ATHABASCA UNIVERSITY

PARTICIPATION AND NON-PARTICIPATION IN COMPUTER

MEDIATED CONFERENCING:

A CASE STUDY

BY

DANIEL O. TAYLOR

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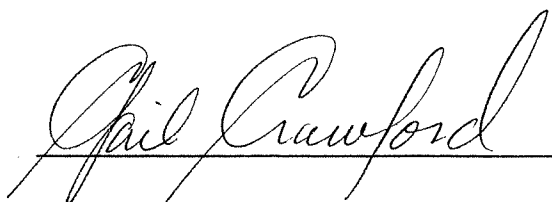
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The undersigned certify that they have read and recommend to the Athabasca University Governing Council for acceptance a thesis "PARTICIPATION AND NON-PARTICIPATION IN COMPUTER CONFERENCING: A CASE STUDY." submitted by DANIEL O. TAYLOR in partial fulfilment of the requirements for the degree of MASTER OF DISTANCE EDUCATION.
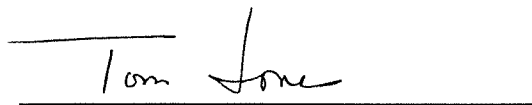
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ABSTRACT

Interaction amongst learners has been identified as a critical element in the learning

process. It has been argued that distance education practice, because of geographical

separation and dependence upon media for communication has offered limited

opportunity for interpersonal interaction. However, with the aid of recently introduced

computer communications, distance learners now have the potential to interact with

other learners, wherever they are, and whenever it is convenient. Yet, despite the

benefits offered by computer mediated communication, there are reports that many of

the learners in computer conferences do not actively participate or participate minimally

and that the majority of messages are contributed by a disproportionate few. Two

hypotheses to explain this phenomenon have been offered in the literature; the absence

of critical nonverbal elements that are found in face to face communication; and a

perceived higher standard for the written word than the spoken word. Those factors

may lead to communication apprehension and non-participation by certain individuals.

This study utilized a single case study research design to investigate the reasons for

varying levels of participation in computer conferencing and to examine whether there is

a relationship between communication apprehension and levels of participation in

computer conferences. Fifty-two subjects from a sample of 126 adult learners in three

graduate distance education courses responded by completing two questionnaires.

Participants answered questions about their general conferencing activity and the

extent to which certain factors influenced their frequency of message contribution. Data

analyses of questionnaire responses revealed no significant relationships with two

exceptions. Low participation students (lurkers) were more likely to report that; a) time

limitations related to their jobs influenced their participation to a considerable extent;

and, b) that they often found their opinion had already been expressed by another

student. Student responses to the questionnaires are discussed and possible

explanations are considered. Limitations of the study are described and further

research activities are proposed.

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CHAPTER I

INTRODUCTION

Interaction amongst learners has been identified, by many, as an important element in learning (Fulford & Zhang, 1993; Garrison, 1990; Gunawardena, 1991; Lauzon, 1992). In traditional distance education practice interpersonal interaction amongst learners has been uncommon (Bates, 1990; Davie & Wells, 1991; Lauzon, 1992). Typically distance learners are located off campus and at diverse geographic locations: Thus, any communication between the participants requires a communication medium. However, the finite capabilities of communication media have resulted in limited opportunity for interpersonal interaction (Nipper, 1989) subsequently denying the benefits of interaction to the distance learner.

With the introduction of computer technology to the distance education process, the distance learner now has greater opportunity to interact with others who are studying the same course materials. However, it has become increasingly apparent that many of the learners do not actively participate in spite of the opportunity to do so (Harasim, 1989; Mason, 1989). This non-participation is called "lurking" and is defined as reading others' messages but not contributing (Kaye, 1990).

In view of the claimed value of interaction, this study was designed to investigate why learners at a distance do not seize the opportunity when it is given to them?

Purpose

The purpose of this study is to investigate the reasons why distance education students do or do not actively participate in computer conferences.

The Problem

While little empirical evidence is available, the arguments supporting the importance of two-way communication in distance education are strong (Fulford & Zhang, 1993; Garrison, 1990; Gunawardena, 1991; Kruh & Murphy, 1990; Lauzon, 1992). To date, distance education does not appear to have been able to capitalize upon the purported benefits associated with interaction in learning. However, with the advent of computer conferencing technology, an opportunity to redress the situation could be at hand. The potential for computer conferencing to greatly increase interaction seems to be widely accepted.

Nevertheless, the phenomenon called lurking, may jeopardize the outcomes of this potentially effective teaching strategy; a strategy that, to this point, has been uncommon in distance education practice.

Studies conducted in conventional educational settings have investigated the effect that non-participation has upon learning outcomes. Several researchers have found that non-participation has a negative impact (Bourhis & Allen, 1992; Bowers, 1986; McCroskey & Payne, 1984). It may be that lurking in computer conferences is a similar phenomenon to non-participation in conventional classes and that it has similar etiology. If that is the case, non-participation in computer conferencing may also have similar negative effects upon the learning outcomes.

Currently, little is published about the lurking phenomenon. For those distance educators who seek to implement interactive learning strategies via computer conferencing, knowledge about possible detractors to the process may be of considerable value. With such knowledge, it is possible that interventions or changes could be made to improve the efficacy of computer conferences for student learning.

The intent of this study is to contribute to the better understanding of factors that may compromise a new dimension of distance education. Inasmuch as the computer and its rapid development is expected to further impact upon the process of learning at a distance, new knowledge in this area is of major significance.

Assumptions

Much of the literature identified in this study concerning the role and usefulness of active learner participation and interaction in education is not empirical research. Rather it reflects various authors' opinions and perceptions. As such, it is recognized that such references have inherent limitations. However, for this study, it is accepted that active learner interaction and participation is important in the learning process.

CHAPTER II

LITERATURE REVIEW

<u>Interaction In Distance Education</u>

In the practice of distance education, contacts among and between students and instructors is relatively uncommon (Bates, 1990; Davie & Wells, 1991; and Lauzon, 1992). Gunawardena (1991) notes that distance educators have had great difficulty in providing learner-to-learner interaction stating "...groupwork or collaborative learning is rare in distance education..." (p.14).

Kaye (1990) contends that the lack of opportunity for the learner to engage in "...debate, conversational learning and collaborative work." (p.4) is a constraint in traditional distance education.

Two important factors are suggested that may account for this limited interaction. First, distance education is dependent upon the use of communication media and those media have functional limitations. Second, the prevailing instructional model focuses upon the transmission of information (Lauzon, 1992).

One of the fundamental elements in the definition of distance education is the separation of the teacher and learner (Keegan, 1990). Typically, distance learners are physically separated by geography, sometimes at great distances from the institution and other learners. Any communication between the two must be mediated by a communication device (Garrison, 1990), which is usually mechanical or electronic. It is generally the case that the educational institution utilizes a medium that reflects the

contemporary state of the communication technology providing that the technology is available at an acceptable cost.

Since the origin of distance education, a variety of communication media have been used. The most common, and still widely used, is print (Pittman, 1987). In more recent years, audio, video and computer technologies have become a part of the media repertoire.

Nipper (1989) has reflected upon the historical role of media in distance education. In his article, he identifies three models of distance learning practice referring to them as first, second and third generations of distance learning. Each generation is defined by the types of communication media utilized.

In regard to the first generation, also called correspondence learning, he points out that written or printed material were the primary tools for communication. Today, print still forms the backbone of many distance educational programs (Pittman, 1987). This endurance is primarily attributed to print's convenience and economy. However, print has other features that contribute to its use. It is "...portable, easily accessible, easy to skim and search, relatively cheap to deliver and can provide higher quality graphics and design: above all, it is easier to read..." (Bates 1988, p.5). Furthermore, the learner is free to review printed text whenever it is pragmatic.

However, a prime disadvantage of print is that it is a one-way technology. The transportation of the printed text is dependent upon land mail which is inherently slow. The length of time that it takes for communication to travel from teacher to learner and back precludes any sense of immediacy that characterizes personal interaction. This

time lag has restricted the bulk of communication between learner and teacher to the distribution of course materials and submission of assignments (Nipper, 1989).

According to Nipper (1989), the second generation of distance learning arrived in the 1960's and offered a combination of print materials with broadcast media such as audio and video. Telephones and limited face-to-face meetings were also featured. These media, in comparison to the first generation, decidedly offered the potential for more interaction.

Nonetheless, the second generation is not without its own limitations. Although second generation technologies such as telephones, audio, or video teleconferencing facilitate communication, they are real-time technologies, requiring the participants to interact synchronously (Davie & Wells, 1991; Gunawardena, 1991). For many distance learners synchronous interaction is "...unsuitable or inconvenient " (Gunawardena, 1991 p.14) and Davie & Wells (1991) claim that it impedes the "...frequency and range of student interactions..." (p.18). Additionally, audio and video conferencing are often restricted by limited amounts of air time and are in many cases monopolized by the most assertive students (Davie & Wells, 1991). Furthermore, some of the second generation technologies such as video conferencing are expensive; prohibitively so in many instances.

In view of the fact that the process of distance education is fundamentally dependent upon communication devices, the role of communication media in distance education is significant. The inherent characteristics and limitations of the media exercise considerable governance upon the educational process. That is, if a medium

is not able to support a particular instructional activity, that activity is virtually impossible in the distance education process.

As Nipper (1989) argues, first and second generation communication media have played a major role in limiting the opportunity for interaction suitable to the distance learner's needs. He contends that from an historical perspective, distance education, in part because of the limitations of the media, has been "...non-interactive..." and that "It isolates learners from each other." (p.65).

However, the reasons for relatively low levels of two-way communication may not be solely related to the capabilities of the technologies. Responsibility may also rest with the type of media chosen or how it is used. Many potentially interactive technologies are not used at all or are under utilized (Jonassen, Davidson, Collins, Campbell & Haag, 1995). Such is the case when the educational design focuses upon transmission of information or when interactive technologies are used as delivery vehicles of lectures to the distance learner.

