

Other than students' unfamiliarity with E-mail, about one third complained about periodic technical problems. These included the server (STEM~Net) being off-line or busy, losing on-line connections, poor text editing ability of PINE (electronic mail system employed by STEM~Net) and for Labrador students the slowness of the Internet and periodic node (technical connection) problems. Students largely agreed that these were the normal frustrations of using E-mail and not a major problem.

Many students felt the CMC component started too late into the course (week 5) and that its six week time frame was inadequate. They also felt that starting the formal discussion with the full course (as one large group versus the subsequent small groups of four or five) was "overwhelming and somewhat of an overkill."

A few students complained about late joiners to the discussions. Certain students submitted their discussion responses long after the majority had progressed to other issues which caused some confusion and disruption to the discussion flow.

On the affective side of E-mail, only a few students referred to it as "impersonal" or "cold." As mentioned previously all but one student enjoyed the experience, but a few of them did remark they missed the face-to-face interaction of campus courses noting that this was a reality of distance education and not a fault of E-mail itself.

In the final analysis, students overwhelmingly voted for using E-mail in distance education. In fact, many could not envision taking distance courses without an electronic

communication capability. Interestingly, students found a previous familiarity with the professor comforting and helpful in the electronic classroom. Students commended Memorial University for offering graduate distance education courses allowing them to pursue their Masters programmes from anywhere in the province. Students made a plea for additional graduate distance courses and highly recommended E-mail as a communication and educational medium.

Professor's Account of Her Experience Using E-mail in Distance Education

E-mail Familiarity and Access

The professor had limited previous E-mail experience and limited technical knowledge. She admitted that her E-mail background consisted of sending and receiving basic messages using Memorial University's software and with technical assistance nearby. Just prior to E6104, the professor relocated to British Columbia, purchased a computer and software with which she was not familiar, and subscribed to a new server which had unforeseen limitations. Needless to say, this exacerbated her situation. Furthermore, she worked out of her home away from possible faculty assistance to which she was accustomed at Memorial. She admitted to being frustrated technically. "So I was actually, more as I imagined some of the students were, out on their own with nobody particularly knowledgeable who they can talk to. And I could really sympathize with them, like [Studen: 4]." She noted that "conceptually I was prepared for it [CMC component]

and ready to try and do it ... but I was really technically lacking in terms of being prepared for this."

Overall Experience

In this interview, the researcher's objective was to learn about the professor's experience with using E-mail in this graduate distance education course. The professor has extensive experience in teaching distance education courses, but this was her first educational application of a formal use of E-mail in this setting.

In general, the professor assessed the experimental use of E-mail with E6104 as having worked "very well" but "not perfectly." She expressed that the experience was "certainly worth the effort" and believed future applications will be improved based on this experience. Compared to other distance teaching, she remarked that "I felt better about the course in a way, in terms of my interaction with the students. I felt more personally in touch with them and I felt more like an instructor I guess."

Like her students, she too admitted that it was time-consuming, requiring approximately two hours a day, five days a week during the peak period. Even with that amount of time, she stated that this allowed for reading students' responses and only reacting to a few which required response. She confided that "it [E-mail] added work but I did feel it was worthwhile definitely."

The professor believed that the on-line interaction allowed her to become more acquainted with her students who not only contacted her regarding formal discussions but

also on various course concerns and for "more common communication." She found this positive as it gave her some insight into distance students' lives, making her more cognizant of the daily pressures confronting them.

The professor favoured this experience over another graduate distance course where her main interaction with the students was the receipt of their assignments, her marking and comments on these prior to returning, and the rare phone call. She felt that she never got to know that previous group at all.

One aspect of the use of E-mail that the professor found disconcerting was a certain similarity in some students' assignments and exams. She observed that some completed assignments were "too similar," and were "lacking creativity and original approaches." She agreed, when asked during the course, that students could discuss the assignments among themselves on-line as they would naturally do on campus. However, original work was emphasized for final products. She came to realize that "maybe this is attributable to the fact that the communicating they [students] did was in writing and they had copies of it." Unlike the university cafeteria chat about an assignment, this 'chat' was permanent. She believed this, for some, "coloured their judgement." In particular, she referred to three students whose assignments were "badly flawed" and this flaw carried through all three of their papers. She strongly felt that because their informal "conversations" about assignments and exams were written that they had a major influence on the approaches selected by these students.

Formal On-line Discussions

The professor expressed that she was "dissatisfied from an academic point of view" with the formal discussions. She believed that the students considered the CMC component, which required research and answering questions, as "more hard work" and "another assignment" rather than an opportunity to stimulate their thinking and learning. Her intention was that the on-line discussions would take the place of discussions in residential education. Students, with one exception, mainly responded with their opinions and their experiences. She anticipated more seminar-like discussions wherein students referred to their assigned readings and discussed the issues from a more academic perspective. She felt that for the most part "students threw out their opinions." "What I found they were doing was more informal class discussions, that is recounting their feelings [rather] than seminar discussion. And I think that's just a fault of the way that live classes are often run."

Benefits of Using E-mail in Distance Education - Professor's Perspective

The professor, like her class, emphasized increased communication and contact as the main benefit of E-mail in distance education. She believed E-mail allowed for some sort of personal interaction between the instructor and students as well as among students. She also recognized a relief in isolation for herself and the students. She expressed it in this way: "it certainly sort of broke down that barrier, that impersonality."

Additionally, the professor liked the flexibility, convenience and 24-hour availability E-mail presented. For example, on campus she maintained an open door policy with students and consequently, had to deal with many interruptions throughout the day. In this environment, she had uninterrupted work time and could determine when she would respond to students (often late at night). Although it was time-consuming and intensive at times, she favoured its convenience and flexibility. In summary, the benefits witnessed by faculty included: increased communication and contact between students and faculty as well as among students, relief from isolation, flexibility, convenience, and 24-hour availability of E-mail.

Problems and Disadvantages of Using E-mail in Distance Education - Professor's Perspective

The professor indicated there were two major disadvantages to the educational application of E-mail for E6104. First, there was the minimal technical knowledge and E-mail familiarity of both the professor and almost half of the students in the course. She felt everyone coped very well under the circumstances but that their combined neophyte E-mail status was a drawback to its effective implementation. Second, the accessibility of the technology created a problem for some students. The professor was surprised by the number of educators without home computers equipped with a communication capability and noted that those who had to depend on workplace computer time had only limited access. Lastly, she remarked that the seemingly lack of compatibility of the various

communication software available and the limitations of some E-mail servers could cause a larger problem with more sophisticated use of information technology than the inability to download WordPerfect attachments as experienced in E6104.

Final Comments and Recommendations - Professor's Perspective

The professor of E6104 is very much in favour of the educational application of E-mail in the distance setting. She recommended that if E-mail is to become widely used in distance education that Memorial University should conduct introductory seminars on E-mail for graduate students or provide a comprehensive STEM~Net guide and a helpline to which students can call for E-mail assistance. Having said this, she believes that the university should have computer literacy as well as E-mail and computer conferencing capabilities as prerequisites to its graduate programmes. However, as this is not the case, she suggested that Memorial could offer at the start of every summer school or every semester, a non-credit E-mail or information technology requirement which all incoming graduate students must complete as a graduate programme prerequisite.

Specific to E6104, the professor recognized she needed to change the requirement of the CMC component to make it not appear as just another assignment. She wants students to realize the benefits of formal on-line discussions without overburdening them in the process. She suggested that she reduce the requirement of the formal discussions. Instead of having students respond to all 11 discussion questions, she would require that they respond directly to only two questions but react to the responses offered by all fellow

students. She wants to maintain the "academic underpinning" of the discussion if possible. If not, she believes that CMC would still be beneficial for the informal discussion regarding assignments and course material and for the communication alone. In fact, for the next offering of E6104 the professor has already decided to reduce the overall requirement of the CMC component while still maintaining its "academic thrust." Further, she recommended that the instructor maintain a highly organized record keeping system for the CMC component.

> In retrospect, I realized that this really requires that I be, as the instructor, that I be highly organized way more so than I was. And what I decided that I had to do for this term is what you said you did and that's have an individual folder for each student.

She suggested that from the beginning, the instructor "should have some system in place to keep records of all this [E-mail], some record keeping system and some filing system." She proposed that the professor keep electronic folders for each student as well as print off students' E-mail for manual filing.

The professor recommended that students be cautioned regarding the informal on-line conversations about exams and assignments and its potential for unintentional influence over their individual work. Students should be made aware of the power of the written word in this area unlike the typical verbal after class discussions about term papers. Lastly, she suggested this aspect of E-mail use could be an area for further research in another study.

## Coordinators' Account of Their Experience Using E-mail in Distance Education

### Coordinator's Role

The role of on-site coordinator for distance education, similar to that of the tutor in much of the distance education literature, is not an official role at Memorial University. Four years ago, the current professor of E6104 and the Faculty of Education computer laboratory instructor arranged this function between them when the professor was out of the province but teaching the first official graduate distance education course E6521 - Instructional Development. As the professor would not be on campus to assist distant students with various and sundry university and course matters, this role was conceived. The computer laboratory instructor advised that the role evolved to her acting as a go-between for students and the faculty member as well as for students and other university staff. Additionally, the coordinator provided assistance with the course content in the unavailability of the professor and maintained frequent contact with students. Contact for E6521, was mainly by telephone, fax or regular mail. E-mail and STEM~Net were not readily available at Memorial at that time. The role proved to be most effective for faculty and students of E6521 and consequently, was maintained for E6104, the second official graduate distance education course.

There were two on-site coordinators for E6104 as the computer laboratory instructor (Coordinator 1) had been seconded to another department during E6104 and another person (Coordinator 2) was hired on a part-time basis to replace her temporarily in the laboratory. Together they devised a plan where the temporary incumbent would act as

primary coordinator and the permanent laboratory instructor would oversee the role and provide assistance and guidance to him and the students as required.

Coordinator 2 had this to say about his role.

> It's not a recognized role. I'm the instructor's connection with the university, I'm the students' connection or medium, the students' go-between to the instructor as well as to the faculty and the university and I'm also a lifeline to the students and in this particular instance the instructor as far as simply using the technology.... It just happens but you become like moral support for these students in this distance environment. Especially for the students in close proximity to the university here, they would even like to come in for some face-to-face contact which they couldn't get from the instructor.... I'm just also there for guidance as far as the course goes.

Coordinators' E-mail Familiarity and Access

Both coordinators were quite adept at using E-mail. They assisted both the professor and students on its use throughout the course as required. Access was not a problem for them as they both had unlimited access and usage (personal schedules permitting). Only Coordinator 1 had home access. Coordinator 2 felt that home access may have provided for more immediate response to students' queries on his part Coordinator 1 was more available during the day to attend to E-mail and felt this was sufficient for responding to students.

Coordinators' Overall Experience

In these two interviews, the researcher's objective was to learn about the coordinators' experience using E-mail in the distance setting for graduate education

Coordinator 1 had worked previously as a coordinator for distance education with this professor but it was the first experience for Coordinator 2.

Coordinator 1, who described her role in E6104 as "one step removed from that [direct] coordinator role," felt that the experience overall was successful but there was room for improvement. She described her experience as follows:

> Bottom line, overall successful! I won't say very successful because there were things that we could have done to make it more successful. I believe there were things the students could have done to make it more successful too. But like all students, from my own experience as a student and from observing students, we sometimes as a group don't take advantage of what's been presented to us. There were some real opportunities here to do some groundbreaking work and most people simply wanted to get through it and get their A. When are students going to change?

Coordinator 1 explained that E6104 was "the first graduate level distance education course that incorporated E-mail as consistently and as systematically as we have done here." She strongly believes that no longer can graduate distance students be left "out high and dry with a correspondence type course whereby somebody simply reads documents, sends back work; work is corrected, sent back to the student with no interaction between the faculty member and the student." She goes on to say that the fax and telephone are not always convenient or successful in reaching faculty members, especially when "the professor only has a window of a couple of hours free for calling." She proposed that the ideal alternative is "to create the electronic classroom which is what I think 6104 tried to do."

Although a very good idea indeed, she still felt some students resisted it to a certain extent. She suggested that maybe students were not comfortable with the concept

of an electronic classroom. However, for Coordinator 1 it was a "perfectly logical leap from the day classroom to the electronic classroom." She saw the potential for electronic mail "to actually substitute some of things that I had missed in my part-time learning and that was the ability to sit down and 'talk' to people."

Coordinator 1 pointed out one aspect of informal use of E-mail which was useful particularly for the students but was surprised by their hesitation to avail of it. She reported that a student had inquired about discussing the assignments on-line but wondered if that would be ethical or considered cheating. Coordinator 1 indicated to the student that on campus students would discuss assignments after class and that this was very similar. As also advised by the professor on this issue students could discuss assignments on-line but that final work was to be original. The coordinator reported that she "... was amazed, absolutely amazed by this inquiry" but that it could be as a result of the nature of the medium and the fact that all conversations were written versus verbal. She felt this perception would change over time "with a couple of more courses like 6104 will make a big difference to students' perception "

Coordinator 1 reported that "CMC worked wonderfully" but could be better. She noted that "1,100 [plus] messages is a sure ... way of looking at it and saying this was pretty successful!" She expressed that the use of E-mail was reasonably successful and that by the end of the course students were using it a lot more informally to discuss assignment strategies and to pass on hints. She stated that "it was very nice to see people finally starting to talk to each other, to actually use it as a communication device."

Coordinator 1 summarized her experience as

> a very useful experience for me, very interesting experience. Overall, I think it was a very good pilot experience. But all in all as a pilot project, ... I mean we don't have a true computer conferencing system, so we were using E-mail as a pseudo computer conferencing system and given that I think we were pretty ... successful! I think there's a lot of research topics in here, a lot of areas that could be explored.

When asked to describe his experience using E-mail as the main coordinator for E6104, Coordinator 2 stated:

> I should, I guess, start off with how useful I found it in terms of communicating with the students. For the most part, communication was almost instantaneous in that I want to send the students a reminder about something ... I could send it to all the students right away with minimal expense ... and they get the information right away. And that's what I found to be one of the big benefits in that I could communicate very quickly and to a large number of students with minimal effort. And I didn't even have to get up from my desk.

Coordinator 2 remarked on the various people to whom students had access:

> initially it seemed confusing, I got the impression it was confusing to the students because it seemed like they E-mailed you [the researcher] questions about some things, but it was only because they heard about you. They just didn't know who to talk to and they were reaching out.

He explained that initially his "access to the professor was difficult and [the professor's] technical problems on her end with getting a computer, getting up and getting on-line" exacerbated the problem. He felt that the course would have "started off a lot better had the communication between myself and [the professor] been better." He felt that he was guilty of not calling her but due to the four and a half hour time difference and his frequently hectic schedule in the laboratory prevented him from calling her when he should have. Students' late receipt of course materials, the professor's lack of on-line availability until near end of September and his inexperience as a coordinator, he believed all contributed to his uneasiness during the beginning of this experience. "It seemed I was so

flustered I never got a chance to sit down and pick up the phone and actually call [the professor]. When I did [there was] the time difference." He further indicated that "if [the professor] had been on-line earlier, then the telephone problem wouldn't have existed and we could have gotten out there and communicated right away." He admitted that he should have communicated on-line more with the students in the beginning but that he "was always assuming everyday, almost from the start of the course, that [the professor] must be up and running. Now she'll communicate with them." He admitted that somehow he should have found the time to contact the professor more frequently in the beginning of the course.

Coordinator 2 found that local students and one or two distant students preferred to meet him face-to-face first before they communicated with him on-line. He stated that once these students had met with him, that he started to receive more E-mail from them He also found that there was a reluctance on students' part to communicate with him via the telephone or letter. It was as if they believed that only computer mediated communication was permissible as it was a course component. He found that students put so much faith in E-mail that "they would not bother to pick up the phone and call or even send a letter or whatever."

Coordinator 2 was disappointed, as was Coordinator 1, that students did not avail of this great opportunity to communicate among themselves more as well as with the professor given the distance environment. He was happy with the on-line communication, between students and the coordinators for the most part, between coordinators and the

professor once the professor was on-line and between coordinators and the researcher. "I just didn't feel as though the students were using it to its, to their advantage. I just didn't feel that it wasn't being used as it could be, to the scope that it could be.... between students' conversations, amongst themselves."

> It should be an easier way to bring everyone together in that distance environment or at least that's the way I hoped it to be.... People instead still had to come in and see me. People still weren't getting it. It just didn't seem to bring everybody together like I had hoped. And it could be due to an unfamiliarity with the technology or it can be due just to personality traits and that people are just uncomfortable, they don't know somebody, so why should I talk to them. ... So there's unfamiliarity with the medium and I see there's [are] also maybe personality traits that come into play there.... you're dealing with also older students, graduate students who are not used to using this and I guess as this becomes a more common form of communication, in general communication, ... things will unfold. We're jumping into the brink of undiscovered country here. So it will take a while for people to come on-line.

He noted that by the end of the course, "students' attitude changed toward the technology and its capabilities with the exception of maybe one student who still had the wall up but maybe it may be chipped away a little bit. Everyone's positive attitude towards E-mail."

The coordinators relayed mixed feelings regarding the experience overall. Both felt the experience was most worthwhile and a definite asset to distance education; however, they felt that E-mail was not exploited for its communication potential by students with fellow students in the distance setting especially. They noted that this may be due to students' unfamiliarity with the technology and/or their personal preference.

Formal On-line Discussions

Both coordinators agreed that the formal online discussions did not occur as the

professor had intended. They remarked that students generally offered their opinions and their experiences, sometimes referring to fellow students' inputs but for the most part did not incorporate their readings in their responses as was required. As did the professor, they felt that the discussions lacked the academic perspective. Coordinator 1 was quick to add however that "I'm not sure it's [discussion] formally used in the classroom either. There is an assumption, especially at the graduate level, that you don't come to class unless you've read your readings and are prepared to talk about them. Ha! Bull!" She commented that as much as professors may wish that to take place, "most of the people can't manage it. At least not all of it!"

Coordinator 1 observed that for the most part the on-line discussions resembled classroom discussions where some people are prepared and some are not and where the discussion is mainly based on students' experiences and opinions. Maybe students prepare a little more in residential education "because there's something about face-to-face interaction." She concluded that this being said to expect i. [more academic discussion] with E-mail may or may not be reasonable."

Coordinator 2 indicated that he only had time to selectively read the responses to the formal discussions but from that random sampling he was disappointed with the quality of students' inputs. He also pointed out the lack of academic consideration and the tendency to relate only their personal experiences and thoughts versus a discussion of the readings. Although students had remarked to him that they spent a lot of time composing their responses and in some cases he noted lengthy responses, they lacked literary support.

Other than the aforementioned reasons, both coordinators pondered why students did not invoke more of their readings into the discussions. Coordinator 1's remarks echo those of both coordinators: "so, either they were very nervous about the whole issue and were really unsure about what they were discussing or there was a real problem with their ability to use the technology."

Benefits of Using E-mail in Distance Education - Coordinators' Perspective

The coordinators did find E-mail very beneficial in the execution of their daily tasks as coordinators. They were able to deal much more efficiently with students' course administration queries and the like. In the words of Coordinator 2 which are representative of both. "It [E-mail] helped! It helped! In the long run, it helped a lot."

Convenience. Both coordinators praised the convenience and instantaneous nature of E-mail. As Coordinator 2 related "my biggest benefit to me is the convenience of it all." He stated that he spent a good part of his day using the computer anyway and it was very easy to go into his E-mail system and send one or many messages. "I can fire it [E-mail] out to one person or all 17. It was so convenient to be able to do that. No photocopying involved, no envelope stuffing, no stamp licking, none of that. It was simple as pie!" All the normal steps of conventional mailing were avoided plus the one-to-many communication capability enhanced the convenience of E-mail. He stated that he "didn't actually anticipate how convenient it would be so that was a bonus for me."

Instantaneous. Coordinator 1 emphasized its instantaneousness. Like her counterpart, she too found "it [E-mail] replaced the telephone and fax and so on as instantaneous communication.... In fact it cut my phone calls down to practically nothing." She reported that she checked her E-mail three times daily and could respond almost immediately. "I thought that I had a lot of contact with students' before with telephone, fax and mail but what I discovered was the nice thing about E-mail was that it was instantaneous outside of the fax which is pretty instantaneous." However, the fax was less convenient as it had to be taken to another office for transmission. E-mail took "an extra person step out of the way for me."

Permanent record. Both coordinators also appreciated the permanency of E-mail. They no longer had to be concerned about keeping track of communications with students. E-mail provided "a record of every communication sent to me or out from me. That convenience was a real plus! ... I could print it anytime, download to a disk at any time. It was great!"

Good tool. Coordinator 1 also found it to be "a very good tool" not only for contacting students, the professor and fellow coordinator but also "to supply students I think with some thought-provoking ideas. There was [were] several places where I added something trying to get the conversation going." Additionally, she forwarded pertinent E-mail to the course which she downloaded from the many listservers to which she subscribes. She wanted to expose the students to the various on-line information resources regarding the same course issues they were discussing.

Concern for others. Coordinator 1 also observed that some students availed of the opportunity to encourage and help each other. "I thought there was a nice mixture of comments and concern and willingness to tell others to take care or here's how I did it, those kinds of things."

Problems and Disadvantages of Using E-mail in Distance Education - Coordinators' Perspective

Both coordinators felt there were few problems and disadvantages encountered with the application of E-mail in E6104. Coordinator 2 described the disadvantages as "very minute and [that] they're easily fixed."

Design flaw. The CMC component was added to the course well into the design phase with limited time to prepare sufficient instructions for the students. Coordinator 1 expressed this problem as a "structural problem" and "a design flaw from the beginning." She admitted that this lack of detailed planning for the CMC component was reflected in "the lack of good instructions in the course manual on CMC which I'll be the first to admit, it's not there. Also too, the lack of good explanation initially as to what we were trying to do." She felt that the objectives of the CMC component were not clear, nor were the instructions or the details of the CMC component adequately specified for students in the course manual.

E-mail unfamiliarity. The coordinators noted certain students' unfamiliarity with the medium as a disadvantage. They felt that as these students were not experienced using

E-mail, they were understandably reluctant to even try it and especially for communication with people they did not know.

Professor's initial on-line unavailability. Coordinator 2 experienced some difficulty in the beginning of the course as he was unable to easily contact the professor. As he explained previously in the description of his overall experience, with his busy laboratory schedule, the time difference in British Columbia and the fact that the professor was not available electronically he had difficulty contacting the professor regarding course issues Consequently, as an inexperienced coordinator he felt uneasy in the conduct of his duties in this role. He stated that if the professor had been on-line right away at the outset of the course it would have been much easier for him and students to contact her. He reported that once the professor was set up electronically their communication was frequent and very convenient. He also admitted that he should have more of an effort to contact her by telephone.

Reluctance of students to communicate among themselves informally. Both coordinators felt students did not take sufficient advantage of this opportunity to communicate among themselves in the distance setting. They sensed a general reluctance on students' part until towards the end of the course for them to communicate among themselves. Coordinator 2 stressed that this aspect of "CMC wasn't actually doing what was intended to do [which] was to get discussion [going] amongst the students themselves and it didn't seem to take place until later on." He was not sure how to remedy that: "I

don't know if we need to emphasize that somewhere in the manual or does it just take time for people to warm up to that, to the technology or to the medium."

Coordinator's unavailability. Coordinator 2 felt that he was not as available to students as he would have liked due to his many taskings as the computer laboratory instructor. He related that on some days he may have 20 messages awaiting him but due to his workload, he was only able to respond to a few of the messages that day. His responses were not as immediate as E-mail allows.

Lack of non-verbal cues. Both coordinators pointed out a caution as to the lack of facial expressions and hand gestures in E-mail communication. Not only the lack of body language but also the finiteness of the written word was suggested as a reason to be prudent in selecting words, style and tone so as not to inadvertently offend the recipient. They suggested that this is common to computer mediated communication generally, not just in this course. "It's difficult to understand what someone means or how they are feeling or what exactly they're striving at just from the written word, you can't see their facial expression, you can't see a hand gesture, you don't know if they're smiling ... [or] frowning." Coordinator 1 clarified that this was as much due to the written word as to the medium "because you don't know people's feelings, attitudes, [and] emotions." Interestingly, Coordinator 1 felt that on a couple of occasions she was "attacked" on-line by one or two students. It was something about their writing style or words chosen to which she actually took offence.

Computer/technology anxiety. Both coordinators remarked that there is a tendency

among students to be computer or technology inhibited. Coordinator 2 commented "I've learned from the students taking these courses and they are also teachers that there is a general reluctance or anxiety associated with computers and that sort of technology." He cited Student 4 as an example.

> There was even a student who almost came so close to just deciding to pass on the 10 marks for the CMC portion just for the simple fact that she refused to use the computer, did not want to learn it, didn't seem to need to learn it and was uncomfortable using it.

Student's lack of tolerance for non-users. Students' familiarity with E-mail varied as stated earlier. Coordinator 1 reported that there was one student, a proficient user of E-mail, who demonstrated no tolerance for the novices. She referred to him as "our hot shot who was uploading and downloading like crazy" with no regard for his fellow students' inability to cope with attachments to E-mail. What truly astounded her about this was the fact that he was, as most of those in the course, a teacher. "Teachers, and it always amazes me how teachers forget that they're teaching as well as learning and that somehow or another, simply because they're in a course, in a class, that they can take off their teacher ['s] hat...." The coordinators had to remind this student on several occasions to send his responses to the formal discussions directly within the E-mail and not as a WordPerfect attachment to the E-mail. In time, this student did acquiesce.

Two-way communication not assured. Coordinator 2 found that not all students were regularly using E-mail, which was the main method he used to communicate information to them, which resulted in some students not receiving his messages. He explained "There was a minority who really had difficulty using the medium or using the

technology. Those people may not get the message that I send. I have to call them up now and then it's no longer a convenience."

Final Comments and Recommendations - Coordinators' Perspective

The coordinators both predicted that this unfamiliarity with E-mail will soon disappear and "graduate students and undergraduate students are going to expect to be able to communicate by E-mail and some of the problems we saw in this course will naturally end. Students will come to the course already prepared for E-mail." Nonetheless, they believed that "E-mail is not for everybody, nor is distance education for everybody!" They indicated that there were certain people who should not have been in a distance education course. For example, Coordinator 1 felt there were a few students who were "more level one distance education kind of person, send me out the materials, I'll do them on my own time, and I'll do a wonderful job but don't expect me to communicate with you and [especially] through the Internet." Yet there were other students whom "you actually had to stomp on them to get them to calm down" as they thoroughly enjoyed the electronic communication.

Both coordinators highly endorsed the use of E-mail in graduate distance education and recommended its use for undergraduate distance courses as well as for residential courses. They see E-mail as offering real possibilities to enhance education. For example, for "students [who] live out of town in the middle of a snowstorm, [for] faculty members putting their notes on E-mail, putting it on a web site that then could be downloaded.

Making information available to students through the Internet." They not only recommended the use of E-mail but suggested that "the sooner we get at doing that, I [we] think the better our students will be in the long run."

Revised course manual. Additionally, both coordinators recommended strongly that the course manual be revised to include a more detailed description of the CMC component, its objectives, and its requirements. An inclusive introductory reference guide to E-mail should also be added outlining the various steps required for the E-mail functions students would be expected to employ during the course.

Earlier contact with students. Both coordinators recommended earlier contact with the students from themselves as well as from the professor. If all students are not on-line immediately then telephone contact is encouraged. They stressed that "a comfort level" must be established early in students, among students and between students and the professor as well as between students and coordinators "because there is a real danger in distance education that people feel like they're alone, they're by themselves, they're in isolation."

Introductory sessions. As a means to help create the comfort level, the coordinators recommended that faculty, staff and students conduct self-introductory sessions on-line at the outset of the course. These would serve as icebreakers and help personalize the electronic communication.

Professor and coordinator availability. The coordinators also recommended that they and the professor need to be available on-line to the students from the beginning of the course. They also recommended that feedback to the students should be prompt.

Face-to-face meeting. Coordinator 2 recommended a face-to-face session, if feasible, to give the distance students an opportunity to meet. He believed this would "break down any barriers or walls and would help students communicate more openly on-line as they would know each other a little" and be able to put a face to a name.

Other communication means. Coordinator 2 found there was an apparent reluctance on students' part to communicate with staff other than by E-mail. He recommended that the course manual should stress that if students cannot reach staff quickly enough by E-mail, they should call them. Faculty and staff telephone numbers are provided in the course manual.

## Summary of Professor's and Coordinators' Experiences

The professor and coordinators were positive overall about their experience using E-mail in graduate distance education. In general, E-mail was considered most worthwhile and a real asset to the distance setting.

The professor and Coordinator 1 had previous distance education experience while Coordinator 2 had no distance education experience. The professor had limited E-mail familiarity but was adequately equipped to handle the required E-mail functions for E6104. Due to logistical and technical difficulties, her on-line access was not available until late

September. Both coordinators had unlimited E-mail access and usage at work (schedules permitting). However, this was the first formal educational application of E-mail for all three of them. The professor and Coordinator 1 preferred the use of E-mail in distance education versus distance education without it, which was their previous experience. All considered that the E-mail experience was successful and proved to be an effective and efficient communication tool. Nevertheless, there is admittedly room for improvement.

The formal on-line discussions were for the most part unsatisfactory and disappointing from a scholarly perspective. The professor and coordinators reported that the majority of students' discussion responses reflected students' experiences and opinions, with limited regard for their readings, and consequently lacked academic support. Both agreed this approach by students was partially the fault of students' expectations and previous experiences with on-campus class discussions.

The professor and coordinators recounted many benefits of E-mail in the distance setting. Increased communication with students was the most crucial benefit from the professor's perspective, while the coordinators favoured the convenience and instantaneousness of E-mail. The professor also listed E-mail's flexibility, 24-hour availability, convenience and the relief from isolation for both her and the students as the other benefits.

The coordinators acclaimed E-mail as a "good tool" for contacting faculty and students, for stimulating students' learning and for exposing students to the wealth of on-line educational resources. The permanency of E-mail as a record of their

communications was stressed as a benefit as well. Lastly, they noted certain students used E-mail as a way to display concern and give encouragement to fellow distant students and to provide help for each other.

The professor and coordinators observed a few problems and/or disadvantages of employing E-mail in this environment. For the professor, student and faculty minimal technical knowledge and limited E-mail familiarity were drawbacks to a more successful implementation of E-mail. She also noted E-mail access as a problem for some. The coordinators stated there was insufficient time and preparation for the CMC component during course design which resulted in incomplete guidelines and instructions for students in the course manual. Students' E-mail unfamiliarity, technology anxiety, reluctance to communicate on-line informally among themselves and their reluctance to telephone staff when in need created some difficulty in the full realization of E-mail's potential in this setting. Furthermore, the role of coordinator is unofficial and the incumbent's full-time job as computer laboratory instructor interfered with Coordinator 2's ready availability for the distant students. The professor was also unavailable electronically for the first few weeks of the course, which Coordinator 2 felt caused some confusion for students. The lack of non-verbal cues in E-mail communication leaves room for misinterpretation of words and intent which occurred occasionally in E6104.

The professor and coordinators strongly advocated the application of E-mail in graduate distance education. The professor recommended that if Memorial University intends to foster the educational use of E-mail, it should offer introductory seminars, or

provide a comprehensive STEM-Net or E-mail guide and a helpline to which students can turn for assistance. In fact, she suggested a non-credit information technology requirement as a graduate programme prerequisite.

Specific to E6104, the professor proposed to reduce the CMC requirement from eleven to two questions per student, and that they react to responses of fellow students' inputs to remaining nine questions. She also suggested that faculty keep a highly organized electronic and manual record system of students' interactions. She advised that students be cautioned on the informal discussion of exams and assignments on-line as to the unintentional influence of the written "conversation" on students' individual work

The coordinators recommended that the course manual be revised to better explain the CMC component and requirements; that earlier contact be made and maintained with students by both faculty and staff and that they be more available on-line to students from course outset; and that self-introductory sessions be conducted on-line at the beginning of the course to help warm up the medium and encourage students' electronic exchanges If feasible, Coordinator 2 propounded a face-to-face session at the start of the course for the same reason as well as to help personalize the later on-line communication.

Like their students of E6104, the professor and coordinators highly recommended the use of E-mail in graduate distance education. They predicted that unfamiliarity with the medium would be short-lived as E-mail becomes more commonplace, which will further enhance its educational application and utility in distance education.

## Summary of Students' Attitude Survey

The researcher designed and administered a brief attitude survey to all students near the end of the course. Its purpose was to obtain an anonymous snapshot of the students' feelings toward the use of E-mail in the distance setting for E6104. These data have been used to triangulate the interview data. Table 6 provides a summary of students' responses.

Students ranked 26 items on a Likert-type scale from strongly agree (5) to strongly disagree (1). Interestingly, the data gathered in this snapshot of attitudes were reflected in the subsequent students' interviews. On average, there was a real vote of confidence for the use of E-mail in graduate distance education. All but one student liked the experience and found it most worthwhile. The majority enjoyed communicating both informally and in the discussion groups.

Students' opinions varied on the significance of the formal discussions' contribution on learning. Six students felt the discussions impacted significantly on their learning; six disagreed that the discussions contributed and five were neutral. During the interviews, the majority (ten) felt that the formal discussions impacted positively on their learning, which indicates that four students had rethought the issue and changed their opinion by the time of the interviews.