Despite the recent developments in communication technology, distance education continues to operate from an old paradigm where information delivery is a central activity. Lauzon (1992) states that "...most distance education programs are transmissive rather that transactional in nature." (p.33). The core of communication media selected for use in distance education continues to be essentially one-way technology (Dillon & Blanchard, 1991).

Nipper (1989) suggests that an explanation for the focus upon information delivery lies in the origin of distance education. He points out that the birth and practice of distance education has been primarily a response to wide geographic distances

between learners and the educational facility. The provision of education programs in the face of that geographic separation has given distance education its very definition and identity. The fundamental purpose of the media in that context was to transmit educational material to individuals who were not on campus and as such distance education practice could succeed with one-way technology. This original conception is still a factor in the design of many distance programs (Jonassen et al. 1995). Thus, the consequence of media limitations and a focus upon transmissive education models may have resulted in limited opportunities for interaction amongst the participants in distance education.

Interaction in the Learning Process

Interaction is a term that can have more than one meaning as Moore (1989) points out. He has written about the concept of interaction and identifies three different types; learner-content, learner-teacher, and learner-learner. All are acknowledged as important elements in the learning process (Moore, 1989).

Two-way communication and interaction amongst the participants in a learning environment has long been viewed as a critical element to the learning process (Fulford & Zhang, 1993; Gunawardena, 1991; Lauzon, 1992) regardless of the setting (Garrison, 1990; Kruh & Murphy, 1990). While learner interaction with the content is the primary element in education, it is argued that interaction with others concerning the content molds and provides real meaning to the content (Garrison, 1990). Others view it as the very essence of teaching and learning. Shale (1988), for example, contends that "First, education is a social process; the basis for education is people interacting with

people." (p.26). Harasim (1989) states "Knowledge building occurs as students explore issues, examine one another's arguments, agree, disagree and question positions." (p.55). Lauzon (1992) also places emphasis upon the interactive element in the definition of learning stating that learning is "...a transactional process, a process that is characterized by the exchange of ideas, thoughts, and feelings between and among people..." (p.33). This is not a novel view. As far back as the time of Socrates the value of interaction was recognized. Socrates required his students to ask questions in their pursuit of knowledge (Main & Riise, 1995).

This emphasis upon interaction in learning is reflected in constructivist learning models. Jonassen et al. (1995) report that there is a developing shift in instructional design from the cognitive psychology paradigm to constructivism. Social construction theorists believe that learning is a social process and the constructivist learning models place emphasis upon the social, interpersonal, and interactive nature of learning (Jonassen et al. 1995). In constructivist philosophy, the development of real meaning is dependent upon articulation and reflection with others as well as within ourselves. With this transition to interactive instructional models, the future may hold that knowledge is increasingly determined in an environment of social interaction, negotiation and debate.

Benefits of Interaction

The are many reported benefits of interaction. Although these claims are extensive and not always accompanied by empirical evidence, there is consistency in the literature. There are claims that interaction improves motivation; completion rates; promotes learner satisfaction (Fulford & Zhang, 1993; Gunawardena, 1991; Hiltz,

1990); improves attitudes and performance (Fulford & Zhang, 1993; Simpson, Pugh & Parchman, 1993); as well as promotes learning independence and better judgement (Imel, 1991).

It is also reported that a higher or deeper level of knowledge grows from active dialogue, reflection and critical analysis of ideas and concepts (Garrison, 1990; Harasim, 1989; Lauzon, 1992). Additionally, interaction is said to enable the adult learner to integrate previous experiences into the learning context thereby tapping a wealth of knowledge and wisdom for the group (Imel, 1991). Jonassen et al. (1995) concur stating "...learning is conversation, and the thinking and intelligence of a community of performers or learners is distributed throughout the group." (p.9). The varied experiences and perspectives of many different people provides a rich resource of information.

Burge (1994) in a study about how students learn in computer conference environments also argues for the benefits of interaction, stating:

When peers provide different perspectives on knowledge from their own experience, their contributions may help a learner to elaborate upon the meaning of a concept or its application. When peers give specific feedback (e.g., examples or paraphrases), it may help a learner to integrate new information with old knowledge or have their new learnings [sic] confirmed. When peers generate implications or inferences, provide cognitive "hooks," or trigger transformations of other's knowledge into personal insights, they promote knowledge organization and elaboration. (p.38)

In support of those claims, there is some research that suggests the opportunity to interact with others does positively influence educational outcomes. For example, Simpson et al. (1993), in their comparative study of instructional TV technologies, found that the fully interactive technologies were "...the most successful..." (p.162) in terms of educational outcomes. In their research, active and reserve naval personnel (N=743) participated in a four day course. The number of participants in each class was approximately 20. The identical course material was delivered to the learners by different media, utilizing various combinations of audio and video. Each method was compared against a baseline of live instruction to determine relative effectiveness of the techniques. The dependent variables "...were student performance on written examinations and student attitudes..." (p.190) on select factors evaluated by course evaluations. Their findings indicated that the more interactive technologies, such as the two-way audio and two-way video, correlated with better student performances and attitudes.

In summary, it appears that there is significant support for the value of interaction in the learning environment. An environment that fosters participant interaction is regarded as an excellent context for learning (Garrison, 1990; Harasim, 1989). Such a learning context has been limited in traditional distance education practice (Bates, 1990; Davie & Wells, 1991; Lauzon, 1992).

Facilitation of Interaction by Computer

The introduction of computer technology announces the third generation of distance learning of which Nipper (1989) speaks. Its ability to mediate communication

over widespread distances opens a powerful new intellectual environment for the distance learner; an environment that fosters learning as a social process. Computer technology is a recent entry to education, appearing first in the early 1980s (Harasim, 1990) and has been applied in the instruction of a wide range of subject areas in both graduate and undergraduate levels (Wells, 1992).

Computer mediated communication (CMC) is an umbrella term that generally refers to three elements:

a) electronic mail,

b) on-line databases, and

c) computer conferencing.

(Gunawardena, 1991; Kaye, 1989; Seaton 1993).

Key features of CMC are that it is time-independent, place-independent, text-based, and permits two-way communication (Gunawardena 1991; Harasim 1990; Kaye, 1990; Ruberg & Sherman, 1992). Dialogue among the participants may be synchronous, asynchronous, one-to-one, one-to-many, or many-to-many (Berge & Collins, 1993; Gunawardena, 1991; Harasim, 1990; Kaye, 1990; Ruberg & Sherman, 1992). Other features of CMC are that communication is more flexible, faster, and more economical when compared to the telephone and mail services (Ruberg & Sherman, 1992).

Computer Conferencing. Conferencing systems, one element of CMC, specifically support group communication, permitting students to interact with each other, their instructor and to share experiences in social learning (Gunawardena, 1991; Haile & Richards, 1984; Lauzon & Moore, 1989; Phelps, Wells, Ashworth & Hahn,

1991; Phillips, Santaro & Kuehn, 1988). The home educational institution provides the central computer that acts as the conference host. It contains the software to manage the interactive activities. Learners and instructors are able to connect to the host computer from their own personal computers by use of a modem. Participants have access 24 hours a day, whenever it is most suitable for them.

In a typical conference system, messages are threaded or linked according to a common feature such as topic. These messages are stored on the host computer to which the participants can gain access when they log in (Gunawardena, 1991). The learners may read messages submitted by others and add their own as they wish. Generally a permanent record of all entries exists for future reference.

Computers as a communication medium introduce distinct attributes. Unlike printed media which are also text-based, time and place independent, computer conferencing is interactive, facilitates many-to-many communication, and creates a meeting place without "...physical or temporal boundaries..." (Lauzon & Moore, 1989, p.40). Granted, there are other technologies that also permit one-to-one and many-to-many communication such as telephone, and audio or video conferencing. However, computer conferencing has a feature that is distinct from those technologies; the ability to permit asynchronous communication. That capability is seen by Hiltz (1994) as a crucial factor in establishing a shared learning environment because it permits each learner to participate when and where it is most convenient for him or her.

Those attributes of computer conferencing offer two primary educational benefits. First, they permit distance learners to interact with other learners as well as with the instructors at their convenience and second, they facilitate the design of educational

programs based on social learning models. Both, as discussed earlier, are deemed to be significant in the process of learning and, to date, have been limited in distance education.

The significance of the introduction of computer mediated communication to the domain of distance education has not been overlooked (Gunawardena, 1991). Many educators have commented upon the potentials of the medium. Seaton (1993) contends that the ability of computer conferencing to enable shared learning is one of its "...most successful pedagogical uses..." (p.51). It is further noted that, as CMC can facilitate many-to-many communication, it is particularly suited to educational activities that involve discussion, debate, reflection, collaboration, and groupwork (Davie & Wells, 1991; Jonassen et al. 1995; Kaye, 1990). Wells (1992) offers what may be viewed as a strong endorsement, declaring that the ability of CMC to enable groupwork "...may be one of CMC's greatest potential contributions to distance education." (p.6).

Jonassen et al. (1995) also note the promise of CMC, remarking that distance education by taking advantage of newer computer technologies such as computer conferencing, can capitalize upon the reported benefits of interaction in the learning process and respond to the developing challenge and interest in constructivist learning models.

Non-participation in CMC

Despite the potential for computer conferencing systems to facilitate group interaction, it does not assure it (Harasim, 1989). While there are cases of high levels of interaction, there are also situations where the degree of learner participation is

found wanting (Gunawardena, 1991). A number of situations have been reported where varying proportions of the registered students do not actively participate. Some read other's messages but do not submit their own. This phenomenon of reading but not contributing is referred to as lurking in the CMC vernacular (Kaye, 1990).

Mason (1989), as part of an evaluation of a conferencing system at the Open University of the United Kingdom (OUUK) reports such a case. A course offered at the OUUK was delivered by distance and featured CoSy software for computer conferencing. The course had 1364 registered students with 1006 being male and 358 being female. All students were over the age of 21 with about half between 30-40 years of age. That distribution was representative of the usual student population at OUUK. As part of the larger evaluation, learner participation rates, as measured by number of contributions, were monitored over one year. It was discovered that 728 students read but never contributed to the conference (p.130). That number represents more than 50% of the registered students.