For those students with previous distance education experience, the majority agreed that the increased interaction with students and faculty, which E-mail afforded, significantly improved their learning environment. Compared to graduate in-class

Table 6

Summary of Students' Attitude Survey (n=17)

| Statement | Aggregate Response by Rank | | | | | | Avg |
|---|---|---|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 | 0 | Ranking |
| I liked the CMC (E-mail) portion of this course. | 6 | 7 | 3 | 1 | -- | -- | 4 |
| I felt that the CMC (E-mail) portion of this course was most worthwhile. | 4 | 7 | 4 | 2 | -- | -- | 4 |
| I particularly liked the ability to communicate with fellow students which is generally lacking in distance education courses. | 10 | 4 | 2 | 1 | -- | -- | 4 |
| I enjoyed communicating both: a. informally and, | 7 | 6 | 2 | 1 | -- | 1 | 4 |
| b. in discussion groups | 3 | 9 | 1 | 2 | 2 | -- | 4 |
| The formal on-line discussion groups contributed significantly to my learning. | 4 | 2 | 5 | 3 | 3 | -- | 3 |
| Compared to previous distance education courses where E-mail was not used, the increased interaction afforded by E-mail with students and the professor significantly improved this learning environment. | 3 | 5 | 1 | 2 | -- | 6 | 4 |
| Compared to on-campus graduate course seminars or discussions, these on-line discussions allowed for: a. more student involvement. | 4 | 2 | 4 | 4 | 3 | -- | 3 |
| b. equal opportunities for all students to participate. | 8 | 6 | 3 | -- | -- | -- | 4 |
| c. time for reflection and consideration of other response before giving my response. | 9 | 4 | 2 | -- | 2 | -- | 4 |
| d. more coherent, well thought-out responses. | 8 | 5 | 1 | 3 | -- | -- | 4 |
| e. a greater sense of group cooperation. | 3 | 1 | 7 | 6 | -- | -- | 3 |
| f. increased responsibility for my own learning. | 6 | 10 | 1 | -- | -- | -- | 4 |
| Through E-mail, I had 24-hour access, if required, to: a. the professor. | 10 | 4 | 2 | -- | 1 | -- | 4 |
| b. fellow students. | 10 | 5 | 1 | 1 | -- | -- | 4 |
| c. the coordinators. | 11 | 3 | 2 | 1 | -- | -- | 4 |
| The amount of instructor input and feedback was just right. | 6 | 5 | 1 | 3 | 2 | -- | 4 |
| E-mail was easy to learn. | 6 | 2 | 3 | 2 | -- | 4 | 4 |
| E-mail was easy to use. | 9 | 4 | 2 | 2 | -- | -- | 4 |

Code: Respondent Ranking: 5 = Strongly Agree; 1 = Strongly Disagree; 0 = Not Applicable;

Avg Ranking = Average ranking of each statement

(Table 6 continues)

| Statement | Aggregate Response by Rank | | | | | | Avg Ranking |
|---|---|---|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 | 0 | |
| There was adequate assistance available on-line to help me with difficulties using E-mail. | 14 | 2 | 1 | -- | -- | -- | 5 |
| I suffered from information overload with the amount of E-mail produced in this course. | 5 | 2 | 4 | 2 | 4 | -- | 3 |
| I would recommend E-mail use in other distance education graduate courses for: a. informal communication among course members and faculty. | 12 | 4 | 1 | -- | -- | -- | 5 |
| b. the formal discussion groups | 5 | 3 | 7 | 1 | 1 | -- | 4 |
| As a result of this course: a. my E-mail skills have greatly improved. | 9 | 4 | -- | 1 | 1 | 2 | 4 |
| b. I will use E-mail more often in my professional life. | 9 | 3 | 2 | 1 | 1 | 1 | 4 |
| I would be willing to take other distance courses with a similar CMC (E-mail) component. | 9 | 5 | 1 | 2 | -- | -- | 4 |

Code: Respondent Ranking: 5 = Strongly Agree; 1 = Strongly Disagree;
0 = Not Applicable; Avg Ranking = Average ranking of each statement

discussions, the majority agreed that the formal discussions offered equal participation opportunities; allowed time for reflection and cogitation of fellow students' responses; permitted more coherent and deliberated responses; and increased students' responsibility for their own learning. In general, students were impartial on issues of greater student involvement and a greater sense of group cooperation in the on-line discussions.

For the most part, students believed they had 24-hour access to fellow students, the coordinators and the professor. Five students considered that feedback from the professor was insufficient while fourteen felt it was just right and one student was non-committal. Information overload was a problem for seven students, not a problem for six and four students remained neutral on the issue.

Two students indicated that E-mail was not easy to learn nor use while the majority responded to the contrary. Some students did not respond as they were previously familiar with E-mail. Overwhelmingly, students agreed that on-line assistance for E-mail use was sufficient.

By far the majority believed their E-mail skills had greatly improved during the course and that they would employ E-mail more frequently in their professional lives. The majority also strongly recommended the use of E-mail in graduate distance education for informal communication among themselves and with faculty. Attitudes varied on its use for formal discussions: eight recommended it; seven were neutral; and, two students were not in favour.

Fourteen students indicated they would be willing to take other distance courses with an E-mail component while two students would not and one remained impartial. In general, the majority was satisfied with the experience and would recommend the continued use of E-mail in graduate distance education. These attitudes were borne out in the interview analyses which precede this section.

## Interaction and Content Analysis of Respondents' E-mail Transcripts

As part of their participation in this study, students, coordinators and the professor voluntarily agreed to carbon copy (cc) all of their E-mail pertaining to E6104 to the researcher. Students also sent E-mail directly to the researcher for assistance regarding E-mail use. The quantity of E-mail discussed in this section is considered to be

approximate as a number of respondents admitted to forgetting to carbon copy the researcher on occasion.

During early observation of incoming E-mail, the researcher noted a communication pattern within the E-mail and used this as one means of coding the transcripts as identified in Table 7. Secondly, an initial content analysis of the E-mail revealed five major content categories which have been identified as CMC, course concerns, course administration, E-mail assistance and chit-chat (see Appendix C for randomly selected samples of E-mail from each category).

The researcher conducted an interaction and content analysis of all received and sent E-mail during E6104 to determine who interacted with whom and to ascertain the purposes for which E-mail was used in this graduate distance course. Table 7 presents a summary of the quantity of E-mail disseminated by study respondents per content category. To help interpret the table and the enormity of the amount of E-mail disseminated during E6104, the following should be taken into consideration. The course alias (ed6104@calvin.stemnet.nf.ca) was established to permit efficient one-to-many communication. It comprised twenty recipients namely, seventeen students, two coordinators and the professor. However, for accounting purposes in Table 7, each E-mail sent to the alias was counted as only one, not twenty, and E-mail sent to the coordinators was also considered as one recipient.

Table 7

Summary of E-mail Transcripts

| Communication Flow | CMC | Course Administration | Course Concerns | E-mail Assistance | Chit-Chat | Totals |
|---|---|---|---|---|---|---|
| S>S | 42 | 2 | 31 | 7 | 24 | 106 |
| S>A | 140 | 8 | 52 | 7 | 14 | 221 |
| S>P | 54 | 9 | 18 | 0 | 3 | 84 |
| S>C | 49 | 16 | 35 | 13 | 15 | 128 |
| S>R | 8 | 16 | 5 | 26 | 8 | 63 |
| **Total from S** | **293** | **51** | **141** | **53** | **64** | **602** |
| C>S | 15 | 21 | 33 | 18 | 6 | 93 |
| C>A | 7 | 11 | 23 | 5 | 3 | 49 |
| C>P | 6 | 18 | 12 | 5 | 2 | 43 |
| C>C | 8 | 44 | 15 | 4 | 6 | 77 |
| C>R | 7 | 47 | 16 | 6 | 8 | 84 |
| C>SN | 0 | 6 | 0 | 0 | 0 | 6 |
| **Total from C** | **43** | **147** | **99** | **38** | **25** | **352** |
| P>S | 32 | 4 | 24 | 0 | 4 | 64 |
| P>A | 8 | 6 | 7 | 0 | 0 | 21 |
| P>C | 4 | 5 | 7 | 0 | 1 | 17 |
| P>R | 4 | 2 | 2 | 0 | 1 | 9 |
| **Total from P** | **48** | **17** | **40** | **0** | **6** | **111** |
| R>S | 26 | 33 | 5 | 66 | 55 | 185 |
| R>A | 5 | 16 | 3 | 3 | 8 | 35 |
| R>P | 9 | 31 | 0 | 3 | 5 | 48 |
| R>C | 14 | 64 | 4 | 34 | 19 | 135 |
| R>SN | 0 | 17 | 0 | 3 | 0 | 20 |
| **Total from R** | **54** | **161** | **12** | **109** | **87** | **423** |
| SN>S | 0 | 1 | 0 | 0 | 0 | 1 |
| SN>A | 0 | 0 | 0 | 0 | 0 | 0 |
| SN>P | 0 | 3 | 0 | 0 | 0 | 3 |
| SN>C | 0 | 10 | 0 | 0 | 0 | 10 |
| SN>R | 0 | 19 | 0 | 0 | 0 | 19 |
| **Total from SN** | **0** | **33** | **0** | **0** | **0** | **33** |
| **Totals** | **438** | **409** | **292** | **200** | **182** | **1521** |

Code: S = Student; A = Alias (full course); C = Coordinator (s); P = Professor; R = Researcher; SN = STEM~Net

CMC E-mail

CMC was the largest category of E-mail produced during the course for a total of 438 messages. As mentioned previously, students were required to participate in a formal CMC component of the course over a six week period which was intended to replace the in-class discussions of residential education. Students were naturally the main users in this category accounting for 293 E-mail while the coordinators, the professor and the researcher accounted for 43, 48, and 54 E-mail respectively. The students' E-mail largely consisted of their responses to the 11 questions for the formal discussions. In responding to the questions, students often referred to fellow students' comments by agreeing or disagreeing and then adding their own thoughts and opinions.

The researcher did not feel qualified to judge the academic quality of said responses but did conduct a simple analysis of this E-mail to gain an overall impression of the input. The majority of this E-mail was students' formal responses which the researcher noted as largely students' opinions and/or based on their experiences (89). They often qualified their responses with "I believe" or "from my teaching experience." Fifty-eight (58) messages referred to their fellow students' inputs or that of the professor, yet only 26 actually referred to their assigned readings or textbook. It is this latter observation which coincides with the professor's remarks in her interview whereby she stated that students' discussion responses largely lacked "academic thrust".

In addition to the formal discussion, other E-mail in this category included requests for acknowledgement of receipt of and feedback on students' responses, acknowledging receipt as requested and thanking each other for feedback when received. For example on

23 October 1995, Student 5 requested "I have already sent out answers to the first two questions, but I have received no replies. Please someone give me back some feed-back "

A few students passed on their impressions, both favourable and unfavourable, of the electronic discussion. For instance, on 9 October 1995 Student 2 stated "I'm really impressed with this on-line discussion" and on 17 October 1995, Student 11 commented "I am really enjoying the discussions and feel that I am learning a great deal from all the different viewpoints." Others who were having problems felt differently. "This is my first experience with this form of interactive communication and I find it somewhat frustrating.... I am much more at home with the parry and thrust of verbal communication" (Student 14, 17 October 95). Student 9 had this to say on 16 October 1995 "I feel a bit overwhelmed with this.... I have managed to read a large chunk of the discussion questions [responses] sent my way.... But it is still a chore."

A few students requested further explanation from the faculty and staff on certain questions and on how to proceed with the discussion. Certain students sought the researcher's help on discussion proceedings and to acknowledge receipt of their E-mail as they were not comfortable that their responses were getting through. (A common insecurity observed among E-mail novices of E6104.) For example, Student 5 on 23 October 1995 stated "I have no idea if these messages are getting through" and Student 4, as late as 22 November 1995, asked "P S [sic] let me know if you receive this [E-] mail."

The chairpersons for the small groups used E-mail to acknowledge responses from group members, provide a certain amount of feedback, encourage participation of new

users, keep members informed of discussion summary status for the professor, disseminate the completed summaries to all concerned, seek assistance from the coordinators and the professor in locating non-participants and to help encourage their participation as well as to thank group members for their inputs. Two chairpersons introduced themselves giving a short personal profile and one suggested ways for the group to proceed.

The E-mail pertaining to the CMC category was also the predominant purpose for which the professor availed of E-mail. On 4 October 1995, the professor made initial electronic contact with the students which included the explanation and requirements of their participation in the formal CMC component of the course as well as her thoughts regarding the first two discussion questions to launch the dialogue. From the E-mail received by the researcher, during the six week period of the formal CMC discussions, the professor periodically commented on individual student's responses (15) and offered her thoughts on some of the issues (11).

At the half way point, the professor provided general comments on the large group d. 'cussion and thanked students for their efforts in this new electronic milieu as well as provided hints to improve the scholarly content of the second half of the CMC component. She distributed guidelines for the small group discussion, assigned students to the small groups, appointed chairpersons and outlined their responsibilities. The professor assisted the chairpersons to encourage group members' participation and acknowledged receipt of students' responses as requested. At the end of the formal discussion, the professor thanked the group chairpersons for their efforts in this additional tasking.

The coordinators' contribution to the CMC category was mainly for the management issues of the CMC discussions. The coordinators provided additional guidelines and clarified the format for the formal on-line discussions; advised the small group chairpersons on their responsibilities and answered their queries accordingly; as well as notified students of the small group aliases. Periodically, the coordinators were asked to help interpret discussion questions for students, to acknowledge receipt of students' responses sent to the aliases and to encourage non-participants to get involved on the chairperson's behalf. The coordinators sometimes forwarded information and ideas from the Internet which dealt with course content and on rare occasions, one coordinator also offered ideas in the discussion forum.

The researcher as participant observer had initial input into this category which was to provide the professor and coordinators with ideas and hints from the literature on how to effectively employ CMC in distance education. Apart from this, on receipt of the "carbon copies", the researcher noted any address errors in students' discussion E-mail, advised students accordingly and sometimes redirected their responses if time-sensitive. The researcher answered students' inquiries regarding discussion format, small group aliases and content of response summaries. The researcher advised chairpersons of students' course status if required, offered words of encouragement and complimented the chairpersons for their extra efforts.

Additionally, the researcher periodically reminded students and the professor to send their E-mail to the researcher as they had previously agreed to do. The researcher's

on-line participation in the actual CMC discussions was limited and that of a participant observer.

Course Administration E-mail

Course administration was the second largest category or purpose for which Email was employed in E6104 (409). The researcher produced the majority at 161, followed by the coordinators at 147, the students at 51, the professor at 14 and STEM~Net at 33. E-mail was definitely an efficient and popular means of communicating with distance students apropos course administration.

Students largely used E-mail to check on status of course materials, report missing course materials, verify use of WordPerfect attachments, confirm their course enrolment and to acknowledge receipt of initial alias E-mail and to confirm their accurate E-mail address information. Students advised the coordinators regarding their pre-tests and post-tests and confirmed their preferred method for receiving the major assignment and final examination.

Students used this as an avenue to discuss their concern regarding the weighting of course components, CMC in particular. Some students believed the CMC component should be valued more and solicited other students' opinions on the matter. They also expressed concern among themselves and with the professor and the coordinators regarding the lateness of the major assignment and final exam. E-mail allowed students to vent their course administration concerns with each other and the faculty member even in

the distance setting. A few students forwarded their major assignment and final exam to the professor and/or coordinators via E-mail versus the regular post.

The professor's use of E-mail for course administration was limited. As she encountered technical difficulties early on in the course, she was not on-line right away. Initially, the professor used E-mail to forward a letter to the coordinators who in turn downloaded and mailed it to the students regarding the course welcome, preparation ideas for the CMC component and words of encouragement for distance students. Through E-mail, she verified the course list, checked on course materials, alerted students to a potential problem with the course audiocassette and a missing article from the book of readings, and also dealt with students' queries concerning course weighting and evaluation.

The coordinators' main use of E-mail during E6104 was related to course administration (147). Coordinators availed of this opportunity to disseminate to students additional course instructions, the major assignment, the final exam, revised class list, and reminders to return pre-tests and post-tests. They answered students' queries regarding receipt of course materials, problems with course materials and the professor's E-mail address, and made arrangements for local students to pick up course materials. The coordinators discussed between themselves and with the professor and the researcher matters concerning course dropouts and no-shows, course evaluation and weighting and course workload.

Regarding the on-line aspect of the course, the coordinators also dealt with STEM~Net staff regarding students' on-line time and disc storage quotas as well as the

establishment of small group aliases. They subsequently advised the students of revised entitlements. The coordinators often extended words of encouragement to the students as they coped with the lack of course materials, anxiety over the late receipt of the major assignment and final exam, and meeting course deadlines. The coordinators were in frequent contact with the students regarding course administration to allay their fears and to address issues as they arose. Furthermore, they kept the professor and researcher apprised of pertinent course administration matters through E-mail.

Course administration was the main purpose for which the researcher employed E-mail in E6104 (161). The researcher accepted responsibility for early electronic communication with the students as the professor encountered certain logistic and technical problems upon her recent relocation to British Columbia. Consequently, much of the researcher's E-mail in this category dealt with getting students on-line early in the course. The researcher tracked down students' E-mail addresses through STEM~Net information on-line services and staff. On 8 September 1995, the researcher made initial E-mail contact with students to confirm their course status. Students were asked to confirm their enrolment in E6104 via E-mail, which they did. Next the researcher built a course distribution list which was disseminated to the students to facilitate their electronic communication among themselves. As the researcher was the first person on-line with the students, they tended to send their course administration inquiries to her. The researcher subsequently forwarded the queries to the coordinators for appropriate action and advised students accordingly. The researcher also attempted to locate students who had registered

but were not yet participating on-line, and kept the coordinators and the professor informed of students' on-line status prior to the CMC component.

Additionally, the researcher requested STEM~Net staff to set up an alias for the entire course to allow efficient one-to-many communication for the CMC phase and advised all concerned of the nature of the alias. Periodically, students had to be reminded not to address E-mail to the coordinators and the professor when sending to the alias to avoid duplication. The researcher also dealt with STEM~Net staff on amendments to the alias, students' on-line quotas, and for additional time and disc storage space to accommodate the researcher's involvement with this study. Of particular note as to the benefit of E-mail in distance education, on a Friday night of a long weekend, the researcher was able to contact a STEM~Net staff member regarding a Labrador student's connection problem. The staff member subsequently contacted the student and corrected the problem. All of this took place through E-mail.

The researcher kept in close contact with the coordinators, in particular, and the professor on miscellaneous course administration matters regarding course dropouts and no-shows, alias amendments, students' and professor's E-mail addresses and on-line status, course workload and potential amendments for future offerings of E6104. E-mail facilitated this information sharing and the ability to keep everyone informed of course happenings as they occurred.

E-mail from STEM~Net staff has also been accounted for under course administration (33). Their E-mail chiefly dealt with students' on-line time and disc storage

quotas, the establishment and revisions of the course alias and small group aliases. STEM- Net staff was most cooperative and accommodating of all requests for E6104.

Course Concerns E-mail

Course concerns was the next largest category of E-Mail transcripts (292) accounting for the third major purpose for which E-mail was employed in E6104. Students were again the main users largely using E-mail to discuss their major assignment which was worth 40% of the course mark. Prior to such discussion, one student sent a message to the alias querying the ethics of on-line discussion regarding the major assignment: "Can someone answer this for me? Is it ethical to discuss the assignment in any form on-line? I know if I were doing an in class course my colleagues and I would be bouncing ideas off each other." The professor assured students that it was ethical to discuss the assignment on-line, agreeing that these discussions would naturally occur on campus.