Wells (1992) reports a similar finding in a computer mediated course offered by Norsk Kunnskapinstituttt (NKI) where 70% of the participants either did not contribute or only logged on a few times. A total of 1246 contributions to the conference were produced by 100 students. Of those 100, 30 were described as lurkers, 45 logged on only a few times and the remaining 25 produced the bulk of the entries.

A third study, by Phillips and Pease (1985), surveyed top level management participants in a computer mediated course. As part of their survey the authors explored computer conferencing participation levels. They discovered that a large percentage of the students stated that they "primarily logged into conferences to read

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the current entries but rarely entered comments." (p.14). However, there are no explanations provided for the participation rates and the authors express the need to "...understand why this phenomenon occurs..." (p.14).

Wells (1992) in her review of the literature on CMC in distance education reports that a minority of CMC group learners (10%) may contribute up to half of the messages. Rapaport (1991) relates similar findings. He cites the experience of the University of Michigan which has used a computer conferencing system since 1974. Rapaport (1991) reports that in the University of Michigan experience, the typical read-write ratio is 100 to 1. That is, the typical participant will read 100 messages for every one that he or she contributes. Furthermore, he contends that a small proportion of the people account for much of the conference messages, although he does not specify the number.

Ruberg and Sherman (1992) point out that others have also reported comparable experiences where a relatively small proportion of students send most of the messages. While the majority of the students may read the messages, a portion rarely or never send their own.

These reports raise the question of why the learners do not seize the opportunity that is offered by CMC and points to the need for further research to explain the phenomenon.

While there is published documentation about its occurrence, no specific investigations about the phenomenon of lurking have been uncovered. What causes lurking and what its implications are for learning outcomes in distance education are

unknown. However, there are a number of authors who have put forth hypotheses to explain the etiology of lurking.

Loss of Nonverbal Expressions. Two authors, Davie (1989) and Feenberg (1989), suggest that lurking is related to the nature of computer conferencing. With its reliance upon text, computer conferencing is not the same as conventional face-to-face interaction and certain differences between CMC and face-to-face communication may be associated with lurking.

A fundamental difference in computer conferencing is the absence of nonverbal communication cues to which one normally has access in a spoken conversation. Nonverbal expressions are complex behaviours which Feenberg (1989) labels 'phatic' functions and are an essential part of the communication process. Examples of nonverbal communication cues include body positioning, hand gestures, head and facial movements, voice tone and volume, and inflections and cadence of speech. Nonverbal communication cues play a fundamental role in conveying such things as emotion and variations of meaning that words alone may not disclose.

In the act of face-to-face communication the speaker refines, adjusts, and clarifies the message by using the nonverbal expressions in combination with the text. The receiver also relies upon the cues, in addition to the text, to accurately interpret the message and the underlying meaning. Throughout conversations such cues are continually reciprocated and monitored by both parties to ensure that the full meaning of the messages are conveyed (Feenberg, 1989).

However, text-only computer conferencing is void of such cues, limiting the signals that are so significant in verbal communication. The sender has no access to these

important cues that tell him/her how his/her message was received as well as that it was indeed received. How the message was received is measured by the text of the receiver's response and by the returning phatic functions. Any future impetus to contribute is contingent upon a favourable reception of one's contribution by others. Unfavourable reception of one's message or even worse, absence of acknowledgement, brings forth communication anxiety. Davie (1989) and Feenberg (1989) both suggest that it is this lack of nonverbal cues in computer conferencing that leads to the sender's apprehension. The loss of a crucial measuring tool leads to the fear of negative reception by others, to communication anxiety and reluctance to participate.

Loss of Anonymity. Relative anonymity is afforded by computer mediated communication. Harasim (1989) points out that the text-based nature of computer mediated communication masks a number of factors that reveal the identity of the writer. Commonly cited elements are gender, race, socio-economic status, and physical features. The reasons for non-participation in CMC may lie in the loss of this anonymity (Grint, 1989; Gunawardena, 1991).

Gunawardena (1991) claims that, over time, computer conference participants are able to identify learner characteristics by the specific character and nature of their messages. Grint (1989) offers a similar explanation. To base his argument, he draws a comparison between the verbal word and the written word. One element by which we are defined by others is the quality of our communication. Spoken communication, because of its transient nature, permits corrections and adjustments to be made spontaneously. Occasional miscues while speaking, stumbling for example, are not

viewed pejoratively. However, the written word is subject to a different standard; it is

expected that the written word be technically correct. Davie (1989) states that the act of

contributing a message in a conference may be viewed by the contributor to be more

like "...an act of publishing, rather than an act of speech." (p.80). If one's written

contribution is not of high quality, readers tend to draw disparaging conclusions about

the characteristics of the writer. Any anonymity possessed by the writer is, in a manner,

betrayed by the written message.

Thus, the character and quality of one's written message reveals elements of

one's identity via the computer conference. Fear of being defined negatively because of

the message quality may prevent some learners from contributing. Furthermore, the

permanency and open nature of the computer conference record creates the risk and

fear of public ridicule. According to Grint (1989), this only adds to the impetus to avoid

contributing. "A critical block to participation seems to be fear of public ridicule."

(p.189). It may be that participants feel that "you are what you write".

It is important to note that the accuracy of personal characteristic identification in

this manner is secondary. The mere expectation by the writer that they may be defined

pejoratively because of the quality of their written message underpins their responses

and arguably gives reason to not contribute.

Common Theme. A common thread is notable in these hypotheses. It appears

that comfort in the act of communicating in a public forum is, in part, rooted in positive

reception of the message by the receiver and a sense of security and confidence in the

written message. If one feels that one's written message is of good quality and receives

positive feedback from the receiver, then one is at ease in communicating. That resulting ease might be expected to be manifest by active participation.

However, this sense of security and comfort may be eroded by the absence of phatic functions, which aid in the measurement of the message's reception, and the apprehension about how others will judge the writer because of the perceived quality of the message. Consequently, such lack of comfort may lead to fear and anxiety concerning the act of communicating in public. Arguably, this fear and anxiety may result in reduced communication efforts. This apprehension concerning the act of communicating in a public forum is referred to by McCroskey (1981) as communication apprehension (CA).

Communication Apprehension

McCroskey (1981) first defined communication apprehension as "... an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons." (p.3). This definition, he points out, permits the application of the concept to all modes of communication; talking, writing, or even singing. Although the concept was originally viewed as a personality trait construct, it now encompasses both trait and situational circumstances. Thus, McCroskey's (1981) definition of communication apprehension states that:

> CA currently is viewed as a person's level of fear or anxiety associated
> with any form of communication with other people, experienced either
> as a trait-like, personality-type response or as a response to the situation
> constraints of a given communication transaction. (p.5)

There are several estimates of the number of people who are highly apprehensive in communication with others. Some estimates suggest that the number is approximately 20% of the student population (Allen, O'Mara & Long, 1987; Bourhis & Allen, 1992). Elsewhere it is reported that approximately 12.6 million students in the USA are communication apprehensive (Bourhis & Stubbs, 1991). Further, communication apprehension is consistently found across a wide variety of demographic variables (Bowers, 1986).

Effects Upon Educational Outcomes. Several studies indicate that communication apprehension and related avoidance in a traditional educational setting has academic consequences. In a survey conducted by Bowers (1986), 402 randomly selected on campus students were presented with the following scenario and asked the question, "Does this ever happen to you?" (p.373).

> You're attending a class here at the University. It's a class in which students
> sometimes make comments or ask questions, and you consider yourself
> prepared for the class. During the class, a question or comment occurs
> to you, and you think that your question or comment would be useful to
> you and useful to the class generally. Yet, because of some kind of inhibition
> or apprehension, you do not make the comment or ask the question. (p.372)

Of the 402 subjects in the sample, 281 or 70% of the subjects responded affirmatively to the question. Those responding 'yes' to the question were further asked to specify the consequences of their self identified communication apprehension in class. They listed the following:

a) dropping a needed course (7%);

b) skipping class (8%);

c) attempting to make themselves inconspicuous (31%); and,

d) other consequences (31%).

The most commonly mentioned of the other consequences was that "...they did not learn the needed information." (p.375) because they did not ask their questions.

In a longitudinal study spanning four semesters, McCroskey and Payne (1984) found that high communication apprehensive students, when compared to low communication apprehensive students, were more likely to drop out and achieved lower grade point averages (GPAs). The researchers studied a sample of incoming freshman students (N=1884) at West Virginia University; 56% were male and 44% were female.

All subjects completed the PRCA-24 (McCroskey, 1981) test that measures communication apprehension. CA levels were specified using the mean and the standard deviation of a sample of more than 20,000 subjects. Those scoring one standard deviation below the mean were considered to be low CA and those scoring one standard deviation above the mean were considered to be high CA. Academic achievement of the subjects was operationalized by each student's cumulative grade point average (GPA) for the four semesters. The retention rate was operationalized as the number of students enrolled and completing each semester. The overall drop out rate of the sample across the period of the study was 29.5% which was consistent with the 29.4% drop out rate of the population. However, the study revealed that those subjects classified as high CA had a higher drop out rate (32.7%), than those subjects

classified as low CA (23.9%) after four semesters. The study also found that the cumulative GPA for those classified as low CA were significantly higher than for those classified as high CA.

A more comprehensive study was conducted by Bourhis and Allen (1992) concerning the relationship between communication apprehension and cognitive performance. The authors noted that the association between the two has been examined in the traditional educational environment for more than 50 years. In their review of the literature, Bourhis and Allen (1992) observed that three distinctive and inconsistent findings have arisen from that research. They were that:

a) CA and performance are significantly and negatively correlated;

b) CA and academic achievement are not significantly related; and that

c) the environment is a significant mediating variable between communication apprehension and performance.

Seeking to clarify the relationship between communication apprehension and learning outcomes, they conducted a meta-analysis of data from 30 research reports drawn from *ERIC, Psychological Abstracts, Sociological Abstracts, Educational Index,* and the *Index of Journals in Communication Studies* for studies that examined the relationship between communication apprehension and cognitive performance. They uncovered 23 documents that contained information on 30 experiments. To be included in the analysis, all of the documents had to meet three criteria. First, the document had to contain quantitative data measuring the association between communication apprehension and some measure of cognitive performance. Cognitive performance was defined as any measure indicating achievement or intellectual or

academic ability. This definition permitted the inclusion of such measures as test score, final course grades, and IQ scores. Second, the document had to be accessible, and third, the report "...had to contain information permitting the estimation of an effect size." (p.70).