Students sought clarification from each other, the coordinators and the professor regarding the format, the parameters, scope and length of the major assignment as well as the requirement for a literature review. Students shared ideas and hints on general approaches and outlines and expressed their overall concerns for actually completing the assignment on time. Some students requested the use of the professor's and the coordinators' credentials for team makeup for the major evaluation assignment. The faculty member's and staffs' biographies were subsequently E-mailed to them.

Students also used E-mail to inquire about deadlines, feedback and marks for the midterm and final examinations. One student tried to set up a study group with local students. Students expressed concern among themselves regarding the late arrival of the major assignment and final exam. Upon receipt of both, a few students found it beneficial to complete the exam first before tackling the major assignment, which they readily communicated to fellow students. Students certainly availed of this opportunity to communicate via E-mail regarding their various and many course concerns. In fact, for students, dealing with course concerns was the second major purpose for E-mail use.

The coordinators also used E-mail extensively to handle students' course concerns. For the most part, coordinators responded to students' inquiries regarding the major assignment, providing general guidance and advice as appropriate. Coordinators provided interim feedback to students regarding their assignment. They also employed E-mail to relay words of encouragement to students, who seemed quite stressed and anxious about course assignments and exams. They also advised that discussing the assignment on-line was no different from what they would do on campus.

E-Mail was also the medium of choice to inform students of examination mailings and to respond to their queries respecting feedback, deadlines and marks for course examinations. They dispatched quick responses to the students' many questions and guided, assisted and encouraged students all along the way. The coordinators also forwarded students' E-mail to the researcher when students forgot. Like the students, the

coordinators readily availed of E-mail to deal with course concerns, making this their second major use of E-mail in E6104.

The professor's main use of E-mail in this category was to respond to students' queries regarding the major assignment. She responded to students' questions regarding the ethics of on-line discussion of the major assignment as follows: "Of course, it is ethical to discuss the assignment on-line. You can use the system to enhance inter-student communication Believe it or not that was the main purpose of the discussion groups - to get all of you exchanging ideas." The professor clarified requirements, provided additional guidelines and offered words of encouragement to help assuage their angst. She also advised students of mailing dates for the assignment and final exam. She offered interim feedback on midterm exams via E-mail and provided individual feedback to students' concerning the major assignment as requested.

The professor provided feedback to the coordinators on their effectiveness and thanked them for their efforts. She sometimes asked the researcher to forward her E-mail regarding exams and the assignment to students on her behalf, as she was encountering technical problems with her commercial server. Course concerns comprised the second major purpose for which the professor availed of E-mail in E6104.

The researcher had limited input in this area. The dozen messages sent were acknowledgements of receipt of student's E-mail, permission for one student to use the researcher's name and biography in her assignment, and a couple of forwarded messages regarding assignments on the professor's behalf.

E-mail Assistance

E-mail assistance was the fourth major purpose for which E-mail was used in E6104 with students being the second biggest users. Students requested help with printing, editing and forwarding E-mail as well as with E-mail addresses, use of the alias and the sent-mail folder and the creation of folders. It is pointed out that Pine, the electronic mailing system used by STEM~Net during the course, has very limited text editing ability, unlike Eudora which is now available from STEM -Net. A few students offered E-mail assistance to fellow students as well.

One student in particular, a new user of E-mail, sent desperate calls for E-mail help to the researcher which are noteworthy in themselves. On 12 October 1995 at 17:42, Student 12 wrote "Help! Nothing more frustrating than STEM -Net which I don't have months to learn!... At this point I am ready to quit." At 21:43, 12 October she wrote: "Cathy, I lost all of my messages HOW?... I am desperate!" The researcher responded providing appropriate instructions. On 13 October she wrote: "Thanks Cathy for all of your help! I think I understand it now. I found my messages..." Six weeks later, this same student sent the researcher several one line messages indicating that she was playing with STEM~Net. For example, on 29 November 1995 Student 12 wrote. "Hi cathy [sic] I am just playing with the stemnet [sic] creating address books and folders." Student 12 experienced a complete attitude change with regard to E-mail.

One student had a problem accessing her account and another indicated a problem with reading WordPerfect attachments. Also included in this category are messages from several students to the researcher and coordinators recognizing their E-mail assistance.

The coordinators' E-mail mainly corrected students' address errors and explained to them the benefits of the electronic address book to avoid such errors. They explained the sent-mail folder, as many students were not familiar with its existence nor how to access E-mail from within it Instructions were also provided on reading WordPerfect attachments, uploading from WordPerfect to E-mail, use of the "cc" block in the message address and text editing in Pine. Coordinators again offered words of encouragement to new users and assured their unlimited availability for helping them.

Providing E-mail assistance to students was the second major purpose for which the researcher used E-mail. From the outset, the researcher had agreed to the professor's request to provide help to students regarding E-mail use. Consequently, the researcher was the biggest user of E-mail for this purpose (109). The researcher responded to numerous requests for E-mail assistance from individual students. Similar to the type of help the coordinators provided, the researcher outlined instructions on printing, forwarding and editing E-mail as well as creating electronic address books and folders. Students encountered great difficulty with accessing the sent mail folder and the forwarding of specific E-mail from within, and therefore the researcher sent detailed instructions to them.

The researcher used E-mail to contact students who had been off-line for sometime

and to reoffer E-mail assistance. The researcher also advised and reminded students of the use and benefits of the aliases.

E-mail address errors were a prominent frustration for students. As the researcher received copies of students' E-mail, the researcher observed the errors, brought it to students' attention and sometimes redirected them on their behalf if time-critical. On numerous occasions, the researcher acknowledged students' frustrations with learning E-mail, empathized with them and offered words of encouragement and congratulations along the electronic way. In fact, through this on-line assistance, the researcher was able to obtain a closer insight into the students' CMC experience on a daily basis and actually conversed electronically with them, getting to know them a little better.

Chit-Chat E-mail

Respondents used E-mail sparingly for this purpose Initially, students conversed about the non-receipt of course materials and their resulting concern with completing course requirements. Students who knew each other previously tended to say "hello" and catch up a little on each others' lives. There were a few E-mail regarding the weather, moose hunting, degree status and students' families; but for the most part, even this category dealt with course related matters. Students offered words of encouragement to each other, good luck salutations on exams, and some advised that they were going to be off-line for a period or were going to be late responding to the formal discussion

Students conveyed thank-you's via E-mail to the coordinators, researcher and each other for their assistance. At the end, a few students extended a "Merry Christmas" to all. One student's closing comments via E-mail were: "Hi all [,] well it was a novel experience. I began to think this room was a classroom...." Students' E-mail in this category was short and simple often referring to some aspect of the course and essentially contained limited personal chatter.

The coordinators limited their "chit-chat" E-mail (25) to mainly, "hellos", words of encouragement in general, advisement of professor's whereabouts when away and lastly, Season's Greetings. The coordinators, like most respondents, would frequently include a sentence or two of friendly chit-chat in E-mail from all categories.

The professor's contribution to this category was also very limited. She used E-mail to acknowledge and empathize with students regarding family matters and sickness which impacted on course deadlines, to advise the coordinators and researcher of her technical problems and also to extend Season's Greetings to students.

The researcher was the largest contributor to this category (87) mainly using E-mail to remind students and the professor to copy the researcher on their E-mail as well as to acknowledge and thank them for receipt of cc's. The researcher also expressed general words of encouragement to students and wished them luck in the various course phases. Additionally, the four chairpersons of the small groups were commended for their extra effort.

Certain students requested confirmation of receipt of their E-mail as they felt

uneasy about E-mail's successful transmission. The researcher replied and congratulated them for their improving E-mail skills. The researcher kept the coordinators advised generally on student's E-Mail progress. In fact, E-mail afforded an efficient data collection means for the researcher as participant observer.

Summary of E-mail Content Analysis

As indicated in Table 7, E-mail was employed in five key areas for E6104 listed here in descending order of magnitude, CMC discussions, course administration, course concerns, E-mail assistance and chit-chat among respondents. The researcher was able to account for 1521 pieces of electronic correspondence, noting this as an approximation of the course E-mail. The students mainly used E-mail for the CMC discussions and course concerns. The coordinators employed E-mail chiefly for course administration and course concerns while course administration and on-line assistance for new E-mail users were the main purposes for which the researcher availed of E-mail. STEM Net staff's involvement was limited to course administration for the CMC component. Although E-mail was formally used for the CMC component, it also proved to be very beneficial and expedient for dealing with course administration and concerns in addition to the on-line assistance for E-mail neophytes. Respondent's use of E-mail for simply chatter was fairly limited and often included some reference to the course. In total, students contributed 602 E-mail, the professor 111, the coordinators 352, the researcher 423 and STEM Net staff 33 for a total of 1521.

# CHAPTER V

## Summary, Conclusions and Recommendations

### Summary of the Study

#### Introduction

The researcher chose Merriam's qualitative case study to investigate the CMC experience of students, faculty and on-site coordinators of the pilot offering of the graduate distance education course Education 6104 - Foundations of Program Evaluation. This approach was selected, since an in-depth case study of the pilot experience was essential to gain an understanding of the experience and to make recommendations for future practice. The qualitative case study provides an intensive rich description of the experience, accommodating a variety of data. As the literature indicates, case studies with small populations are not generalizable, but they can provide concrete evidence of the advantages and limitations of CMC in distance education. This study did so.

Study respondents included the students, the professor and the two on-site coordinators. Throughout the course, all respondents voluntarily forwarded copies of their E-mail pertaining to E6104 to the researcher for later content analysis and were interviewed at the end of the course, either face-to-face or by telephone. In addition, students and faculty completed a profile form at the beginning of the course, and students completed a brief attitude survey concerning their experience near or at the end of the course. The interviews were semi-structured allowing respondents to direct the flow of the interviews and respond to largely open-ended questions. The researcher only interjected to

ensure certain issues were covered at some point during the interview. The researcher also functioned as a participant observer throughout the course, keeping field notes to reflect the experience of all involved. Data were reported qualitatively using respondents' own words as much as feasible.

Overall Experience

In general, all respondents, except one student enjoyed the CMC experience, describing it as "definitely worthwhile" and an "asset" to graduate distance education. Many students considered themselves to be in an electronic classroom wherein E-mail alleviated the isolation, permitted human contact and enhanced the distance learning environment. As far as the formal CMC component was concerned, the majority of students (10 of 17) found the discussions stimulating and useful in this otherwise discussionless environment. These same students concluded that the on-line discussions impacted positively on their learning overall. On the other hand, seven students disagreed with the usefulness of the formal discussions indicating that they did not impact on learning, but served only to confirm previous learning. The professor and coordinators were disappointed overall with the academic thrust of the CMC component, but still considered the experience worthwhile. As noted in the literature, CMC was beneficial in providing increased interaction, relief from isolation, convenience, and ease of access

Benefits of Using E-mail in Graduate Distance Education

All respondents recounted numerous benefits of the application of E-mail in graduate distance education. Students particularly favoured the ability to communicate among themselves and with faculty and staff. The coordinators found E-mail particularly useful for getting in touch with students and for handling administrative matters. The professor was enamoured with the communication aspect of it, noting that CMC relieved the isolation not only for the students but for her as well in this distance environment. It also provided an opportunity for the professor to see inside the busy lives of distance students unlike her previous distance education experiences.

Increased communication topped the benefits list. Easy accessibility to each other, 24-hour availability, asynchrony, and the one-to-many communications capability effected flexible and convenient interaction and thereby relieved the feelings of isolation often experienced in distance education. Additionally, its instantaneousness, time for reflection, information sharing and idea exchange as well as the permanent record of all communications enhanced the learning experience in this distance course. Certain students also expressed that E-mail afforded an equal learning opportunity and that although they were normally reticent in regular classes, they felt more at ease and inclined to participate in the electronic classroom.

Problems and Disadvantages of Using E-mail in Graduate Distance Education

These benefits notwithstanding, there were a few problems and disadvantages

encountered with the CMC experience in the pilot offering of E6104. The main problem for all respondents resulted from the sheer volume of E-mail produced during the course, estimated to be 1521 by the researcher. Students, faculty and staff found the reading, responding and handling of said E-mail time-consuming and unmanageable at times especially during the CMC component for students and the professor. Students complained that the six week timeframe for CMC was too short, that it started too late into the course (at Week 5), that there was inadequate feedback from the professor on their discussion inputs and about the low mark value assigned to this demanding and time-consuming activity. Its mark value of 10%, alone, did not motivate some students to excel. Previous studies also found disadvantages to include information overload, lack of verbal cues, and demanding in terms of time commitment.

Students' familiarity with E-mail ranged from proficient to no experience at all. This unfamiliarity, the dearth of detailed instructions on E-mail use and an incomplete explanation of the CMC component in the course manual created initial frustrations and confusion for the students, and resulted in considerable time expended by the researcher and both coordinators in on-line teaching and providing encouragement to those who had to learn E-mail basics. Furthermore, students' course materials arrived late which delayed their start of the course in general by two to three weeks. The professor encountered technical difficulties which impacted on her on-line availability early on in the course. The role of coordinator in distance education at Memorial University is unofficial and therefore

the main coordinator felt he could not always provide prompt attention to the students on-line queries due to his official job responsibilities.

The literature points to the need for sound instructional design from the start, in implementing CMC in distance courses. While E6104 was soundly designed, for the most part, the CMC portion was added at a later date, and thorough instructional design might have alleviated many of the initial problems.

Other Categories of E-mail Use in E6104

Respondents not only used E-mail for the formal CMC component but also found less formal purposes for its use. A content analysis of the E-mail transcripts forwarded to the researcher revealed five categories of E-mail use during E6104. The largest category dealt with the aforementioned CMC component, followed by course administration, course concerns, E-mail assistance and chit-chat in descending order of magnitude. Respondents' use of E-mail for mere chit-chat was limited.

Students mainly used E-mail for the CMC discussions and dealing with course concerns particularly regarding their major assignment and examinations. The professor's use consisted of her CMC input and responding to course concerns. Course administration and concerns were the main purposes for which the coordinators employed E-mail. It is noted that the handling of these course administration matters and course concerns, which may not have been so prevalent without the facility of this medium, added to the workload of faculty and staff.

## Conclusions

Davie (1988) recommended more case studies of CMC be conducted as they are "ideally suited for in-depth explorations of the perceived effects of differing educational strategies" (p. 58). This case study concludes that E-mail as an innovation in E6104 was successful. E-mail provided a communication opportunity which enhanced learning and relieved isolation - two primary considerations of distance education.

The professor's expectation for the CMC component was mainly for students to engage in seminar-like discussions through CMC. This was not achieved, as students more often offered their opinions in their responses to discussion issues. Students needed a detailed explanation as to the objectives and expectations of the formal on-line discussions from the outset of the course. They also required on-going feedback from the professor and fellow students throughout the CMC component to motivate them and assure them that they were on the right track. The course manual was not explicit in this regard although the professor did provide certain guidelines on-line.

Students needed to be involved in the medium from the outset of the course with the professor and/or staff to not only become familiar with it, for the uninitiated, but to establish a rapport and a more personal electronic environment before the formal CMC component commenced. Students who were unfamiliar with the medium required explicit instructions in the E-mail skills required for the course.

However, E-mail was beneficial to the learning process, and it was also extensively employed for dealing with course management and students' course concerns. It provided

students and staff an immediate channel to relay and respond to course issues which would otherwise not be so readily available in the distance setting. Eastmond and Ziegahn (1995) indicate that "the ultimate aim of instructional CMC is to provide a good learning experience for students" (p. 59). The researcher concludes that CMC in E6104 did enhance the learning experience of graduate distance students.

## Recommendations

The researcher makes the following recommendations based on the results and conclusions of this study:

1. That the application of E-mail in the graduate distance course, E6104 - Foundations in Programme Evaluation be continued.
2. That the Division of Continuing Studies and the Faculty of Education review the many specific recommendations offered by the respondents in this study for implementation consideration in future offerings of E6104. The researcher specifically recommends:

   (a) That the course manual be revised to include a more detailed explanation of the objectives, intent and requirements of the CMC discussion inputs and reactions;

   (b) That the course manual include an explanation of the professor's intent, type and amount of feedback regarding students' discussion to clarify the feedback issue for students;

(c) That the professor provide more frequent feedback to students both individual and group concerning their input to the formal discussion;

(d) That the professor and staff be on-line early and often with students to establish a comfort level within the group through course introductions and certain informal discourse prior to the more formal CMC component; and

(e) That the professor require students to respond to a maximum of four of the eleven discussion issues incorporated in the formal topics for discussion.

3. That the Division of Continuing Studies and the Faculty of Education determine the E-mail and CMC preparedness requirement of their future graduate student candidates, and devise a plan to allow candidates to achieve this requirement.
4. That the Division of Continuing Studies conduct an impact analysis of the additional workload required for the on-line handling of course administration matters and concerns by university faculty and/or staff in future offerings of E6104.
5. That the Division of Continuing Studies and the Faculty of Education consider the application of E-mail in other graduate distance education courses at Memorial University in light of the many benefits discovered in this study.
6. That further in-depth case studies be conducted into the application of E-mail in graduate distance courses at Memorial University to continue to improve practice as well as to contribute to the case study literature, which is lacking in this area.

7. That further studies be conducted within the Faculty of Education at Memorial University to determine the quality, in terms of scholarship, of class discussions in on-campus courses.

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# Appendix A

## Correspondence

It should be noted that in original copies of the correspondence the professor's name appears. She has given her permission to the researcher for her name to be included (Dr. M. Kennedy, personal communication, June 10, 1996).