Each study was coded according to year of study, age of subjects, and the type of dependent measure such as, grades, English scores, intelligence scores, math scores, and reading scores. Using the correlation coefficients identified in the experiments and the estimates of cognitive performance, Bourhis and Allen tested for homogeneity using the Hedges and Olkin (1986) chi-square test. The overall results indicated an average negative correlation between CA and cognitive performance "r [10,728] = -.118, k = 28, p < .05" (p. 71). They concluded that "A small but stable relationship exists between CA and cognitive performance. The small correlation (r = -.12) indicates that as CA increases cognitive performance decreases." (p.73).

In view of the research studies cited, it appears that there is evidence suggesting that, in traditional educational contexts, communication apprehension has negative effects upon a variety of educational outcomes.

An argument can be made that the distance learner is also subject to communication apprehension and its academic implications. Since, communication apprehension is reported to affect approximately 20% of the student population (Allen, O'Mara & Long, 1987; Bourhis & Allen, 1992) and extends across a variety of demographic variables (Bowers, 1986), the learner studying at a distance is not likely to be exempt from the effects of communication apprehension.

Traditional educational environments typically operate with groups of people; the type of environment that is associated with communication apprehension (Bowers 1986). In contrast, distance education has traditionally been a relatively solitary experience. The learner at a distance typically studies course materials at home with varying levels of interpersonal contact with the teacher. Most interaction by the student is with the content. By virtue of this limited contact with groups, the opportunity for the experience of communication apprehension in the distance learning environment has been limited. However, with the development and expanded use of interactive technologies such as computer conferencing, the exposure of the individual distance learner to groups increases. Inasmuch as communication apprehension is a phenomenon linked to interaction with other people or groups, then, one can reasonably expect that as the occasions for interaction in distance education arise, communication apprehension and its educational consequences may also occur.

Summary and Research Questions

Interaction amongst the participants in education is often identified as an important element in the learning experience, offering a variety of benefits. In distance education many-to-many interaction has not been common. Two cited reasons are the prevalence of transmissive educational models upon which distance education traditionally has operated and the limited capabilities of communication media. However, with the development of and expanded use of electronic communication technologies the opportunity for interaction has grown. Computer conferencing is increasingly being used to facilitate this interaction.

Nevertheless, in spite of the increasing opportunity to interact with others, many distance students enrolled in courses utilizing computer conferences fail to participate or participate minimally. The literature suggests that non-participation may be related to the nature of text-only computer conferencing and apprehension concerning communication with others. Further, attempts to understand differing levels of interpersonal communication in campus-based education have made use of the communication apprehension concept.

This study will examine the explanations that distance education students involved in computer conferencing give for their varying levels of participation and will also examine levels of communication apprehension, as measured by an existing instrument, to answer the following research questions.

1. To what do students attribute their levels of participation in computer conferencing?

2. Is there a systematic relationship between oral communication apprehension and levels of computer conference participation?

3. Is there a significant difference between responses of the lurker and the non-lurker to the PRCA-24 and the computer conference participation questionnaires?

CHAPTER III

METHOD

<u>Design</u>

This study utilized a single case study research design to investigate the reasons for varying levels of participation in computer conferencing and to examine whether there is a relationship between oral communication apprehension and levels of participation in computer conferences.

Case study research design is defined as non-experimental as it does not include any manipulation or control, is inductive, and does not seek to predict. Rather, its aim is to offer an explanation or description of events or phenomenon, as they are, in response to the questions 'how' and 'why' (Merriam, 1988; Yin, 1984). It is particularly regarded as a useful method to gather basic information when little is known about the phenomenon of interest (Merriam, 1988).

To date, published information concerning the reasons for different levels of participation in computer conferencing is limited. Thus, with a view to finding initial information about the factors that influence participation in computer conferences, a case study design was selected as the most appropriate technique. This study is an exploratory examination of the phenomenon of lurking through one group of subjects.

Lurking. Lurking is operationally defined as a mean conference participation rate of two or fewer contributions per conference unit/topic and/or a mean word count of 150 words or less per conference unit/topic.

Communication Apprehension. Communication apprehension is defined as one's level of fear or anxiety associated with any form of communication with other people (McCroskey, 1981). In this study communication apprehension will be operationalized according to the normative values from the testing of 25,000 subjects with the PRCA (McCroskey, 1984). The data from that testing indicates that the scores form a normal distribution, with a mean of 65.6 and a standard deviation of 15.3.

High Communication Apprehension. High communication apprehension is operationally defined as a score of one standard deviation (15.3) or more above the mean (65.6).

Low Communication Apprehension. Low communication apprehension is operationally defined as a score of one standard deviation (15.3) or more below the mean (65.6).

Conference Participation Rate. The total number of entries and total word count for those entries to the course computer conferences by each respondent.

Subjects

The target population of this study was the students registered in courses of the Master of Distance Education (MDE) program at Athabasca University (N = 274; 132 males, 142 females). Students in the MDE program are typically adult learners and

come from diverse occupational backgrounds including the fields of education, health services and the corporate sector. All are required to have an undergraduate degree or its equivalent for admission. All were studying the courses at a distance in broadly dispersed geographic locations throughout Canada.

The subjects for this study were graduate students enrolled in one or more of the three following courses offered in the MDE program:

1) MDDE 601, An Introduction to Distance Education and Training;

2) MDDE 602, Methods of Inquiry and Decision Making; and,

3) MDDE 603, Systems Design in Distance Education.

The students were either registered as program students in the Master of Distance Education program or as non-program students who enrolled in one or more courses. Non-program students are eligible to apply for acceptance into the program at a later date. Eighty-five students were enrolled in the Master of Distance Education Program while 41 were enrolled as non-program students taking one or more courses. The sample was comprised of 126 subjects, 66 females and 60 males which was consistent with the target population. The average age of the sample was approximately 42 years.

Instruments

Computer Conference Participation Survey. A 31 item survey using 5-point Likert-type responses as well as some open-ended items was developed for the study (Appendix A). The questions asked were generated on the basis of information obtained from the literature (McCreary and Van Duren, 1987; Davie, 1989; Feenberg,

1989; Grint, 1989; Chacon, 1992), academic advisors and from reviewing conference transcripts. Questions focus on possible reasons for varying levels of participation in course conferences.

Personal Report of Communication Apprehension-24. The Personal Report of Communication Apprehension (PRCA-24), a 24 item Likert-type scale questionnaire developed by James C. McCroskey (Appendix B), was used with permission of the author.

This instrument originated in the early 1970s and the version used in this study is the most recent. It can be used to generate scores in four communication contexts; groups, dyads, meetings and public, as well as a combined overall score. The instrument features six items that test communication apprehension in each of the contexts. To avoid response bias, three of the six items are positively worded and three are negatively worded. The results of testing of over 25,000 subjects form a normal distribution with a mean of 65.6 and a standard deviation of 15.3 (McCroskey, 1984, p.38). Reliability of the instrument is reported to consistently exceed 0.90 (McCroskey & Payne, 1984). In support of the test's validity, McCroskey cites research that indicates the test has produced empirical results that support the major elements of the theory that underlie the construct of communication apprehension (McCroskey, 1978).

It must be noted that the PRCA-24 focuses upon fear of oral public communication in an individual. It does not, nor will it be used in this study, to measure lurking behaviour in a computer conference. However, whereas lurking behaviour may possibly be associated with the fear of oral public speaking the purpose of the PRCA-24 in this study is to measure the fear of oral public speaking.

Procedure

      Permission for access to the computer conference records was obtained from the course instructors (Appendix C) and ethical clearance was received from the Ethics Review Committee of Athabasca University.

      Subject Selection. Subjects for the sample were first drawn from students registered in two courses at Athabasca University in 1995-1996; An Introduction to Distance Education and Training (MDDE 601), Methods of Inquiry and Decision Making (MDDE 602). The response rate from this initial subject list was weak and therefore it was decided that additional subjects be included in the study. Students registered in two sections of Systems Design in Distance Education (MDDE 603) were added to the subject list.

      An Introduction to Distance Education and Training (MDDE 601) is the first core or required course in the Master of Distance Education program at Athabasca University. It is also the only core course in which non-program students are permitted to enrol. Thus, this course tends to have the highest course enrolments. Further, all program students and many non-program students take the course, thus ensuring the widest range of students and participants. Finally, since most students, both program and non-program students, enrol in this course early in their studies, most of the students are inexperienced in computer conferencing and many are inexperienced in distance education. There were three sections of this course with different instructors for each section during the two periods, September to December 1995 and September to December 1996.

Methods of Inquiry and Decision Making (MDDE 602) and Systems Design in Distance Education (MDDE 603) are also required courses for MDE program students. However, non-program students are not normally permitted to enrol in either course. Thus, most students are somewhat more experienced with computer conferencing and with distance education. During the September to December, 1996 period, there were two sections of MDDE 602 conducted with different instructors for each section. MDDE 603 was conducted in 1995 and again in 1996 with two different instructors for each section.

All three courses had the largest enrolments relative to other courses in the MDE program and thus offered the best potential to represent the population. In selecting the sample from these courses it was anticipated that there would be a substantial number of students from a wide range of backgrounds with varying levels of previous course and conferencing experience.

Registration in the three courses totalled 164 students. However, all were not included in the test sample as 38 were deleted from the list of potential subjects for two reasons. First, the MDE program has an early withdrawal policy that permits enrolees to withdraw within the first 30 days of the course commencement. Inasmuch as those students who did withdraw early (n=28) would not be involved in the conferences beyond the initial 30 days they were not included in the sample. Second, some of the subjects were on the student list more than once (n=10) because of registration in more than one of the selected courses. In that case, they were regarded as a subject by virtue of their registration in their first course and processed as one subject. For example, if a participant was registered in MDDE 601 as well as MDDE 602, his/her conference

participation rate was determined on the basis of his/her participation in MDDE 601 alone.