508D Placentia Place
St. John's, NF
A1A 1S4

19 July 1995

Chair
Ethics Review Committee
Faculty of Education, Memorial University
St. John's, NF
A1B 3X8

Dear Mr. Okshevsky:

Request for Ethics Committee Approval

I am a Master of Education student at Memorial University and am ready to commence the research portion of my degree. I plan to conduct a qualitative case study of the experience of graduate distance education students and faculty using Computer Mediated Communication (CMC). E-mail in particular, during the pilot offering of E6104-Foundations of Program Evaluation this Fall from the Continuing Studies Division of Memorial University. I have completed my thesis proposal in accordance with the Faculty of Education's Handbook for Graduate Students. My thesis supervisor, Dr. M. Kennedy, has approved this proposal which is enclosed herewith (Appendix A).

Additionally, as outlined in your Ethics Guidelines dated November 3, 1994, I have enclosed letters of consent for the students (Appendix B) of the course with whom I hope to work and for the course instructor (Appendix C). Student and faculty profiles (Appendices D & E respectively) are also enclosed.

Please note that as this is a qualitative case study, I cannot provide potential interview protocols or questionnaires at this time. In accordance with Merriam (1988) and Stake(1995), qualitative research is emergent in design and therefore, questions and areas for exploration will evolve as the study gets underway. I have indicated in my thesis proposal, pp. 19-20, certain areas of interest at this point which I plan to explore through the students' and instructor's E-mail and/or through telephone interview or questionnaire if required.

If you have any questions regarding the above, please contact me at 576-0211 or fax 576-6606 or E-mail cbruce *a* calvin.stemnet nf.ca . I look forward to hearing from you.

Sincerely,

Cathy Bruce-Hayter

508D Placentia Place
St. John's. NF
A1A 1S4

19 July 1995.

Director
Division of Continuing Studies
Memorial University of Newfoundland
St. John's. NF
A1B 3X8

Dear Ms. Whalen:

Request for Approval of Thesis Research

I am presently a Master of Education student at Memorial University. For my thesis, I am interested in studying the use of Computer Mediated Communication (CMC) for communication and discussion purposes in graduate distance education.

Specifically, I am interested in studying the Computer Mediated Communication experience of graduate distance education students and faculty in course E6104-Foundations in Program Evaluation being offered this Fall by your department.

Dr. M. Kennedy, the course instructor, is also my thesis supervisor. She advised me of this research opportunity and her interest in the results of the pilot offering of this course, particularly the CMC portion. Dr Kennedy and the course development team have been working with Mr. R. Hyde in preparing this course. Mr. Hyde is aware of the integration of CMC into this course on a trial basis.

I would like to explore the experience of using CMC for both students and faculty in this graduate distance course. With students' and faculty's permission, I would analyse all of their E-mail pertaining to the course during the Fall. Additionally, I would ask students to keep a basic journal of their thoughts and feelings regarding the experience.

As E6104 is offered by your department, I request your permission to conduct my research with this course. This research will be conducted in accordance with the Faculty of Education Ethics Committee guidelines and with minimal burden to students and staff.

Sincerely,

Cathy Bruce-Hayter

508D Placentia Place
St. John's, NF
A1A 1S4

August 10, 1995

Dear .

My name is Cathy Bruce-Hayter and I am a Master of Education student at Memorial University of Newfoundland. My thesis supervisor is Dr. Mary Kennedy who is also the instructor for your course, Foundations in Program Evaluation-E6104.

As Dr. Kennedy mentioned in her letter, you will be using E-mail during this course to communicate with each other and her for the purposes of discussion and normal communication. For my thesis, I would like to conduct a case study of **your experience** using E-mail during this course. As part of my research, I would analyse all of the E-mail pertaining to the course produced by you and the instructor.

At this time, I am awaiting approval of my study from the Faculty of Education's Ethics Review Committee. I anticipate a favourable response by early September when the committee reconvenes. At that time, I will send you another letter detailing the study and outlining exactly what I would ask of you as participants. Additionally, I will forward the required participation agreement forms for your signature should you decide to participate. Your participation in this study is completely voluntary. All information gathered is strictly confidential and at no time will individuals be identified.

I am very interested in working with you as it would provide an excellent opportunity for me to conduct my research on the use of Computer Mediated Communication (CMC), E-mail in particular, for graduate distance education. I can appreciate your work load as part-time and distance graduate students and therefore, will keep my requirements to a minimum.

In anticipation of your favourable response, I look forward to working with you during this course. Thank you very much for your consideration of this request, it is greatly appreciated.

I will be in touch in early September but please feel free to contact me at anytime at **576-0211,** or by fax **576-6606** or via E-mail **cbruce *a* calvin.stemnet.nf.ca .**

Sincerely,

Cathy Bruce-Hayter

Memorial
University of Newfoundland

*School of Continuing Education*
*Division of Continuing Studies*



August 28, 1995

Cathy Bruce-Hayter
508D Placentia Place
St. John's, NF A1A 1S4

This is in response to your letter of July 18 requesting permission to conduct research with the students of Education 6104 distance education course.

Permission is granted subject to your receiving approval from both the faculty and the students. You should contact Dr. Mary Kennedy as soon as possible. Because of confidentiality, I cannot release the names of students to you but would be happy to distribute a memo to the students on your behalf.

I would appreciate receiving a copy of your thesis when it is complete. We look forward to cooperating with you. You may contact ~~with~~ me or Ern Cole, Associate Director.

Doreen M. Whalen
Director
*E-mail: dwhalen@morgan.ucs.mun.ca*
*Telephone: 737-3085*

Copy to Ern Cole (Tel. 737-3077)

**FACULTY OF EDUCATION**

**Memorial University of Newfoundland**

**Faculty Committee for Ethical Review of Research Involving Human Subjects**

**CERTIFICATE OF APPROVAL**

---

Investigator: Ms. Cathy Bruce-Hoyter

Investigator's Workplace: Faculty of Education

Supervisor: Dr. Mary Kennedy

Title of Research: Computer mediated communication experience in Graduate Distance Education

Approval Date: Sept. 15, 1995.

---

The Ethics Review Committee has reviewed the protocol and procedures as described in this research proposal and we conclude that they conform to the University's guidelines for research involving human subjects.

Walter Okshevsky, Ph.D.
Chairperson
Ethics Review Committee

Members:
Dr. Stephen Norris
Dr. Walter Okshevsky
Dr. Tim Seifert
Dr. Dennis Sharpe
Dr. Amarjit Singh

Memorial
University of Newfoundland

Faculty of Education



September 15, 1995

To: Ms. Cathy Bruce_Hayter, c/o Dr. Mary Kennedy
From: Dr. Walter C. Okshevsky, Chair, Ethics Review Committee
Subject: Thesis Proposal

==========

The Committee has completed its review of your thesis proposal entitled "Computer mediated communicative experience in graduate distance education." On behalf of the Committee I am pleased to be able to advise you that your proposal has been approved subject to the following conditions.

Re. Letters of Consent:

1. Given that the instructor of the course to be examined is also your thesis supervisor, in order to ensure the voluntariness of subjects' consent, please indicate explicitly that the names of those students who choose not to participate in your study, as with those who do so choose, will be kept in strict confidence by you until final grades have been submitted by the instructor of the course.
2. Please include Dr. Stephen Norris' telephone number in all Letters.
3. Indicate explicitly both within the body of your Letters and in their respective concluding statements in the first-person that subjects are free to withdraw from your study at any time without incurring prejudice in any form. This is an especially critical assurance in this case given that the instructor of the course is connected with your research by way of being the Supervisor.
4. Indicate the disposition of the collected e-mail materials upon completion of your study. Normally, these are destroyed or returned to subjects.
5. For purposes of informed consent, please briefly amplify the description of the purposes of your study as given in the third paragraph of your Letter to students in order that subjects may be more fully informed as to what it is you will be analyzing the data for.

6. Within your Letter to students, please change "b" to convey the assurance that subjects are free to choose which portions of their e-mail pertaining to the course they wish to submit to you.
7. Submit to the Committee the final version of the interview protocols once these have been formulated.

Please find enclosed your Certificate of Approval. If I may be of any further assistance to you please do not hesitate to contact me at your convenience.

On behalf of the Committee, I wish you the best of success in your research.

Sincerely yours,

Walter C. Okshevsky

Committee members: Drs. Singh, Sharpe, Seifert, Norris, Okshevsky

cc: Dr. Stephen Norris, Acting Associate Dean, Research and Development

508D Placentia Place
St. John's, NF
A1A 1S4

September . 1995

Dear [Student],

As mentioned in my letter of introduction in August, I am Cathy Bruce-Hayter, a Master of Education student at Memorial University of Newfoundland. I am now writing you to explain my study and your requested involvement.

My thesis will consist of a case study of your (the students') and faculty's experience using E-mail for a graduate distance education course. Most of my data will come from the E-mail messages that are sent by you and your instructor regarding the course throughout the semester. Basically, I am interested in studying **your experience** in the use of E-mail for this course. I may also need to interview you over the telephone or have you complete a short questionnaire near the end of the semester. I am aware of your work load as part-time and distance graduate students and therefore, will keep my requirements to a minimum.

In order for me to study your experience using E-mail, I request the following from you

a. your agreement to participate in the study (please sign form #1 below and return it to me).

b. copies of all of your E-mail pertaining to the course sent to fellow students, the instructor, the onsite coordinators and anyone else you may contact regarding the course. This is easily done by adding my E-mail address (**cbruce@calvin.stemnet.nf.ca**) to the CC (carbon copy) address block on each message that you send online. As a backup, I ask that you save all E-mail on-line until the end of the semester. I remind you that all information is strictly confidential and in no way will the sender be identifiable in the reporting of my research;

c. that you maintain a very basic journal of your thoughts and feelings regarding this experience throughout the semester. Point form only is sufficient either on-line or written, whatever works best for you; and,

d. your permission to contact you at some convenient point near the end of the semester to interview you via telephone or have you complete a short questionnaire (please sign form #2 below and return it to me).

Please return both forms to me in the stamped, self-addressed envelope provided as soon as possible

Your participation in this study is completely voluntary. You may choose to participate but not complete the journal nor give me permission to contact you for clarification or additional information. All information gathered in this study is strictly confidential and at no time will individuals be identified.

Following completion of the study, a summary of the results will be available to you upon request. If at any time you have questions about the research, please feel free to contact me at **576-0211**, or by fax **579-5543** (effective 30 September) or via E-mail **cbruce@calvin.stemnet.nf.ca.** Should you wish to speak with a resource person not involved in the study, please contact Dr. Stephen Norris, Acting Associate Dean, Research and Development, Memorial University of Newfoundland.

I look forward to hearing from you and hopefully working with you during this course. Thank you very much for your consideration of this request, it is greatly appreciated.

Sincerely,

Cathy Bruce-Hayter

**FORM # 1**

I, _____, understand the nature of this study and hereby agree to participate in it. I will forward all of my E-mail regarding this course to the researcher (Cathy Bruce-Hayter). I **will / will** not complete a basic journal as described above. All information is strictly confidential and no individual will be identified.

_____ _____ _____

Date Name (please print) Signature

_____

Contact number (optional)

**FORM #2**

I, _____, am willing to be contacted by the researcher (Cathy Bruce-Hayter) either by phone or a short questionnaire to clarify/gain any additional information during the course.

_____ _____ _____

Date Name (please print) Signature

_____

Contact number (optional)

508D Placentia Place
St. John's, NF
A1A 1S4

September , 1995

Dear [Professor],

As you are aware I am a Master of Education student at Memorial University of Newfoundland presently involved in research for my thesis. In past discussions, you indicated that you would be introducing a Computer Mediated Communication (CMC) portion to your distance education course entitled Foundations in Program Evaluation-E6104 commencing in September 1995

For my thesis, I would like to study the Computer Mediated Communication (CMC) experience of graduate distance education students and faculty, specifically students and faculty of the above course. I understand that, for the purposes of this course, CMC will be limited to the use of electronic mail (E-mail) only as outlined in the student course manual; and that students will be required to participate in on-line discussion groups as well as have the opportunity to contact you through E-mail at any time. My thesis would comprise a case study of your and your students' experience with using E-mail throughout the course To conduct the case study, I will need copies of all of your online communication with students regarding this course. The students will also be asked to participate in this manner I will then download all of the E-mail for my analysis.

Your participation will largely consist of forwarding all of your E-mail pertaining to this course to me. This is easily done by adding my E-mail address **(cbruce @ calvin.stemnet.nf.ca)** to the CC (carbon copy) address block on each E-mail message that you send. As a backup, I request that you save all of your E-mail pertaining to this course on-line for the duration of the semester.

Additionally, I request that you keep a very basic journal in point form only of your thoughts, feelings and ideas regarding your experience with using e-mail for this course. This journal may be maintained on-line, or whatever method that works best for you, and then forwarded to me at the end of the semester.

As my research is qualitative in design, I am interested in your experiences in your natural setting and in learning a little about you and your background with computers, particularly for communication purposes. Consequently, I've enclosed a faculty profile sheet and request that you complete it and return it to me at your earliest convenience in the stamped, self-addressed envelope provided.

I will be conducting a content analysis of the course e-mail interactions throughout the semester I may need clarification or additional information at some point and would like your permission to contact you via e-mail, phone or a short questionnaire for this purpose. I anticipate only needing 15-30 minutes of your time. If you are willing for me to contact you in this manner please sign form #2 below and return with your faculty profile.

Your participation in this study is completely voluntary. You may chose to omit any questions from the faculty profile. You may also choose to participate but not keep a journal nor give me permission to contact you for clarification or additional information. All information gathered in this study is strictly confidential and at no time will individuals be identified. If you are willing to participate please sign form #1 below and also return with your faculty profile.

Following completion of the study, a copy of my thesis will be available to you. If at any time you have questions about the research, please feel free to contact me at **576-0211,** or by fax **579-5543** (effective 30 September) or via E-mail **cbruce@calvin.stemnet.nf.ca.** Should you wish to speak with a resource person not involved in the study, please contact Dr. Stephen Norris, Acting Associate Dean, Research and Development, Memorial University of Newfoundland.

Thank you very much for your consideration of this request, it is greatly appreciated.

Sincerely,

Cathy Bruce-Hayter

**FORM # 1**

I, _____, understand the nature of this study and hereby agree to participate in it. I will forward all of my e-mail regarding this course to the researcher (Cathy Bruce-Hayter). Additionally, I give permission to her to use my completed faculty profile information in the study of the Computer Mediated Communication (E-mail only) experience of course E6104. All information is strictly confidential and no individual will be identified.

_____ _____

Date Signature

**FORM #2**

I, _____, am willing to be contacted by the researcher (Cathy Bruce-Hayter) either by phone, E-mail or a short questionnaire to clarify/gain additional information during the course.

_____ _____

Date Signature

508D Placentia Place
St. John's, NF
A1A 1S4

September , 1995

Dear [Coordinator],

As you are aware I am a Master of Education student at Memorial University of Newfoundland presently involved in research for my thesis. I will be working with a distance education course entitled Foundations in Program Evaluation-E6104 commencing in September 1995. Further to our discussions this week regarding your roles as the on-site coordinators for this course, I hereby am writing you to request your participation in my study.

For my thesis, I would like to study the Computer Mediated Communication (CMC) experience of graduate distance education students and staff, specifically students and staff of the above course. I understand that, for the purposes of this course, CMC will be limited to the use of electronic mail (E-mail) only as outlined in the student course manual; and that students will be required to participate in on-line discussion groups as well as have the opportunity to contact you through E-mail at any time. My thesis would comprise a case study of faculty's, students' and your experience with using E-mail throughout the course. To conduct the case study, I will need copies of all of your on-line communication with students, faculty and anyone else regarding this course. The students and faculty have also been asked to participate in this manner. I will then download all of the E-mail for my analysis.

Your participation will largely consist of forwarding all of your E-mail pertaining to this course to me. This is easily done by adding my E-mail address (**cbruce@calvin.stemnet.nf.ca**) to the CC (carbon copy) address block on each E-mail message that you send. As a backup, I request that you save all of your E-mail pertaining to this course on-line for the duration of the semester.

Additionally, I request that you keep a very basic journal in point form only of your thoughts, feelings and ideas regarding your experience with using E-mail for this course. This journal may be maintained on-line, or whatever method that works best for you, and then forwarded to me at the end of the semester.

I will be conducting a content analysis of the course E-mail interactions throughout the semester. I may need clarification or additional information at some point and would like your permission to contact you via E-mail, phone or a short questionnaire for this purpose. I anticipate only needing 15-30 minutes of your time. If you are willing for me to contact you in this manner please sign form #2 below and return to me.

Your participation in this study is completely voluntary. You may also choose to participate but not keep a journal nor give me permission to contact you for clarification or additional information. All information gathered in this study is strictly confidential and at no time will individuals be identified. If you are willing to participate please sign form #1 below and return to me.

Following completion of the study, a summary of the results will be available to you. If at any time you have questions about the research, please feel free to contact me at **576-0211**, or by fax **576-6606** or via E-mail **cbruce@calvin.stemnet.nf.ca.** Should you wish to speak with a resource person not involved in the study, please contact Dr. Stephen Norris, Acting Associate Dean, Research and Development, Memorial University of Newfoundland.

I look forward to hearing from you and hopefully working with you during this course. Thank you very much for your consideration of this request. it is greatly appreciated.

Sincerely.

Cathy Bruce-Hayter

**FORM # 1**

I, _____, understand the nature of this study and hereby agree to participate in it. I will forward all of my E-mail regarding this course to the researcher (Cathy Bruce-Hayter). I **will / will** not complete a basic journal as described above. All information is strictly confidential and no individual will be identified.

| | | |
|---|---|---|
| _____ | _____ | _____ |
| Date | Name (please print) | Signature |

_____
Contact number (optional)

**FORM #2**

I, _____, am willing to be contacted by the researcher (Cathy Bruce-Hayter) either by phone or a short questionnaire to clarify/gain any additional information during the course.

| | | |
|---|---|---|
| _____ | _____ | _____ |
| Date | Name (please print) | Signature |

_____
Contact number (optional)

508D Placentia Place

St. John's, NF A1A 1S4

1 Dec 95

Dear |Student|,

I would like to take this opportunity to formally thank you for your participation in my study to date. Without your efforts, I would not have been able to conduct this study.

As mentioned in my E-mail yesterday, I am forwarding an attitude survey regarding E6104 for your completion. Please keep in mind as you complete this survey that E6104 is a distance education course.

I anticipate that completion will take 5 to 10 minutes depending on any comments that you may wish to add. Due do your busy schedules, I do not expect you to respond before the end of the semester. However, I do request that you return the completed survey to me at the time you are returning your final exam if at all possible. A stamped, self-addressed return envelope is provided for your convenience.

If any of you have been able to keep a journal of your thoughts throughout this E-mail experience (my September letter refers), I also request that you return it in the same envelope. If you have this on disc you can E-mail it to me if you prefer. If you forgot or were too busy to keep a journal, I understand.

Lastly, to gain your personal insights, thoughts and feelings regarding this CMC (E-mail) experience, I will need to conduct telephone interviews with most students and certain face-to-face interviews with local students. I anticipate 20 to 30 minutes for telephone interviews and maybe a little longer (1 hour) for face-to-face interviews. |Your professor| suggested that I conduct the interviews commencing the second week in January due to your hectic schedules prior to that time which I can fully appreciate. I request that you send me an E-mail with your preferred date and time for the interview. Please include your telephone number to ensure that I have the correct number. For some of the local students, I will contact you individually via E-mail and/or phone call to arrange interviews at your convenience. Of course, if anyone prefers, I am willing to conduct the interviews earlier.

I will be asking your permission to record the interview to enable me to transcribe the discussion later for analysis purposes. Information gathered in this study is strictly confidential and at no time will individuals be identified.

Again, let me extend my appreciation for your involvement in my study and extend Season's Greetings to you and yours for the upcoming holidays.

Sincerely,

Cathy Bruce-Hayter

FAXed
6/18/96

202

PENNSTATE

(814) 863-3764

Michael G. Moore, Ph.D., Director
The American Center for the
Study of Distance Education
College of Education

The Pennsylvania State University
403 South Allen Street, Suite 206
University Park, PA 16801-5202

June 18, 1996

Cathy Bruce-Hayter
508D Placentia Place
St. John's, Newfoundland A1A 1S4
FAX: 709-576-6606

Dear Ms. Bruce-Hayter:

In response to your e-mail of May 31 and June 6, requesting permission to include items from *Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching, and Institutional Issues,* Research Monograph Number 6, and Book of Readings Number 3, *Distance Education for Corporate and Military Training* as part of your graduate thesis, we grant permission to use items from the following monograph:

> Wells, R. 1992. *Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching, and Institutional Issues.* Research Monograph Number 6. University Park, PA: The Pennsylvania State University, The American Center for the Study of Distance Education.

Permission is also granted to use a Figure from the following book of readings:

> Lauzon, A. C., and G. A. B. Moore. 1992. A fourth generation distance education system: Integrating computer-assisted learning and computer conferencing. In *Distance Education for Corporate and Military Training,* ed. M. Moore, 26–37. University Park, PA: The Pennsylvania State University, The American Center for the Study of Distance Education.

This permission is granted on the condition that prominent acknowledgment of Well's work in *Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching, and Institutional Issues,* Research Monograph Number 6, and of Lauzon's and Moore's work in Book of Readings Number 3, *Distance Education for Corporate and Military Training* be given.

Sincerely,

Margaret A. Koble
Publications Manager

# Appendix B

## Instruments

## Student Profile

Education 6104: Foundations of Program Evaluation

This Student Profile sheet will be used for the evaluation of this course. All information collected is confidential and will be used only by the course evaluators and course instructor. Please fill in the following and return the completed profiles to the course instructor before you begin work on the course. Thank you for your assistance.

1. Student Name: _____

2. Town/city of residence: _____

3. Age: ____under 25 ____25-30 ____31-40 ____41-50 ____ over 50

4. Degree(s) held: ____ B.A. _____B.Ed. _____B.Sc.
other _____

5. Graduate Program: _____Teaching and Learning _____Educational Leadership

_____ Educational Psychology other _____

6. Number of courses completed on graduate program:

_____ less than 3 _____ 3-5 _____ 6-8 _____ more than 8

7. If teaching in the school system, which grade level do you teach:

_____ primary _____elementary _____ jr. high _____ sr. high?

What is your area/subject of specialty? _____

How many years of teaching experience do you have? _____

8. If working outside of the school system, please indicate place of work and position:

_____

9. What is the main reason that you are taking this course?

____ to complete degree requirements ____ as an elective on degree program

____ personal enrichment ____ career advancement ____ other _____

10. Was the decision to enroll in this course influenced by it being offered by distance?

____ Yes ____ No

11. Have you previously taken other courses by distance education or correspondence?

_____ Yes _____ No.

If yes, were they: _____ undergraduate _____ graduate other _____

If yes, did you use _____E-mail or _____ computer conferencing as part of the course?

12. Check off any of the items below which reflect your ability/experience with computers:

_____ word processing _____ graphics packages _____ spreadsheets

_____electronic mail (E-mail) _____computer conferencing _____ internet

other _____ _____ none

13. Of the above computer applications, which do you use the most?

_____

14. Do you own a personal computer? _____ Yes _____ No

15. If yes, what type of computer do you own? _____

16. Is it equipped with a modem? _____ Yes _____ No

17. What type of communication software do you use? _____

18. What is the main purpose of your computer usage: ____ personal professional?

19. If you are a school teacher, does your school have computers? ____ Yes ____ No

20. Do you have regular access to school computers for your school work? Yes No

21. Are you familiar with STEM~Net? _____ Yes ____ No

22. Is your school on-line through STEM~Net at Memorial University?___Yes __No

23. If you do not use STEM~Net to access the internet (E-mail), which service provider (s) do you use

___ other university account (e.g. morgan, kean, ganymede, etc.)

___ employer service provider (e.g. Cabot College, Provincial or Federal government, etc.)

____freenet (e.g. St. John's Infonet, etc.)

____commercial provider (e.g. Compusult, AOL, Seascape, NLNet, etc.)

__ _other _____ _____

24. For this course, how will you access your E-mail: _____ home computer

_ ____school other computer location_____

(Please specify location)

(Use reverse side if required)

Return completed profile to:

Course Instructor E6104
Box 73, Faculty of Education
Memorial University of Newfoundland

St. John's, NF, A1B 1X8

## Faculty Profile

Education 6104: Foundations of Program Evaluation

1. Name: _____

2. Town/city of residence: _____

3. Faculty status: _____

4. Area of specialty: _____

5. Have you previously instructed courses by distance education or correspondence?

_____ Yes _____ No.

6. If yes, were they: ____ undergraduate ____ graduate other _____

7. If yes, did you use ___E-mail or____computer conferencing as part of the course?

8. Briefly describe your usage of E-mail or computer conferencing in these courses:

_____

_____

9. Check off any of below applications which reflect your ability/experience with computers:

_____ word processing _____ graphics packages _____ spreadsheets

_____electronic mail (E-mail) _____computer conferencing _____ internet

other _____ _____ none

10. How many years experience have you had using computers? _____

11. Do you own a personal computer? _____ Yes _____ No

12. If yes, what type of computer do you own? _____

13. Is it equipped with a modem? _____ Yes _____ No

14. What type of communication software do you use? _____

15. What is the main purpose of your computer usage: ____ personal ____ professional?

16. Describe briefly your computer usage: _____

_____

_____

17. Are you familiar with STEM~Net? ____ Yes ____ No

18. Are you on-line through STEM~Net at Memorial University? ____ Yes ____No

19. For this course, how will you access STEM~Net or other service for E-mail:

_____ home computer _____university other _____

_____

If you are using another service provider, please specify: _____

20. Describe the training or preparation, if any, that you received in the use of E-mail for this course: _____

_____

**ATTITUDE SURVEY**

Please respond to the statements below on a scale from 1 to 5 where 1 indicates you Strongly Disagree (SD) and 5 indicates you Strongly Agree (SA). If you wish to comment on or qualify your response, you may do so on the survey or during your interview.

| Statement | SA | | | | SD | |
|---|---|---|---|---|---|---|
| 1. I liked the CMC (E-mail) portion of this course. | 5 | 4 | 3 | 2 | 1 | |
| 2. I felt that the CMC (Email) portion of this course was most worthwhile. | 5 | 4 | 3 | 2 | 1 | |
| 3. I particularly liked the ability to communicate with fellow students which is generally lacking in distance education courses. | 5 | 4 | 3 | 2 | 1 | |
| 4. I enjoyed communicating both: | | | | | | |
| a. informally and, | 5 | 4 | 3 | 2 | 1 | |
| b. in discussion groups | 5 | 4 | 3 | 2 | 1 | |
| 5. The formal online discussion groups contributed significantly to my learning in this distance course. | 5 | 4 | 3 | 2 | 1 | |
| 6. Compared to previous distance education courses taken where E-mail was not used, the increased interaction with students and the professor significantly improved this learning environment. | 5 | 4 | 3 | 2 | 1 | NA |
| 7. Compared to on-campus graduate course seminars or discussions in which I have participated, these on-line discussions allowed for: | | | | | | |
| a. more student involvement. | 5 | 4 | 3 | 2 | 1 | |
| b. equal opportunities for all students to participate. | 5 | 4 | 3 | 2 | 1 | |
| c. time for reflection and consideration of other responses before giving my response. | 5 | 4 | 3 | 2 | 1 | |
| d. more coherent, well thought out responses. | 5 | 4 | 3 | 2 | 1 | |
| e. a greater sense of group cooperation. | 5 | 4 | 3 | 2 | 1 | |
| f. increased responsibility for my own learning. | 5 | 4 | 3 | 2 | 1 | |
| 8. Through E-mail, I had 24-hour access, if required, to: | 5 | 4 | 3 | 2 | 1 | |
| a. the professor, | | | | | | |
| b. fellow students, | 5 | 4 | 3 | 2 | 1 | |
| c. the coordinators. | 5 | 4 | 3 | 2 | 1 | |

**ATTITUDE SURVEY**

| Statement | SA | | | | SD | |
|---|---|---|---|---|---|---|
| 9. The amount of instructor input/feedback was just right. | 5 | 4 | 3 | 2 | 1 | |
| 10. E-mail was easy to learn. | 5 | 4 | 3 | 2 | 1 | NA |
| 11. E-mail was easy to use. | 5 | 4 | 3 | 2 | 1 | |
| 12. There was adequate assistance available on-line to help me with any difficulties using E-mail. | 5 | 4 | 3 | 2 | 1 | |
| 13. I suffered from information overload with the amount of E-mail produced during this course. | 5 | 4 | 3 | 2 | 1 | |
| 14. I would recommend E-mail use in other graduate distance education courses for: | | | | | | |
| a. informal communication amongst course members and faculty. | 5 | 4 | 3 | 2 | 1 | |
| b. the formal discussion groups. | 5 | 4 | 3 | 2 | 1 | |
| 15. As a result of this course: | | | | | | |
| a. my E-mail skills have greatly improved. | 5 | 4 | 3 | 2 | 1 | |
| b. I will use E-mail more often in my professional life. | 5 | 4 | 3 | 2 | 1 | |

## Interview Guide for E6104

The following questions/topic areas were used as a general guide for the interviews. Respondents were permitted to alter the order through open-ended responses. (This same guide was used for the professor and coordinators, only that certain questions/topics were adjusted accordingly as per the notes in parentheses by question.)

Purpose: The purpose of this interview is to discuss your experience with using E-mail in this distance education setting. I would like to gain an understanding of what the experience was like for you.

I would like this interview to be more of a conversation versus a question-answer session and let you basically talk about your experience. I may periodically ask a question to gain information on a particular area but you feel free to talk about the experience in any way you wish.

General Comments

1. To start with, I would like you to tell me about your experience overall with using E-mail during this distance course.

E-mail Familiarity

2. Describe your E-mail familiarity prior to this course.

Learning

3. Describe the impact of the formal on-line discussion groups on your learning.

a. Full class group (ethics of evaluation discussion) -

b. small groups (politics of evaluation discussion) -

4. Discuss how the use of E-mail affected your learning overall during this course.

Previous distance education experience

5. If you have previously taken (conducted, coordinated) distance graduate courses but without the E-mail component, how would you compare them to this course?

6. If you have previously taken (instructed) on-campus graduate courses, how would you compare the on-line discussion groups to the in-class discussion groups?

Interaction

7. How did you feel about the ability to interact via E-mail with fellow students during this distance course? (Describe that interaction, compare this experience with that of other distance courses and on-campus courses.)

8. How did you feel about the ability to interact via E-mail with your professor (your students) during this distance course? (Describe that interaction, and compare this experience with that of other distance course and on-campus courses.)

9. How did you feel about the ability to interact via E-mail with the course coordinators (students and the professor) during this distance course? (Describe that interaction, compare this experience with that of other distance courses without E-mail accessibility.)

10. Is there anything further that you want to discuss about the on-line interaction during this course?

Benefits

11. What were the benefits, if any, of using E-mail as part of this course?

12. What was the most significant benefit?

Problems

13. What problems, if any, did you encounter using E-mail?

14. What was the most significant problem and how did you overcome it?

Disadvantages

15. What were the disadvantages, if any, of using E-mail as part of this course?

16. What was the most significant disadvantage and how did you overcome it?

Access

17. Describe your access to E-mail for this course and any difficulties that you may have encountered accessing equipment or the STEM~Net server.

Technical proficiency

18. To what extent has your use of E-mail changed as a result of this course, personally and professionally?

Final Comments or Recommendations

19. Do you have any additional comments, observations or recommendations?

# Appendix C

## Sample E-mail Transcripts

(Note E-mail headers and all identifying information have been deleted to protect respondents' identity)

Category: CMC

Date: Fri, 6 Oct 1995 20:07:44 -0230 (NDT)
From: [Student 8]@calvin.stemnet.nf.ca>
To: ed6104@calvin.stemnet.nf.ca
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>
Hello all!
I've finally made contact with the course materials & have been working feverishly all week trying to catch up! My responses to the first set of discussion questions may reflect that haste, but here goes!
#1. A rule of conduct governing behavior would be that of punctuality. We are expected ( and reasonably so) to be on time for class. Re attitude: even the most difficult of students should be treated with appropriate respect.
#2. I would be more concerned with the "disease theory" as it might apply to ADD students when they are in normal social situations. A special weekend would most likely be designed around an agenda which has the ADD child in mind. I agree with previous contributors that the disease theory does place the rights of an individual above the rights of the group & I don't believe that this helps either the individual or the group. As an evaluator I need to be aware that I have this bias. The bias would have to be tempered in some way if I were to conduct an evaluation. Re the paid summer school... there could be lots of ethical issues here...equating education with money, paying students to be failures...
#3. Science & scientific research is not value free. I don't know if it's possible for any activity to be value free. One example of value laden experiments...fetal tissue transplants. To my knowledge the ethics debate is still current, but this experimentation may become less controversial as time progresses. .. Much like organ transplants today. Ethics are not absolute, time free guidelines. They are shaped by culture, context & experiences.
#4. I would like to know more about the students. There are "yes " and "no" answers to this question, depending on the motivation for the $$$.
#5. The wording of this question makes me uncomfortable. Widening the gap between the advantaged and disadvantaged seems like something that i should say "no" to. When some disadvantaged children make gains I feel I should support the continuation of the program. Are we getting into absolute objectives here? Is it ethical to discontinue a program which benefits some but not all.? Should no children be helped because some cannot be helped? Is it the duty of the evaluator to ensure fairness to all? I think society is pluralistic in terms of ethics. It depends on "where you're coming from".
#6. Later. I've just used up 45 minutes online, & I preplanned these comments. Oh my!!

Category: CMC

Date: Tue, 10 Oct 1995 08:30:18 -0230 (NDT)
From: [Student 1]@calvin.stemnet.nf.ca>
To: alias@calvin.stemnet.nf.ca
Cc: "coordinators 6104 -- Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>,
[Coord 2]@morgan.ucs.mun.ca>, [Coord 1]@morgan.ucs.mun.ca>

Subject: Discussion questions 1&2

Hi everyone! Here are my thoughts on those issues.

1. I see my role as a teacher as a learning facilitator. However, students are human beings and their learning experience does not always go smoothly without frustration. Therefore, their behaviour can become a problem in the course of the year. I also demonstrate a certain behaviour facing some situations or some students. I feel that I should be aware of those variables when dealing with difficult situations. I think students learn more from modelling a behaviour, in this sense if I treat my students with respect it is more likely they will respond with respect. Being aware of my own behaviour will encourage them to pay more attention to their own. I feel it is important, like others have mentionned, to keep the "dignity" of the student intact when correcting a misbehaviour. I have experienced the benefits of this approach.

2.a) I think the disease theory will in fact diminish responsibility of the individual who suffers from a disease. If I am involve in the evaluation of this type of program I should be aware of my responsibility when evaluating the risks and should plan or recommend some procedures to prevent any incidents, or at least to minimize the risks of it.

b) The disease theory should apply to those who have no control over their disease at any time. In this sense some disease,like schizophrenia, are more difficult to prevent and medication or support should be always provided. However, in the case of the drinking, this can be control before anything happen.

c) In the case of the drunk who beats his wife, the disease could be control by himself. If he is not aware of his problem, or denies it, then the disease theory should not apply since there are no disease according to him. The incident was an act of violence.

d) Our legal system stated that it is a criminal offense to drink and

drive and if a person is arrested for that s/he will have a criminal record for life. The same should applys in the case of a man who drinks and beats his wife, he is armful to another human being as much as the drunk driver could be for people on the road.

e) It seems outrageous to pay students to study, but here we have to look in the long term. How much the course will cost in total (fees, books, accomodations, etc.), and how much will it cost to the society to support those students who have no high school diploma and can't get a job. We have also to think about the reasons for them to fail high school, very often socio economic reasons are behind this, like other people have already mentionned. If we want to break the cycle of generations being support by the society we should give their children a chance to get out of it. However, a questionaire should be filled to describe the needs for receiving this "bursary".