Distribution of Questionnaires. In view of the fact that most students in the sample retained an e-mail address it was decided that contact would be primarily by e-mail. However, with electronic mail, the name or other identifying information of the sender is commonly noted automatically on the message. To assure confidentiality of the respondents' identities, an individual other than the researcher acted as a mediator. This individual sent and received the questionnaires, removed all identifying information, and coded the completed questionnaires before forwarding them to the researcher.

A cover letter (Appendix D) along with a copy of both questionnaires was sent to each member of the sample either by e-mail or surface mail. The cover letter introduced the researcher and fully informed the subjects of the goals, activities, intentions of the study and the expectations of the subjects. Their privacy and anonymity was assured and they were given freedom to participate or not as they wished. Further, an offer to receive notification when a copy of the report would be available was conveyed to each participant. The return of completed questionnaires by the subjects was regarded as expressed consent to participate.

Those subjects contacted by e-mail were asked to complete and return the questionnaires within two weeks. Those contacted by surface mail were asked to complete and return them within three weeks. A reminder letter was forwarded to those who did not respond within the specified time frames. There were 21 completed questionnaires returned at this time. A second reminder was sent four weeks after the

initial contact. This letter asked the non-responders for permission to contact them by telephone. If they did not wish to be so contacted, they were asked to specify their wishes in return mail. This generated 13 more responses, 12 completed questionnaires and one decline to be involved. Thirty-three completed questionnaires were returned.

At this point in the process the students registered in the two sections of Systems Design in Distance Education (MDDE 603) were added to the subject list. They were sent the same cover letter and questionnaires with one subsequent reminder notice. The addition of those students generated a further 13 returned questionnaires. Over the succeeding days several more questionnaire responses arrived. Of a potential 126 respondents, 52 questionnaires (41.27%) were returned.

Examination of Conference Records. The computer conference records for each of the three courses were obtained from Athabasca University. Before their receipt, participant identifiers were coded to ensure the subjects' privacy and anonymity. The individual course conference records were differentiated by the specific topic in the course. Each course had multiple conference topics or units ranging from four in MDDE 601 to 12 in MDDE 602. The number of individual messages and the number of words in each separate message contributed by each respondent were counted. Although most subjects submitted multiple separate entries to register individual comments, a few subjects submitted aggregate messages, commenting upon several, and on occasion, many other entries. It was judged that these aggregate submissions, where the writer referenced with clear intent more than one previous message or conference item, were most accurately regarded as multiple entries. Therefore, specific comments

expressly referenced to another message were counted as one separate message. All conference entries were counted except for those:

a) submitted by the conference moderator;

b) identified as being withdrawn;

c) that were duplicates of a message otherwise counted; and,

d) that were inadvertently copied from another conference.

All the words in the identified message were counted except for:

a) words generated by the CoSy computer conference program;

b) headings;

c) signatures; and,

d) quotes from the messages of other students.

Thus, a cumulative number of messages and a cumulative number of words submitted by each respondent was recorded for each course unit or topic.

Course Requirements for Conference Participation. Each course had different requirements for participation in the conferences. There were variations in the minimum number of entries required and in the crediting of the contributions. Most moderators allotted a percentage of the final course mark to the conference contributions, ranging from 10 to 20%, while one did not. Some required a minimum of 2 contributions per unit while others had no minimum contribution.

Progress of the conference entries was monitored by all the moderators. If a student were recognized as inactive, then three of the five moderators made contact to determine if there were a technological problem or remind them of the potential to earn marks. Generally, there was no overt enforcement of the participation requirement by

the moderators except that two reminded the students that marks would be allotted for participation. No initiative was taken to control the length or number of entries to the conferences by any moderator.

CHAPTER IV

DATA ANALYSES

<u>Research Question # 1</u>

The computer conference participation questionnaire was used to collect data that was anticipated to answer the first research question "To what do students attribute their levels of participation in computer conferencing?". It contained 28 likert-type questions that offered the respondent a choice of five options as well as two open-ended questions. It was organized into three major sections. The first section of the questionnaire contained questions that related to the respondents perceptions, feelings and habits with regard to the conference activity. The second section of the questionnaire focused upon the effect that selected factors had upon how often the respondent entered messages to the conferences. This section was further divided into the following four subsections:

a) communication technology factors;

b) personal or life circumstance factors;

c) course related factors; and,

d) perceived competence factors.

The final section of the questionnaire addressed general issues such as the students' satisfaction with the use of computer conference and the value that they placed upon the conference activity to their learning. The data from the questionnaire is as follows.

Conference Activity and Experiences. Fifty-five percent of the respondents had

experience in computer conferencing. Many of those earlier experiences were gained

in other MDE courses. The remaining 45% of the respondents were first-time

participants in computer conferencing.

Table 1 shows that most of the participants viewed their level of participation as

within the average range, while a small number considered their participation at the

extremes.

Table 1

Self Identified Rating of Conference Participation

_____

Level	n	%
Very low	4	7.69
Below average	11	21.15
Average	16	30.76
Above average	19	36.53
Very high	2	3.84

_____

As can be seen in Table 2, the majority of respondents reported that they logged on and read the conference messages every day or two. The most common frequency was every second day. However, while the majority of the respondents tended to read the other's messages every day or two, they did not necessarily respond at the same time. Table 3 shows that many of the respondents would often read the other participants messages without contributing their own in response.

Table 2

Frequency of Reading Conference Entries

_____

Frequency	n	%
Less often than weekly	4	7.69
Weekly	3	5.77
Every couple of days	22	42.30
Daily	21	40.38
More than once daily	2	3.84

_____

Table 3

Frequency of Reading Others' Entries Without Responding

_____

Frequency	n	%
Very rarely	0	0
Rarely	2	3.84
Occasionally	13	25.00
Often	28	53.84
Very often	9	17.30

_____

Table 4 shows that approximately 40% of the respondents felt some sense of discomfort in placing a message on the conference that would be read by others. A small number indicated that they were decidedly uncomfortable while the majority indicated that they were, at the least, comfortable in doing so.

Table 4

Comfort Level Placing Message on Conference

_____

Level	n	%
Very uncomfortable	5	9.61
Uncomfortable	2	3.84
Somewhat comfortable	14	26.92
Comfortable	15	28.84
Very comfortable	16	30.76

_____

The matter of how well a message is written seemed to be a concern for many of the respondents. Table 5 shows that more than half of the respondents considered it very to extremely important that their messages be grammatically correct or well-written.

Table 5

Importance of Grammatically Correct or Well-Written Messages

_____

Level	n	%
Unimportant	3	5.77
Not very important	2	3.84
Somewhat important	17	32.69
Very important	19	36.53
Extremely important	11	21.15

_____

Table 6 shows that more than one-half of the respondents said they composed their

messages often or most of the time in advance of logging-on.

Table 6

Frequency of Message Composition Prior to Logging On

_____

Frequency	n	%
Very rarely	11	21.15
Rarely	5	9.62
Occasionally	8	15.38
Often	11	21.15
Most of the time	17	32.69

_____

In this study, the computer mediated conferences were text-based and consequently devoid of nonverbal communication cues. However, the absence of such cues did not seem to be of special concern to the respondents. As Table 7 displays, approximately 70% of the respondents said they were not at all or only slightly concerned. For almost 14%, the absence of nonverbal cues was of considerable or very much concern.

Table 7

Levels of Concern Due to Absence of Nonverbal Cues

_____

Level	n	%
Not at all	21	40.38
Slightly	16	30.77
Moderately	7	13.46
Considerably	4	7.69
Very much	3	5.77
No response	1	1.92

_____

Influence of Communication Technology Factors Upon Participation. Two general aspects of internet based communication were expected to influence the degree of participation: financial costs and reliability of access. Reasons for the latter may originate with hardware, software, or the internet service provider.

Overall, half of the respondents indicated that technology related factors did not influence their contribution to the conferences. As shown in Table 8, about three-quarters of the respondents indicated that financial costs were not a problem. However, difficulty with access was slightly more of a factor. Table 8 also shows that nearly 39% indicated that difficulty with access was a moderately influencing factor in their conferencing activity.

Table 8

Influence of Communication Technology Factors Upon Contribution

Financial Costs			Difficulty With Access		
Level	n	%	Level	n	%
Not at all	39	75.00	Not at all	13	25.00
Slightly	5	9.61	Slightly	19	36.54
Moderately	3	5.77	Moderately	13	25.00
Considerably	3	5.77	Considerably	4	7.69
Very much	2	3.85	Very Much	3	5.77

Influence of Personal or Life Circumstance Factors Upon Participation. Time limitations due to employment, family commitments and illness were also assessed. Overall, personal life factors appeared to be no more than a moderately influencing factor. Table 9 shows that illness did not appear to be a significant influence as approximately 88% testified that it was not at all or a slight influence.

Table 9

Influence of Personal or Family Illness Upon Contribution

_____

Level	n	%
Not at all	25	48.07
Slightly	21	40.38
Moderately	3	5.77
Considerably	3	5.77
Very much	0	0

_____

However, limited time because of work and personal/family commitments as shown in Table 10 had a stronger influence on contributions.

Table 10

Influence of Time Limitation Upon Contribution

Employment Related			Personal or Family Related		
Level	n	%	Level	n	%
Not at all	4	7.69	Not at all	4	7.69
Slightly	10	19.23	Slightly	10	19.23
Moderately	13	25.00	Moderately	21	40.38
Considerably	22	42.30	Considerably	12	23.07
Very much	3	5.77	Very much	4	7.69
			No response	1	1.92

Influence of Course Related Factors Upon Participation. There are a number of potential course related factors that might influence contribution rates. The questionnaire asked for information concerning the relevance of the topic being discussed and the impact that the other students or their messages had upon one's contribution.

About one-third of the respondents indicated that topic irrelevance was not a factor in their participation as shown in Table 11. However, about 13% specified that it was indeed, at the least, a considerable influence.