[Student 1]

Category: CMC

Date: Sun, 22 Oct 1995 21:19:10 -0400
From: [professor]@aol.com
To: ed6104@calvin.stemnet.nf.ca
Cc: cbruce@calvin.stemnet.nf.ca

Subject: CMC - Week Three

Hi CMC Group!
After a technical glitch which caused me to be out of contact for a day or two, I finally got back on AOL to find oodles of messages, so I have just spent part of Saturday and Sunday reading, with great interest - your thoughts on Ethics in Evaluation.

One of the difficulties with using CMC as a required part of a course is the technical frustration that is involved - for me as well as for you. I am not very knowledgeable about computers in general, and the communications part in particular, so you should indeed feel that we are all learning together here. I have spent over a week trying to get new (and cheaper) software working, to no avail, so I am still on a borrowed email address. Life is hard!

It has been beautiful here - as usual I guess, and I went into shock obn reading [Student 3's] comment about freezing and snow. I'm still in my semi-retirement uniform of walking shorts and sweatshirts, as I traipse around out here. I just had two friends visiting from St. John's, and while they love back home like me, they sure liked the climate here.

Where are we with this CMC experience? So far I think most of you have managed to join the discussion - but there are still some missing persons, according to my class list. If anyone has not joined in the discussion as yet, you should certainly attempt to do so within the next week or so.

This week you should all deal with questions 5 and 6 in the Manual. There are guidelines for ethical practice, and the Joint Committee on Evaluation Standards has dealt with the issue, and indeed set standards for ethical behavior on the part of evaluators. If you haven't read these excerpts in your Book of Readings you should probably do so.

I noticed [Student 13] had concerns about the mid-term, addressed by [Coord 2], your friendly coordinator (thanks for a great job, [Coord]). The concerns dealt with (a) whether it should be like a real exam or more like a formal paper, and (b) whether you should stick to only the information covered up to the first

six weeks on the suggested time line. I thiought you all might benefit from some information from me on the midterm. Please treat the midterm as an EXAM, not a Paper. Limit your responses to the suggested lengths, and do not try to do numerous drafts, with great bibliographic citations and direct quotes. You have other assignments to do that. Try setting aside an afternoon, or a weekend day, and just sit and write it. Re the deadline - normally you would have to mail it in time for me to get it by end of October, but given the delays beginning the course with materials, I can be flexible. Do get at it, though, because you have lots more to do.

[Student 5], thanks for the information on accessing EvalTalk. I'm sure those class members with Internet access will appreciate the group discussions there.

[Student 1's] point about the change in the use of IQ tests and measures from the original conceptualization is interesting. Often we in education implement programs for one purpose, only to have that purpose alter significantly over time - often in an ethically undesirable direction - i.e. is Sesame Street's success with children of middle-class and upper class kids justifiable, in light of its original purpose to narrow the gap between advantaged and disadvantaged kids.

[Student 13's] point about scientific research on school achievement and it tie to funding is another example of this ethical dilemma.

>From my evaluation experience I don't think I ever did an evaluation that did not give rise to ethical conflict to some extent, as [Student 6] notes. In evaluating a job readiness program I was faced with the issue of criteria for selection of participants - highly questionable in that case. In evaluating an on-the-job training program where government funded business to employ difficult to place workers, I found that empployers would use one forty week stint, lay off the person, and three months later seek funding for someone else for another forty weeks - yet the aim was supposedly to create fulltime jobs. And so on. Evaluators cannot duck ethical issues, it seems.

I'm looking forward to receiving your next round of comments soon. Next week I shall assign you to small discussion groups where you will discuss issues via email among yourselves (kindly copying everything to Cathy for her thesis, of course), but you will only forward the group response to me. We'll see how that goes for you. In the meantime keep emailing!

Cheers, [professor's name]

Category: CMC

Date: Wed, 25 Oct 1995 23:24:44 -0230 (NDT)
From: [Student 12]@calvin.stemnet.nf.ca>
To: ed6104@calvin.stemnet.nf.ca
Cc:[professor]@aol.com, cbruce@calvin.stemnet.nf.ca, [Coord 1]@morgan.csu.mun, [Coord 2]@morgan.csu.mun

Subject: Q5

As I was saying the other night, who is to say that the gap would have not widen regardless between the advantaged and disadvantaged kids. >From a prescriptive valuing perspective, I would have to say that the gains of half the disadvantage kids are worth something and if that something is widening the gap so be it. From a desriptivevaluing perspective, I would be conscious of the underlying values of the participants, namely the advantaged and diadvantaged kids and their parents. In a descriptive approach, I would descibe the different value perspectives and refrain from making a choice among them in order to pass judgement on the program. Using a descriptive approach will help to ensure fairness of treatment for all. Using a prescriptive approach, the evaluator would tend to put his/her own slant on the findings. By adding one's own slant to things, the evaluator is also adding his/her biases.
Just the fact that someone would disagree with my idea that a program like Sesame Street that widens a gap between advantaged and disadvantaged kids, illustrates how society is pluralistic in its views of ethics.
Of course, our upbringing, education, work experience etc contribute to our differing views. For example, if I came from a disadvantaged home, I might very well be against programs like Sesame Street. My view could be holistic relating to the whole concept of such programs or it may be simplistic - I could not watch Sesame Street, I turned out fine, so we do not need to spend money on such programs. Society is not only pluralistic, in terms of ethic, but, in my opinion, very sensitive changing to meet other expectations. This would lead to a discussion of poolitical correct which in my opinion is a farce in itself. Perhaps somewhat pigheaded. I quess I look at it like the disease theory idea - political correct being used to meet someone's needs; similar to the dieased individual who wants the easy way out. I know this is not always the case, that there are very legitimate scenarios.
I fell I am babbling on ! So good night all.

P.S. Dr. [professor], my midterm will be sent tomorrow by priority post, so you can have it hopefully by Monday. I was a couple weeks late receiving

course materials. Mail is extremely slow to and from the island. I would probably have a better cance getting it to you sooner in SUNNY B.C.. PLEASE SEND SOME SUN TO LABRADOR. It gets desperate when you wish for snow so you can have a nice blue sky for the snow to reflect off. Someone once said that as a child when he rained they thought God was crying. He has to stop crying sometime - not to be sacrireligious people. as you can see the weather affects me a lot more than an exam.

Cheers from rainy Labrador where the sun is hibernating!

Category: CMC

Date: Fri, 27 Oct 1995 11:11:19 -0230 (NDT)
From: [Student 2]@calvin.stemnet.nf.ca>
To: [Coord 1]@morgan.ucs.mun.ca>
Cc: [professor]@aol.com,
ed6104@calvin.stemnet.nf.ca, cbruce@calvin.stemnet.nf.ca

Subject: Re: Paying Students???

Wow, your response put the devil in me . I agree 100%. How can students learn if they are hungry or if they spent the whole night in fear from a drunken parent etc. Real good points re pay or not pay students. I also agree that we pay either way if everyones's basic needs are not met. Well put thanks for the input. [Student 2]

Category: CMC

Date: Mon, 6 Nov 1995 21:03:57 -0330 (NST)
From: [Student 11]@calvin.stemnet.nf.ca>
To: Group4 <ed6104d@calvin.stemnet.nf.ca>, [professor]@direct.ca>,
[Coord 2]@morgan.ucs.mun.ca>,
[Coord 1]@morgan.ucs.mun.ca>,
"Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Group discussions #1 and #2

Hi Group,

I guess I should introduce myself. My name is [Student 11] and I am an itinerant teacher for resource-based learning with the [location] Integrated School District. I travel to nine different schools in the [this] end of the district working with teachers, helping them develop resource-based units which are integrated into the curriculum.

Here are my thoughts on the first two questions. I guess it would be nice to get a group response out by Thursday.

#1
I feel that there is definitely a political element in the issue of implementing full-day kindergarten. In fact, there are a couple of political elements.

The trend today is to have both parents working outside the home which results in a need for child care facilities. The government, realizing that a big proportion of the vote comes from this type of family setting, proposed a program to suit the needs of its constituents in order to generate voter support. Even though this is not one of the major reasons for implementing full-day kindergarten, it does represent a political element which influences decision makers.

One of the major political elements is that of bus travel and the cost therein. We have a government in the midst of cutbacks, looking for every chance to save a dollar. By eliminating dinner hour bus runs for kindergarten students some of the savings desired will be realized.

As educators we like to think that the government is interested in the child's education and not votes or dollars saved. However, politics determines reality and the proposed full-day kindergarten program is just

that, politics.

#2
I'm not sure about this issue. Maybe someone else in the group has a better handle on this one.

Here are a couple thoughts:

I think politics determines a lot of program changes. Changes usually occur because of pressure from outside or within an organization. I believe both of these types entered into this issue. The public became frustrated with high failure rates of first year students which made the university , the staff and the Newfoundland school systems look bad. As well, with budget cutbacks high enrolements were becoming a problem; i e , not enough staff or money for expanding programs. I feel the university raised entry standards in order to reduce enrolement to suit the fiscal restraints and to improve the academic standing of the the school. What do you think?

If I was hired to evaluate this program my evaluation would have political elements.
Why? Because in an evaluation you are seeking information for somebody and that somebody usually has an influence on your report. You have to please the client

It could be compromised by treating all stakeholders equally and reporting all sides of the story; participant-oriented evaluation or naturalistic evaluation

Look forward to your comments.

[Student 11]

Category: CMC

Date: Mon, 13 Nov 1995 11:38:00 -0800
From: [professor]@direct.ca>
To: [Student 12]@calvin.stemnet.nf.ca>
Cc: cbruce@calvin.stemnet.nf.ca
Subject: re: Topic 2, Questions 3 and 4

>Hi [name]. I like the points you've made in the CNA case. Within the profession the main reason given was to increase professional status of nurses, but once the decision was taken all kinds of other political agendas kicked in. Cheers, [professor's name]
>Topic 2
>
>>Question #3
>> One of the proposed changes that appears to be going ahead >with little or no opposition, particularly after the referendum, is >school consolidation. While there are obvious disadvantages, the >decision, despite its political birthright, will probably have a >positive impact on education. Amalgamating schools will >undoubtedly mean larger classes, but on the positive side there >will also be a wider selection of course offerings to help better >prepare college and university bound students as well as those >hoping to enter the labour force immediately after high school. >"Adjusting the Course" and "Adjusting the Course II" advocate >amalgamation in so far that reducing duplication would result in >monies saved which would be re-channelled into human and material >resources (providing the Treasury Board decides to do so.) It is >the intent of the Department of Education to re-channel monies >saved with the expectation that achievement of higher standards may >be influenced by the savings from restructuring.
>
>>Question #4
>> There definitely was a political element to the CNA's decision >to mandate degree requirements for entry level nursing positions. >Obviously, with government cutbacks and reduced nursing staff, >viable nurses' training could no longer continue at individual >hospitals. Since the government is providing some funds for >training through the university, a cost effective "practical" >solution would be to have all nurses train at this institution and >close down the other schools.
> Requiring nurses to acquire a degree would undoubtedly benefit >the profession. With more "schooling" the percentage of nurses

>passing the RN exam at the end of their training would probably
>increase. The profession would also become more autonomous.
>Training would be taken out of individual hospitals and
>concentrated at the university level. This could not only regulate
>the number of nurses entering the profession but promotions could
>no longer be solely or mainly based on obtaining a degree because
>all nurses would now have the same educational qualifications. As
>promotions would probably be based upon completion of a Masters of
>Nursing degree, undoubtedly the standards would improve.
>  Any improvement in standards is a benefit to society. While
>there is continuing to be a reduction in nursing staff, those that
>are and will be in the hospitals will be better qualified and
>trained resulting in improved hospital care and probable earlier
>diagnosis of potential problems.
>  Understandably, any evaluation would fall prey to politics.
>Worthen and Sanders summarize one of the Joint Committee's
>standards for evaluation practice which includes a formal
>obligation to warn clients about any limitations of an evaluation,
>noting any conflict of interest, his/her obligation to the broader
>"public" as well as obtaining subjects' consent, guaranteeing their
>privacy and so on. Brickwell, however, would probably state that
>while this is all well and good, evaluators can fall prey to
>political pressures, especially if the client is clear about what
>s/he expects to be reported at the end of an evaluation, or if the
>possibility of receiving future evaluation contracts is contingent
>on favourable findings. The old adage "never bite the hand that
>feeds you" could well apply to any CNA evaluation. Favourable
>findings could possibly guarantee future evaluation contracts, or
>funding to complete the initial evaluation. The evaluator can be
>put in a very awkward position should his/her results be negative
>or contrary to the clients' expectations.

Category: Course Administration

Date: Mon, 11 Sep 1995 08:31:43 -0230 (NDT)
From: [Student 14]@calvin.stemnet.nf.ca>
To: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: ed6104

this is to let you know that I am registered

[Student 14]

Category: Course Administration

Date: Thu, 28 Sep 1995 23:13:03 -0230 (NDT)
From: [Student 8]@calvin.stemnet.nf.ca>
To:[Coord 1]@morgan.ucs.mun.ca>
Cc:[Coord 2]@morgan.ucs.mun.ca>,
Cathy Bruce-Hayter <cbruce@calvin.stemnet.nf.ca>

Subject: Re: Email list

Hello [Coord 1]!

Your email response made excellent bedtime reading! That breaks the record for the longest email message I have ever received! Just kidding of course. I appreciate all the footwork you did on my behalf. I did receive a call about my materials but my 10 yr old took the message & all he could remember was the part that said the stuff was ready. He couldn't recall any info about pick up or delivery. I then assumed that i would receive it by mail. That was around the 18th. After a mail-less week went by I contacted you. I'v just emailed [Coord 2] & asked him to leave the package at continuing studies. I'll collect it today (Friday). have a good weekend ..and thanks again!

Category: Course Administration

Date: Tue, 3 Oct 1995 00:25:40 -0230 (NDT)
From: [Student 8]@calvin.stemnet.nf.ca>
To: [Coord 1]@morgan.ucs.mun.ca
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Re: Course materials (fwd)

Hi!
I just now tuned in to check my mail from the weekend..to find that my message to you was returned...probably due to the nf I included in the address. .I have just finished the video & i must say it was a pleasant surprise. I had expected a series of straight lectures...do you really collect old tools??? I found that the video presented a neat summary of the contents of the first 7 or 8 chapters of the text. I'll tackle the programmed text tomorrow.

Category: Course Administration

Date: Wed, 4 Oct 1995 16:02:16 -0230 (NDT)
From: [Coord 2]@morgan.ucs.mun.ca>
To: [Student 15]@calvin.stemnet.nf.ca>
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: 1973 vs. 1987 Text

It's good to hear that you got your materials! However, I think that you should invest in the newer version of the Text. I have the 1973 version, and it is quite different with respect to information covered and how such information is organized. The preliminary/background info. shouldn't have changed that much, you'll just have to dig a little bit for it. This means that the first week of readings can be found. You will also notice sections covering the various evaluation approaches. The names for these approaches will be the same, as will the majority of details; however, new theories, opinions, and versions have most certainly arisen since 1973. Therefore, this is certainly fuel for the arguement to get the latest version!

Anyway, in the meantime here is the Chapter titles (1987 Text) for the first five weeks of the course:

Module 1 = Chapter 1 (The Role of Evaluation in Improving Education)
Chapter 2 (The History of Evaluation in Education)
Chapter 3 (The Concept of Evaluation: An Overview)

Module 2 = Chapter 4 (Alternative Views of Evaluation)

Module 3 = Chapter 5 (Objectives-Oriented Evaluation Approaches)

Module 4 = Chapter 6 (Management-Oriented Evaluation Approaches)

Module 5 = Chapter 7 (Consumer-Oriented Evaluation Approaches)

Good Luck...Keep in Touch!

[Coord 2]

Category: Course Administration

Date: Fri, 17 Nov 1995 22:49:25 -0330 (NST)
From: [Coord 2]@morgan.ucs.mun.ca>
To: Entire ED6104 Class <ed6104@calvin.stemnet.nf.ca>
Cc: Cathy Bruce-Hayter <cbruce@calvin.stemnet.nf.ca>
Subject: Assignment - Evaluation Proposal

Howdy all!!

I'm going to be away from the office for Monday and Tuesday so I thought that I would e-mail the assignment to everyone (just for the heck of it). Some of you have already picked it up from my office, or may receive it via facsimile. For those of you who specifically requested a WP Attachment, I will send that to you as well.

If you have any questions, please don't hesitate to let myself, [Coord 1], or [the professor] know.

Anyway, here it goes and GOOD LUCK !!!

[Coord 2]

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..."TA DA"...