Table 11

Level of Influence That Perceived Topic Relevance Had Upon Contribution

_____

Level	n	%
Not at all	17	32.69
Slightly	17	32.69
Moderately	10	19.23
Considerably	6	11.53
Very much	1	1.92
No response	1	1.92

_____

Tables 12 through 15 show the differing impact that other students or their messages had upon contribution rates. In general, two themes emerged from that data. First, a sense of exclusion created by dominant individuals and non-response from others to one's messages were reported to be minor influences upon contribution. Second, in regard to the impact of prior statement of one's view and the failure of previous messages to stimulate a response, the majority of the respondents indicated that both factors ranged from slight to considerable influences upon their contribution.

Table 12

Failure of Other Messages to Stimulate Participation

_____

Level	n	%
Not at all	7	13.46
Slightly	15	28.84
Moderately	19	36.53
Considerably	9	17.30
Very much	2	3.84

_____

Table 13

Influence of Prior Expression of Viewpoint Upon Contribution

_____

Level	n	%
Not at all	3	5.77
Slightly	10	19.23
Moderately	21	40.38
Considerably	12	23.07
Very much	5	9.61
No response	1	1.92

_____

Table 14

Influence of Non-response From Others Upon Participation

_____

Level	n	%
Not at all	22	42.30
Slightly	18	34.61
Moderately	7	13.46
Considerably	3	5.77
Very much	2	3.84

_____

Table 15

<u>Sense of Exclusion Due to Dominant Participants</u>

_____

<u>Level</u>	<u>n</u>	<u>%</u>
Not at all	24	46.15
Slightly	17	32.69
Moderately	3	5.77
Considerably	6	11.53
Very much	2	3.84

_____

<u>Influence of Perceived Competence Factors Upon Participation</u>. This section of the questionnaire dealt with the influence that self perceived weaknesses had upon conference contribution rates. Table 16 shows that about 69% of the respondents felt that insufficient knowledge about the topic under discussion was no more than a slight influence upon their participation.

Table 16

Insufficient Level of Knowledge to Render Comment

_____

Level	n	%
Not at all	16	30.76
Slightly	20	38.46
Moderately	14	26.92
Considerably	0	0
Very much	2	3.84

_____

The ability of the respondents to use the keyboard or their confidence in their written communication skills did not appear to be major influences upon contribution to the conferences. As Table 17 shows, a high percentage of respondents indicated that neither items affected their participation rate. However, inexperience with computers and the skills necessary to post a conference message were slightly more influential factors as shown in Table 18.

Table 17

Influence of Weak Writing and Typing Skills Upon Contribution

Weak Writing Skills			Weak Keyboarding Skills			
Level	n	%	Level		n	%
Not at all	46	88.46	Not at all		44	84.61
Slightly	5	9.61	Slightly		6	11.53
Moderately	0	0	Moderately	0	0	
Considerably	0	0	Considerably	1	1.92	
Very much	1	1.92	Very much		0	0
			No response		1	1.92

Table 18

Influence of Weak Message Posting Skills Upon Contribution

_____

Level	n	%
Not at all	30	57.69
Slightly	17	32.69
Moderately	2	3.84
Considerably	1	1.92
Very much	2	3.84

_____

Feelings of intimidation spawned by the high level of knowledge or keen

articulation skills of other conference participants appeared to be an inhibiting factor for

a small portion of the respondents. Table 19 shows that approximately one quarter of

the respondents felt that those two factors influenced their participation rate at least to a

moderate degree.

Table 19

Influence of Feeling Intimidated Upon Contribution

_____

Level	n	%
Not at all	20	38.46
Slightly	18	34.61
Moderately	9	17.30
Considerably	2	3.84
Very much	2	3.84
No response	1	1.92

_____

General Issues. Two questions were posed to the respondents in regard to their overall opinion of computer conferencing. As Table 20 depicts, most respondents attested to at least moderate satisfaction with the conferencing experience and half indicated that the computer conference was either very or extremely important to their learning.

Table 20

Overall Opinion of the Computer Conference Experience

Level of Satisfaction			Importance to Their Learning		
Level	n	%	Level	n	%
Very low	4	7.69	Not at all important	6	11.53
Low	2	3.84	Not very important	6	11.53
Moderate	19	36.53	Somewhat important	14	26.92
High	19	36.53	Very important	17	32.69
Very high	8	15.38	Extremely important	9	17.30

The questionnaire contained two open-ended questions in the general issues section. The first question asked the respondents to identify what they viewed as the most important factors that influenced their contribution to the conference. The second question asked for any additional comments they would like to submit. The responses to both questions were tabulated separately and clustered according to any central themes that emerged.

In regard to the first question, five themes were identified. The most commonly identified factor that influenced the contribution rate was the availability of time. Several commented that, especially when the entries from others were lengthy, they felt that they just did not have the time to read and respond.

The second most commonly identified factor that influenced their participation rate was the potential to earn marks. This issue also generated further remarks in the additional comments section.

Personal interest in the topic and the sense that they had something worthwhile to contribute were the third and fourth most common themes. Topic relevance was identified as a reason to comment as it was expressed that if the discussion became too social and less related to the course objectives, they were less likely to comment.

The fifth most common theme concerned feedback from others. There were mixed comments here. Some participants said that they were less likely to contribute or even likely to quit contributing if there was no response from others. Reticence because of fear of negative feedback was also mentioned. Others stated that they were more likely to contribute if the conversation was challenging or if the conference moderator tossed out a stirring, debatable issue.

Several single views were expressed that are noteworthy. One respondent commented that the sense of community encouraged him/her to participate, while two participants commented that they viewed themselves as independent learners and did not see any personal value in participating.

The last open ended question requested general comments and produced a variety of responses that could be broadly grouped into four categories. The most comments were related to the level of involvement of the conference moderator. The respondents communicated that they wanted the moderator to be active, lead the discussion and keep it on track. The next most common response was the expressed

satisfaction with attributes of computer conferencing. It was remarked that computer conferencing was satisfying because it:

a) is safe and convenient;

b) is devoid of negative nonverbal signals;

c) is asynchronous;

d) permits exposure to a diversity of opinions and perspectives;

e) is a good alternative to face-to-face discussion; and,

f) creates a sense of community and shared learning.

The third category of comments related to the incongruity between required participation and the concept of learner independence. The comments indicated that the respondents viewed themselves as independent learners and resented being coerced, by the possible forfeiture of marks, into an activity that they did not value. The fourth category summarized comments that expressed dissatisfaction with overly large and formal entries. Such messages were viewed as an obstacle to the more appealing spontaneous, casual and informal style of traditional conversation.

Research Question # 2

To find an answer to the second research question "Is there a systematic relationship between oral communication apprehension and levels of computer conference participation?" two sets of data were collected; one set from the records of the computer conferences of the relevant courses and the other set from the responses to the PRCA-24. Both sets of data were tested for correlation.

Levels of Computer Conferencing Participation. To measure participation levels in the computer conferences, the number of individual messages and the number of words in those messages were counted. The number of messages contributed by the respondents ranged from a low of one to a high of 81. The total word count of the respondents ranged from a low of 105 to a high of 11,486.

With lurking operationally defined as a mean conference participation rate of two or less contributions per conference unit and/or a mean word count of 150 words or less per conference unit, 30.7% (n = 16) of the total respondents were defined as lurkers. In contrast, 60.8% (n = 45) of the total non-respondents met the lurking definition.

There was considerable variation in the patterns of message contribution. Some participants contributed regularly with a general consistency in the number of messages and number of words that they submitted to the conferences. Others were equally irregular, contributing sporadically with no consistency in the number of messages or number of words. Further, others contributed relatively few messages of considerable length, while others contributed few messages with a minimal number of words. At the extremes, some students contributed many messages while others did not contribute at all. In addition, it was not rare for students to participate actively in some units and not in others.

The totals and means of both the message and word counts among all respondents, non-lurkers and lurkers, are shown in Table 21 for comparison.

Table 21

Group (N=52)	Message Count		Word Count	
	Total	Mean	Total	Mean
All Respondents	1316	25.80	214,876	4,132.23
Non-lurkers	1143	31.75	188,999	5,249.97
Lurkers	173	10.81	25,877	1,617.31

Personal Report of Communication Apprehension - 24 Scores. The completed PRCA-24 response forms of the study sample were scored according to the instrument instructions.

The scores on the PRCA-24 from all of the respondents ranged from a low of 24 to a high of 96. The scores on the PRCA-24 from those who were operationally defined as lurkers ranged from a low of 24 to a high of 83.

For comparison, Table 22 shows the means and standard deviations for all the respondents, the lurkers and the non-lurkers with the normative values.

Table 22

Central Tendency of PRCA-24 Scores According to Group

Group	Mean	SD
Normative	65.60	15.30

All respondents	52.02	17.76
Non-lurkers	51.64	18.09
Lurkers	52.88	17.54

_____

Correlation Testing of the PRCA-24 Scores and Lurking. The PRCA-24 scores of

lurkers were tested for correlation with both the message count and the word count of

the lurkers using the product moment correlation coefficient at a confidence level of p ?

.05 and $df = 14$. Table 23 shows the findings.

Table 23

Correlation of PRCA-24 Scores and Conference Participation Levels

_____

      Message Count $r = .2273$ $df = 14$ p ? .05

      Word Count $r = .1837$ $df = 14$ p ? .05

_____

These data indicate that there is no statistically significant relationship between the scores on the PRCA-24 and either the message count or the word count of those people who met the criteria for the definition of lurking at the identified confidence level. This finding suggests that an individual's score on the PRCA-24 would not be useful in predicting that individual's participation rate in the computer conference.

Research Question # 3

The third question asked "Is there a significant difference between responses of the lurker and the non-lurker to the PRCA-24 and the computer conference participation questionnaires?". To determine an answer the participants (N=52) were separated into two groups, lurkers (n=16) or non-lurkers (n=36), according to their conference participation rates. The responses to each questionnaire item for both testing instruments were tabulated for each individual in each group and analyzed by a chi-square test. The analysis indicates that the proportion of responses by the lurkers and the non-lurkers to the conference participation questionnaire were not significantly different with the exception of three items, #2, #12 and #18, as shown in Table 24.

Table 24

Chi-square Values For Conference Participation Questionnaire Items

Item #	χ^2	Item #	χ^2	Item #	χ^2
1	.209	11	.106	21	.803
2	.041*	12	.036 *	22	.779
3	.747	13	.461	23	.674
4	.660	14	.634	24	.803
5	.381	15	.596	25	.175
6	.161	16	.198	26	.563
7	.945	17	.555	27	.290
8	.665	18	.038 *	28	.082
9	.560	19	.363	29	.455
10	.329	20	.387		

* Statistically significant $p \le .05$

Questionnaire item #2 asked the participants to rate their own level of participation. Table 25 shows that 50% of the lurkers compared to 19% of the non-lurkers viewed their level of participation as below average or lower. Further, a greater percentage of the non-lurkers compared to the lurkers viewed their participation levels as above average or greater. It appears that both groups accurately rated their overall participation rates. Interestingly, 12% of the lurkers rated their participation level as above average.

Table 25

Self Rating of Participation Level: Non-lurkers vs. Lurkers

_____

Level	Non-lurkers (%)	Lurkers (%)
Very low	5.56	12.50
Below average	13.89	37.50
Average	27.78	37.50
Above average	47.22	12.50
Very high	5.56	0

_____

Questionnaire item #12 asked the participants about the extent of influence that job related time limitations affected their participation. Table 26 shows the tabulated responses of the lurkers and the non-lurkers to item #12. As can be seen in Table 26,

there are large differences in the "moderate, considerable" response categories between the lurkers and the non-lurkers. Almost double the percentage of lurkers, compared to the non-lurkers, indicated that job related time constraints were a considerable influence upon their participation in the conferences. Further, very few of the lurkers, in comparison to the non-lurkers, indicated that it was a moderate influence.

Table 26

Influence of Job Related Time Limitations: Non-lurker vs. Lurker

_____

Level	Non-lurkers (%)	Lurkers (%)
Not at all	8.34	6.25
Slightly	16.66	25.00
Moderately	33.33	6.25
Considerably	33.33	62.50
Very much	8.34	0

_____

Item #18 inquired about the extent of influence that prior statement of one's viewpoint had upon conference participation. Table 27 shows the tabulated responses to item #18 from the lurkers and the non-lurkers. The data show that a larger percentage of the non-lurkers indicated that it was a slight influence whereas a much greater percentage of the lurkers indicated that it was a considerable influence.

Table 27

Influence of Prior Expression of View Upon Participation; Non-lurker vs. Lurker

_____

Level	Non-lurkers (%)	Lurkers (%)
Not at all	8.34	0
Slightly	25.00	6.25
Moderately	38.89	43.75
Considerably	13.89	43.75
Very much	13.89	0
No response	0	6.25

_____

The chi-square analysis data in Table 28 show that the proportion of responses by lurkers and non-lurkers to all of the PRCA-24 test items were not significantly different.

Table 28

Chi-square Values for PRCA-24 Questionnaire Items

Item #	χ^2	Item #	χ^2	Item #	χ^2
1	.272	9	.791	17	.761

2	.748	10	.438	18	.659
3	.426	11	.654	19	.967
4	.477	12	.814	20	.293
5	.935	13	.400	21	.954
6	.364	14	.684	22	.519
7	.491	15	.703	23	.684
8	.520	16	.769	24	.556

$p ? .05$

CHAPTER V

DISCUSSION, IMPLICATIONS AND SUGGESTIONS

<u>Summary of the Study</u>

Interaction has long been viewed as a critical element in the learning process. Support in the literature for the value of interaction is broad and consistent with claims for a number of educational benefits. In the practice of distance education, interaction has been relatively uncommon and is acknowledged as an inherent constraint. Two reasons identified for limited interaction are the dependence upon a communication medium for interaction and the prevailing instructional design model in distance education that focuses upon transmission of information.

In recent years, the introduction and development of computer technology has launched a new dimension to the distance educational process. With the aid of computer mediation, distance learners are now able to interact with other distance learners in a fashion previously unknown. The distinctiveness of computer mediated communication rests in its ability to permit one-to-one and many-to-many interaction that is asynchronous. However, despite the benefits offered by computer mediated communication, there are reports that many of the learners registered in courses with computer conferences do not actively participate or participate minimally and that the majority of messages are contributed by a disproportionate few.

Opinions in the literature suggest that non-participation may be related to the text-only nature of computer conferencing and apprehension concerning communication

with others. The purpose of this study was to investigate the reasons why distance education students do or do not actively participate in computer conferences. Three research questions were posed.

1. To what do students attribute their levels of participation in computer conferencing?

2. Is there a systematic relationship between oral communication apprehension and levels of computer conference participation?

3. Is there a significant difference between responses of the lurker and the non-lurker to the PRCA-24 and the computer conference participation questionnaires?

Discussion of the Findings

Limitations of the Study. There are a number of factors that must be given consideration when discussing the findings. With respect to the design, case studies by their nature are limited by only examining a single occurrence of a phenomenon. All research designs have weaknesses that must be addressed by the researcher. With regard to case study design, Merriam (1988) states that primary criticisms are concerned with issues of internal and external validity and reliability.

Internal validity is an issue of whether the research findings reflect reality; that is, do the results accurately show what is indeed there (Merriam, 1988)? In that regard, Merriam (1988) points out that all experiences, in and of themselves, are not self-explanatory and that all experiences must be interpreted or translated by someone. In an investigation of the experiences of research participants, the self report of the experiences by those people is arguably valid because they are the ones who are

interpreting the experience. Accordingly, in qualitative research such as case studies, it is the obligation of the researcher to present the perspectives and experiences of the participants as they are reported (Merriam, 1988). In recognition of that design weakness, this particular study has used self report instruments and has documented the perspectives of the respondents rather than engage in an interpretation of those experiences.

With regard to the question of external validity, case study research represents an instance or snapshot of a phenomenon and consequently the findings do not generalize beyond the study itself. Specifically, the data generated by the subjects in case study research are not representative of the responses that are reflective of a larger population and thus inferences about that population cannot be drawn. Additionally, the multiple data points, i.e. the responses to the questionnaires, are dependent scores in that they are generated by the same subject. This further reduces the projection of the conclusions to an external group (T. Jones, personal communication, March 25, 1998). In this study, there are no attempts to generalize the findings. The findings of this study only reflect the experiences of one group of subjects at a particular point in time.

Reliability refers to the issue of whether research findings can be replicated (Merriam, 1988). Merriam points out that this presents a problem in social science research because human behaviour is dynamic and thus it is virtually impossible to replicate. She states that there is "...no benchmark by which one can take repeated measures and establish reliability..." (p.170). Thus, she further argues, the best method of handling the impossibility of replicating the study is to provide sufficient details of the study so that the reader can conclude that the results are consistent with the process.

To address that issue in this study, details concerning the background to the study, the basis for the subject selection, the basis for the instrument development and selection, the process, and the findings have been provided to enable readers to formulate their own opinions about reliability.

Beyond the limitations imposed by the design, this study is further bound by circumstance related constraints. First, this study is restricted by a limited sample in scope and in size. All the subjects were drawn from a student population in one graduate program. The sampling technique was not random, but rather purposive.

Caution is also taken in regard to the accuracy of the data collected. Due to the potential that the respondents may view communication apprehension as an undesirable label, this study is further limited by the possibility that the respondents inaccurately report their fear of communicating with others. However, it is assumed that responses to both questionnaires are truthful and accurate.

As with any survey, the characteristics of the subjects who choose to respond, versus those who do not, has the potential to bias the results. It is noted in this study that the proportion of non-respondents who met the lurker definition is almost double that of those who did respond. It may be that those learners who are most likely to participate in the conferences were also the ones who are most likely to participate in the study. This raises the concern of response bias. Additionally, the response rate to the survey questionnaires was weak at approximately 41%.

Accordingly, any attempts to draw conclusions without giving weight to the stated limitations or beyond the scope and context of this study would be misguided. It is

unequivocal that the findings and conclusions only pertain to this study and that they must be viewed contextually.

Notwithstanding those caveats, the findings are interesting and informative. It must be restated that the amount of published information concerning the lurking phenomenon is small. The examination of a single case, in all probability, has value in revealing preliminary data about an emerging occurrence. As all journeys begin with a first step, the growth of knowledge arguably begins with introductory experiences. This study, being an initial report of one group's experiences with computer conferencing, can contribute to the development of a better understanding of the wider experience of computer conferencing.

Research Question #1

To what do students attribute their levels of participation in computer conferencing?

The review of the literature provided two hypotheses for the varying levels in computer conference participation; lack of nonverbal expressions and loss of anonymity. First, in regard to the role that nonverbal cues play, the argument has been made that the text-only nature of computer conferencing gives rise to concern about communicating. As Davie (1989) and Feenberg (1989) have suggested the lack of nonverbal or phatic expressions impairs the communication process by limiting essential elements. Without those elements, it becomes difficult to fully interpret an incoming message. The gauging of how one's message has been received may be

very dependent upon those missing elements. In their absence, one may be reluctant to participate.

Two questionnaire items have a relevance to this issue. One item asked the respondents to identify the degree of concern that lack of nonverbal cues created for them. The second item asked the respondents to identify the extent that the absence of responses from others discouraged them from contributing. It would appear from the data that neither issues were a significant concern. As Table 8 shows, more than 70% of the respondents felt that the absence of nonverbal cues were no more than a slight concern. Table 14 shows that more than 70% of the respondents felt that the absence of response from others was not a major influence upon their contribution rate.

Second, in regard to the loss of anonymity, several authors argued that the act of placing a message on a computer conference is held to a different and higher standard of quality than the spoken word. As Davie (1989) states, it is seen as akin to an act of publishing rather than speaking. Arguably then, the conference message demands greater attention to construction and detail.