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EDUCATION 6104

ASSIGNMENT - EVALUATION PROPOSAL

Due Date: December 18, 1995

Grade Value: 40%

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Attached is a Case Study of a three course module, and an RFP (Request for Proposals). You should develop a proposal to evaluate this three course module, in accordance with the information outlined in the RFP. In selecting an evaluation approach, be su re to cite appropriate literature. [assignment then continues]

Category: Course Administration

Date: Sun, 26 Nov 1995 16:36:06 -0330 (NST)
From: [Student 13]@calvin.stemnet.nf.ca>
To: ed6104@calvin.stemnet.nf.ca
Cc: [Coord 2]@calvin.stemnet.nf.ca, cbruce@calvin.stemnet.nf.ca

Subject: Final Exam

Hi Everyone,

I may really be putting myself out on a limb here, but I have been hearing a great deal about the concerns that people have about the final exam. The assignmnet, regardless of how we should tackle it, is causing a lot of problems for people in this class. I have heard that people want some further discussion on the final and whether or not it should be given to us or to revamp the evaluation procedure to increase the % marks for the CMC experience. Because this course is offered through distance makes it difficult to voice our concerns to one another and how we will bring this up to [the professor]. How do others feel about it? I know I am not alone. Could you please give me some feedback?

[Student 13]

Category: Course Concerns

Date: Thu, 16 Nov 1995 14:10:39 -0800
From: [professor]@direct.ca>
To: [Student 13]@calvin.stemnet.nf.ca>
Cc: cbruce@calvin.stemnet.nf.ca

Subject: Re: Final Assignments

Hi [Student 13]. I sent the assignment to [Coord 2] on Monday, so it should be on its way to you now. Also by now you'll have gotten [Coord 1's] email re requesting the assignment specifications and exam, I assume. Don't panic.

I am now in the process of marking the midterms, and still have not received some. Once I get them done this week I can let you know (informally via email) how your response was. I hope this helps. Cheers, [professor's name]

Hi [professor'sname],
> This is [Student 13] in good old Newfie Land and I am really
>getting concerned about the final work we have to do for this course.
>When I start to think that there is still 60% of course work lleft to do
>in the next 3-4 weeks it boggles my mind. I was wondering if others have
>voiced their concerns as well. I guess I will have to wait to receive
>further info from you(exam and paper) until you can really say anything
>else. This could be pre work stress, but I can't help feeling the way I
>do.
> As well, do you have any idea when we will be receiving our
>mid-term marks? I am curious to see how I am doing and if I am on the
>right track as far as my ideas go. I would appreciate hearing from you soon.
>
>Thanks again,

Category: Course Concerns

Date: Thu, 23 Nov 1995 23:18:27 -0330 (NST)
From: [Student 12]@calvin.stemnet.nf.ca>
To: ed6104@calvin.stemnet.nf.ca
Cc: cbruce@calvin.stemnet.nf.ca

Subject: Assignment

This message is in response to [Student 8's] wondering if anyone has started the assignment.

[Student 8] I would be interested in discussing the evaluation issues. (with you) The case study clearly identifies the stakeholders for us, but I am hung up on the issues. The purpose of the evaluation is for the improvement of the program via distance. Automatically, we have to make the assumption that there is a need for improvement. A need by who - the client (the Faculty of Ed.). There are so many things to look at - is it cost efficient for the faculty to offer courses through distance ed.?; does the faculty have enough human resources for offering an additional section?; does the program in fact meet the needs of the consumer i.e. is the statistical data accurate when it indicates that students are interested in pursuing doctoral degrees?; how can a distance program be evaluated so that it lends itself to quality?; should the performance of students be compared to on - campus students?; does the university have the students best interest at heart or does it want to offer a program different from the other two universities?; is this new M.ED. program really appropriate for those wanting to upgrade or is what the other university is offering just as ideal?; what does the student expect from the instructor of a distance education program?; what about the resources?; how flexible is the Monday night demands for audiotel and the Learning Channel - and so on

Many of these issues would surmise from talking to the audiences affected. As an evaluator preparing a proposal should we just discuss the process for uncovering evaluative concerns and issues and identify the evaluative questions as the intent of the evaluation - namely a formative purpose?

I am trying to look at it as if I were going to evaluate our distance ed6104 program and experience via distance, How would I go about collecting and finding data that would allow me to make recommendations for the improvement of the program.

Anyone care to join in. I hope I haven't violated any ethical codes.
[Student 8] could you email your address to me please. I would like to carry on the discussion.

Dr. [professor], you said that we should provide info pertaining to the evaluator's qualifications. How realistic is it that a client would hire a graduate student with no experience in evaluation but completing graduate course in research design and evaluation. Perhaps we could highlight our education and our educational work experience. Perhaps if we attempted to educated the client somewhat with respect to evaluation and then presented our approach so that he/she would have no other choice but to choose the approach recommended then maybe we would gaet the contract What do you thing? I hope I do not have to compete with your experience for a contract - my evaluation design would never compare.

[Student 12]

Category: Course Concerns

Date: Fri, 24 Nov 1995 20:39:04 -0330 (NST)
From: [Student 13]@calvin.stemnet.nf.ca>
To: ed6104@calvin.stemnet.nf.ca
Cc: cbruce@calvin.stemnet.nf.ca,[professor]direct.ca,
[Coord 2]@calvin.stemnet.nf.ca

Subject: 40% paper

Hi,

This is [Student 13] and I am wondering what students in this course live in St. John's because I would be interested in getting together for a study group. I can be reached at [phone #]. Call me anytime and leave your name and number if I am not at home. I promise to get back to you as soon as possible.

Hope to hear from you soon.

[Student 13]

Category: Course Concerns

Date: Sun, 26 Nov 1995 14:52:45 -0330 (NST)
From: [Student 13]@calvin.stemnet.nf.ca>
To: [Student 9]@calvin.stemnet.nf.ca>
Cc: ed6104@calvin.stemnet.nf.ca, cbruce@calvin.stemnet.nf.ca,
[professor]@direct.ca, [Coord 2]@calvin.stemnet.nf.ca

Subject: Re: 40% paper

Hi [Student 9],

I will answer your question as best as I can. I believe that $30 000 is the maximum amount of money for this proposal. I don't think that we have to be too analytical when it comes to the amount that we will be making. I believe that [the professor] just wants to see how much of this course we have been able to understand and put to use. I hope that ths helps.

[Student 13]

On Sat, 25 Nov 1995, [Student 9] wrote:

> [Student 13]:
>
> I am in Labrador but I would be willing to meet with you or any other via
> the email to discuss the Evaluation Proposal. The question that I have
> is is $30 000 the total limit on the whole evaluation including expenses
> or plus expenses, because I am finding it hard to make any money on this
> one. For example $200 a day for 200 days is $40 000?

Category: Course Concerns

Date: Wed, 29 Nov 1995 11:23:44 -0330 (NST)
From: [Student 16]@calvin.stemnet.nf.ca>
To: [Student 12]@calvin.stemnet.nf.ca>
Cc: ed6104@calvin.stemnet.nf.ca, cbruce@calvin.stemnet.nf.ca

Subject: Re: your mail

Hi Everyone, I too have draft one of my proposal completed! Once I decided on an approach, my reading became more focused... It actually started to come together. I like [Student 12's] suggestions of "where to read" Hang in there this too will get done! Santa is coming and hopefully for me anyway he will bring "A masters Degree"!!!!
Take care, happy working, just think when you are finished, you can start your christmas shopping! (yuck!)

Category: Course Concerns

Date: Mon, 11 Dec 1995 20:51:38 -0330 (NST)
From: [Student 9]@calvin.stemnet.nf.ca>
To: [Student 15]@calvin.stemnet.nf.ca>
Cc: ed6104@calvin.stemnet.nf.ca,
"Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Re: Eval. proposal
Just a few things that I think will be helpful. Read down through.

On Sun, 10 Dec 1995, [Student 15] wrote:
> hello all:
> I guess most of you have the proposal finished by now. I'm one of those
> who did the final first and am now going through the proposal. I've read
> some of your comments and questions, and have (I think) a fairly good
> idea of what to do. There are a couple of pressing questions however,
> which have probably been asked already:
> Is it necessary to include a covering letter for the proposal?

I dont know if it is necessary but I am including one.
> For the cost budget analysis section, do we just have to give a breakdown
> of the projected costs for certain things, and keep it within $30000 as a
> total?

I Gave an individual breqkdown on a spreadsheet, down to the last cent.
Yes I think yu need to keep it to within $30 000.
> Are profiles of the evaluation team sufficient enough, or do we have to
> create entire resume?

I gave both a profile and a detailed resume.

> I'm finding that the description of the approach and the methodology are
> taking up the major portion of the proposal. Are others finding this as well?

The description of the approach and the methodology do take up a good
deal of time. Mine is about 4 pages.

> Or am I on the wrong track? Any comments would be greatly appreciated...
> P.S. For those of you working on the final, it's pretty straight forward
> once you get going at it. Good luck all!!
[Student 15] I have not even begun the final yet. Perhaps you could give me
some pointers on this one. [Student 9] Goose-Bay

Category: E-mail Help

Date: Thu, 12 Oct 1995 21:43:51 -0230 (NDT)
From: [Student 12]@calvin.stemnet.nf.ca>
To: cbruce@calvin.stemnet.nf.ca

Cathy I lost all of my messages HOW?

I was looking in the folder list L command in the menu. I looked under sent messages and I think I know why [the professor] did not receive my message - incorrect address.
Then I looked in saved messages which = 0
When I returned to folder index from the main menu all 52 messages were gone why? I reaaly appreciate any help - I am desperate!

Me again [Student 12]

Category: E-mail Help

Date: Fri, 13 Oct 1995 23:24:27 -0230 (NDT)
From: [Student 16]@calvin.stemnet.nf.ca>
To: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Re: Email refresher

Hi Cathy, [Student 16] here I was taking your advise and trying to print of email using Y but it is not printing the whole message exactly as it appears in pine. It skips some lines and runs other lines together. Have you found this happening? Any suggestions?

Category: E-mail Help

Date: Fri, 13 Oct 1995 09:51:49 -0230 (NDT)
From: [Coord 1]@morgan.ucs mun.ca>
To: [Student 12]@calvin.stemnet.nf.ca>
Cc. cbruce@calvin.stemnet.nf.ca

Subject: Re. Ethics questions 1&2

Congratulations, [Student 12]! You did get through and a good job, too! Just a note...be careful with the typing and with typos...the message did bounce (a jargon term for getting email sent back to the original emailer - sort of like a "no longer at this address stamp from the post office) with a "host unknown" note attached and when I examined it, you had typed "[professor]@col.com" for [professor] not "[professor]@aol.com" - notice it is aol not col. 8-) You may hunt and peck on the keyboard, or type professionally but I find, taking care to make the letters and spacings correct, esp. in the addresses will save you great frustrations, let alone have messages go to someone who you don't know.

I will tell you that I use the address book built into this email program so that I only have to type once, an address, and from then on can use a nick name that I have given the address to call it up - hence when I type mary in the TO. slot of the message section (and press return), I get [professor]@aol.com to appear! No more extra typing. Cathy sent you a message on how to use this feature, also the help menu on your stemnet account should also explain the way to do it...when all else fails, call us!

If you are having other frustrations with email please consult freely with Cathy or myself, or ask Stem-net directly. All of us want this to be as pleasant an experience as possible (as well as a good learning one!) Just like the first time you learned to drive or use that darned photocopier (if anything like the one in my office), computers and email just take experience, practice and patience.

Please don't hesitate to contact us by phone, fax or in person (if you can) should the explaination via email not be satisfactory.

In the meantime, I'll take the liberty (if Cathy doesn't mind) of forwarding your message to[professor] so she will get it this am. I'll remove the bounce message so it will be a clear copy!

Have a good day and weekend!

Category: E-mail Help

Date: Mon, 16 Oct 1995 09:44:47 -0230 (NDT)
From: [Coord 1]@morgan.ucs.mun.ca>
To: Cathy Bruce-Hayter <cbruce@calvin.stemnet.nf.ca>
Cc: [Coord 1]@morgan.ucs.mun.ca>

Subject: Re: [Student 12's] Address Book (fwd)

The trick is to use the F or forward key. This allows you to edit a piece of mail to anyone from anyone...see below...I forwarded (if that is a word) this message to you and then using the "control K" from the menu below, cut the text from the message I was forwarding. When cutting, make sure your text to be cut is on its own line ie: if I were to ^K here... Instead of this line I am now typing being deleted, the one above would be...because the ^k deletes the line you are on when you begin the ^k process. So if you want to keep part of a line, press enter to move the rest of the line down and away from the body of text you want to keep and ^k from there!

Warn the students, as the month changes from one to the next...the person is prompted to "move/delete sent mail sept (example) etc" if she says no, it will be deleted, if yes, then it is saved in her list of folders. The language of the question is clear but if she is as frustrated as she indicates, she may not be *listening* to the language...ie. her angst is interfering with her common sense and reading ability - very common and quite normal.

Can you get to her other than by email...call or meet her in person? Where is she, is there no one in her work or home who has a basic knowledge of email who can sit with her for a period of time until she is more comfortable...its late in the term for her to still be so anxious. I would certainly be connecting with her in some other way (either I or [Coord 2] could do it) to lower her angst level!!!
Perhaps even faxing her out very, very simple instructions for her use of pine...whatever!

Category. E-mail Help

Date. Wed, 29 Nov 1995 14:59:04 -0330 (NST)
From. [Student 12]@calvin stemnet.nf.ca>
To: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Hi cathy I am just playing with the stemnet creating addresses books and folders

[Student 12]

Category: E-mail Help

Date: Fri, 15 Dec 1995 09:11.30 -0330 (NST)
From: [Student 4]@calvin.stemnet.nf.ca>
To: [Coord 1]@morgan.ucs.mun.ca>
Cc: ed6104@calvin.stemnet.nf.ca,
"Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Re: mail

I deleted the mail because I assumed it was the same I have been having trouble with my mail so I am now deleting my mail as I read it. I check from now on. SORRY I can check now.

Thanks for the help!

Category_Chit Chat

Date: Wed, 20 Sep 1995 21:07:49 -0230 (NDT)
From: [Student 16]@calvin.stemnet.nf.ca>
To: [Student 8]@calvin.stemnet.nf.ca>
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>, [Student 14]@calvin.stemnet.nf.ca,
[Student 9]@calvin.stemnet.nf.ca, [Student 15]@calvin.stemnet.nf.ca

Subject: Re: Partial e-mail list of fellow students

Hi [Student 8], [Student 16] here. I have received the course outline and text as well. No other articles. I have completed my profile and pretest, and returned it by mail. Other than that I have read chapters 1-3! I am currently a full time student and already feel overloaded so don't panic, I'm sure everything will work out, they always do! CHEERS!

Category: Chit Chat

Date: Tue, 3 Oct 1995 15:10:27 -0230 (NDT)
From: [Coord 1]@morgan.ucs.mun.ca>
To: [Student 8]@calvin.stemnet.nf.ca>
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>,
[Coord 1]@morgan.ucs.mun.ca>

Subject: Re: Course materials

On Tue, 3 Oct 1995, [Student 8] wrote:

> Hi!
> I just now tuned in to check my mail from the weekend..to find that my
> message to you was returned..:probably due to the nf I included in the
> address. .I have just finished the video & i must say it was a pleasant
> surprise. I had expected a series of straight lectures...do you really
> collect old tools??? I found that the video presented a neat summary of
> the contents of the first 7 or 8 chapters of the text. I'll tackle the
> programmed text tomorrow.

Glad you enjoyed it...it was as much fun to do! No I really don't collect old tools (but who knows what the future might bring???? 8-). I hope you find the PIT as good.

[Coord 1]

Category: Chit Chat

Date: Wed, 25 Oct 1995 16:43:32 -0230 (NDT)
From: [Student 9]@calvin.stemnet.nf.ca>
To: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Thanks

Thanks for the message. Glad you have all 6 answers. I got a new modem for my home computer, but with my poor luck I haven't been able to get it working yet. I'm still using the school's computer to access and it is hard to get connected.Bye.

Category: Chit Chat

Date: Thu, 2 Nov 1995 14:37:05 -0330 (NST)
From: Cathy L. Bruce-Hayter <cbruce@calvin.stemnet.nf.ca>
To:[Student 2]@calvin.stemnet.nf.ca>
Cc:[Coord 2]@morgan.ucs.mun.ca>

Subject: Re: question #3 and 4 (fwd)

Hi [Student 2]

,
Thanks for the cc and my apologies. I did have this one dated 31 Oct. I save each person's E-mail to individual folders by last name. As 31 Oct I was almost out of time too I did not file or print my mail. Hence today when I saw your query regarding receipt of this message, I quickly went to my [Student 2] electronic folder and it was not there. I forgot to check my inbox where incoming mail is stored until you file or delete it.

OOps!!!

Sorry for the grief and frustration!

Cathy

Category: Chit Chat

Date: Mon, 20 Nov 1995 22:23:34 -0330 (NST)
From: [Student 2]@calvin.stemnet.nf.ca>
To. [Student 8]@calvin.stemnet.nf.ca>
Cc: "Cathy L. Bruce-Hayter" <cbruce@calvin.stemnet.nf.ca>

Subject: Re: political questions 3 & 4

[Student 8] ,no such luck. We still have snow coming down here and the forcast is for high winds . I still have a hope of a holiday,ha.

Thanks for responding so soon. [Student 2]

Category: Chit Chat

Date: Mon, 18 Dec 1995 10:12:54 -0330 (NST)
From: [Coord 1]@morgan.ucs.mun.ca>
To: education 6104 mailing list <ed6104@calvin.stemnet.nf.ca>
Cc: Cathy Bruce-Hayter <cbruce@calvin.stemnet.nf.ca>

Subject: Merry Christmas to all...

To all of you...the best of the season and for the new year.

Congratulations to [Student 16]. Welcome to Club Med! To the rest of you...we'll keep your spots warm for you! 8-) Drop in and see me the next time you are in the Education Building. Will put on the coffee!

It's been great working with you.

PS. Don't stop calling if you still have questions and concerns...I am here until the 22nd when it is off to [...] for my brother's wedding. Back on the 3rd of January! [Coord 2] will be in town all Christmas, so email him or call him at home if you need to! Bye!