Two questionnaire items have relevance to this issue. One item asked about the respondents comfort level in placing a message in public forum; the other asked how important it was to the respondent that their messages be grammatically correct or well written. Table 5 shows that approximately 60% of the respondents claimed that they were comfortable. The remaining 40% claimed that they were no more than somewhat comfortable. Interestingly, the data in Table 6 show that a large proportion of the respondents felt that it was important to have entries that were well-written. This finding

is consistent with the argument that a higher standard is expected for written communication.

There is however, another possible explanation for the perceived need to submit well-written messages. As indicated earlier, marks were awarded for participation in most of the courses. The awarding of marks in education traditionally requires that there must be a measure of quality before marks are to be granted. In this case, the respondents may have felt that in order to earn the marks, their contributions needed to be well-written.

Perhaps in some relation to the perceived higher standard for the written word, a significant number of respondents indicated that they composed their messages in advance of logging on, as shown in Table 7. It may be that, to contribute a well written entry, the respondents wrote and refined their messages off-line when they had more time. Alternately, it also may be that there was a cost saving by having the message ready before accumulating on-line connection charges.

Research Question #2

Is there a systematic relationship between oral communication apprehension and levels of computer conference participation?

The scores of the lurkers on the PRCA-24 were tested for correlation, with both the number of messages and the number of words in those messages, using the Pearson Product Moment Correlation Coefficient. The testing revealed no significant correlation at a 95% confidence level.

There are several comments to be made concerning this finding. As indicated earlier, this study had a response bias tilted toward non-lurkers. Many of those who were minimal participants in the computer conferences were also the ones who did not respond to the questionnaires. Thus, the absence of a statistically significant correlation may reflect that response bias.

Additionally, other uncontrolled variables may have influenced participation rates. First, the conferences had varying levels of participation marks awarded. The potential to earn marks may have motivated some to participate who otherwise would not have done so. Secondly, the instructional style of the moderators and the personalities of the participants may have been influential. For example, the nature of the moderators' messages and discussion questions may have been, more or less, provocative of discussion. Further, the nature of the participants personalities may have been conveyed in their messages. It cannot be said with certainty that group personality factors such as congeniality and affability did not weigh upon the overall participation rates. For example, it could be argued that a cordial group communicates their congeniality through their manner of written discussion and thereby invites an otherwise hesitant person to participate. The converse could also be a possibility where an unfriendly group stifles contributions. Lastly, many of the participants in the study come from a background in some aspect of education. In many instances of educational activity, it is customary for the instructor to speak in front of groups of people in a public forum. A repertoire of such experiences in the participants in this study may have desensitized them to communication apprehension and consequently biased the

results from the PRCA-24 testing. The study's findings might have been very different had it been possible to control or eliminate these variables in an experimental study.

Research Question #3

Is there a significant difference between responses of the lurker and the non-lurker to the PRCA-24 and the computer conference participation questionnaires?

The chi-square analysis of the responses of the lurkers and the non-lurkers to the conference participation questionnaire were not significantly different with the exception of three items.

The analysis indicated a significant difference in the self-rated levels of participation. A larger proportion of non-lurkers rated themselves higher in level of participation whereas the lurkers rated themselves lower. It appears that each group recognized their own level of activity realistically.

In addition, a higher percentage of the lurkers indicated that job related time constraints and prior statement of their views influenced their participation to a considerable degree. That difference may account for the lower participation rates of the lurkers. However, it must be kept in mind that likert-type questionnaire choices are not quantitative values and are therefore subject to different individual interpretations. The difference between the responses of the two groups has the potential to be a function of different interpretations of the response choice terminology.

The chi-square analysis of the responses to all of the PRCA-24 test items were not significantly different between the lurkers and non-lurkers. This suggests that the feelings and perspectives of the lurker regarding public communication are not different than those of the non-lurkers. Therefore any differences in the participation levels between the lurkers and the non-lurkers would not be attributable to communication apprehension as measured by the PRCA-24.

Implications and Suggestions for Further Study

Distance education practice is an evolving and expanding aspect of education. The coincident development and application of computer based technologies in the practice of distance education ushers in a new dimension for distance educators. With the expectation that developments in computer technology will continue and that distance education programs will avail themselves of the technology, new understandings concerning the relationship between the two are important.

This study documents the experiences of learners involved in computer conference activity. As principals in the experience they have shared their perspectives and as such their views can be instructive to program administrators, course developers and computer conference moderators who plan to use computer conferencing as an educational tool.

This study is preliminary in the search for information about participation factors in computer conferencing. The conclusions that can be drawn from this study alone are limited. Accordingly, subsequent studies that investigate these same issues from a larger population would be useful. Additionally, experimental studies, which are better

able to control potentially confounding variables, might provide more precise answers to the questions posed in this study.

The subject of this study is a relatively uninvestigated matter and thus offers many possibilities for examination, including studies that focus upon the:

1. impact of required participation in graduate level computer conferences;

2. value of participation marks in graduate level computer conferences;

3. role of the moderator in learner participation;

4. impact of non-participation in computer conferences upon learning outcomes;

5. reasons for discomfort in computer conference participation; and,

6. reasons for the importance of well written conference entries.

This list of suggestions is, by no means, complete. There are many other potential questions of interest for the curious investigator.

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APPENDIX A

COMPUTER CONFERENCE PARTICIPATION QUESTIONNAIRE

Directions: Please select one of the responses that best estimates your experience or feelings by placing an "X" in the space provided. When completed, please return to the sender by e-mail.

1. Was the conference in MDDE 601/602/603 your first experience in computer conferencing?

       _____ Yes   _____ No

If not..., please describe your previous experience.

2. How would you rate your own level of participation in the conferences for this course?

      _____ very low

      _____ below average

      _____ average

      _____ above average

      _____ very high

3. How often did you read the conference messages submitted by others?

      _____ less often than weekly

_____ weekly

_____ every couple of days

_____ daily

_____ more than once daily

4. How often did you read the conference messages from others without responding?

_____ very rarely

_____ rarely

_____ occasionally

_____ often

_____ very often

5. How comfortable were you placing a written message on the conference that would

be read by others?

      _____ very uncomfortable

      _____ uncomfortable

      _____ somewhat comfortable

      _____ comfortable

      _____ very comfortable

6. How important was it to you that your conference postings were grammatically

correct or well written?

      _____ unimportant

      _____ not very important

      _____ somewhat important

      _____ very important

      _____ extremely important

7. To what degree were the absences of nonverbal communication cues in these text-based conferences a concern for you?

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

8. How often did you compose your messages in advance of logging-on to the conference?

      _____ very rarely

      _____ rarely

      _____ occasionally

      _____ often

      _____ most of the time

Please indicate the extent to which the following factors influenced how often you made contributions to the course conferences. Indicate your choice by placing an "X" in the space provided.

COMMUNICATION TECHNOLOGY FACTORS

9. Financial costs of connecting to the internet.

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

10. Unreliable communications access (e.g., problems with hardware, software, Internet Service Provider)

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

11. Other technological problems. Please describe

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

PERSONAL OR LIFE CIRCUMSTANCES FACTORS

12. Time limitation because of job related commitments

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

13. Time limitation because of family or personal commitments

       _____ not at all

       _____ slightly

       _____ moderately

       _____ considerably

       _____ very much

14. Illness (personal or family)

       _____ not at all

       _____ slightly

       _____ moderately

       _____ considerably

       _____ very much

15. Other personal or life circumstances factors. Please describe.

       _____ not at all

       _____ slightly

       _____ moderately

       _____ considerably

       _____ very much

COURSE RELATED FACTORS

16. The specific issue or topic under discussion didn't seem all that relevant to me.

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

17. Other conference contributions did not prompt or stimulate me to respond.

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

18. Someone else seemed to have already stated my viewpoint.

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

19. The absence of response from others to my previous entries discouraged me from making further entries.

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

20. I felt that I was not part of the discussion because certain individuals dominated the conference.

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

21. Other course related factors. Please describe.

      _____ not at all

      _____ slightly

      _____ moderately

      _____ considerably

      _____ very much

PERCEIVED COMPETENCE

22. I felt that I did not know enough about the topic to comment.

 _____ not at all

 _____ slightly

 _____ moderately

 _____ considerably

 _____ very much

23. I felt that my written communication skills were inadequate.

 _____ not at all

 _____ slightly

 _____ moderately

 _____ considerably

 _____ very much

24. I felt that my skill in using the keyboard was inadequate.

 _____ not at all

 _____ slightly

 _____ moderately

 _____ considerably

 _____ very much

25. I felt inexperienced with computers and the skills required for posting a message.

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

26. I felt intimidated by others who seemed to be very knowledgeable or articulate.

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

27. Other personal competence factors. Please describe

_____ not at all

_____ slightly

_____ moderately

_____ considerably

_____ very much

GENERAL ISSUES

28. Overall, how would you rate your level of satisfaction with the use of computer conferencing in this course?

       _____ very low

       _____ low

       _____ moderate

       _____ high

       _____ very high

29. How important to your learning was the computer conferencing element in this course?

       _____ not at all important

       _____ not very important

       _____ somewhat important

       _____ very important

       _____ extremely important

30. For you personally, what was (were) the MOST IMPORTANT factor(s) that influenced whether you DID or DID NOT make entries into the computer conferences in this course? Please describe.

31. Do you have any additional comments about your experiences with computer conferencing in this or other courses? Please describe.

Thank you very much for your assistance in this research. If you would like to receive additional information or notification when the project is completed and a report is available, please indicate by placing an "X" in the place provided.

_____ Yes, I would like to receive notification when there is a report available from this research.

APPENDIX B

PERSONAL REPORT OF COMMUNICATION APPREHENSION (PRCA-24)

DIRECTIONS: This instrument is composed of 24 statements concerning your feelings about communication with other people. Please indicate in the space provided the degree to which each statement applies to you by marking whether you (1) Strongly Agree, (2) Agree, (3) Are Undecided, (4) Disagree, or (5) Strongly Disagree with each statement, There are no right or wrong answers. Many of the statements are similar to other statements. Do not be concerned about this. Work quickly, just record your first impression.

_____ 1. I dislike participating in group discussions.

_____ 2. Generally, I am comfortable while participating in a group discussion.

_____ 3. I am tense and nervous while participating in group discussions.

_____ 4. I like to get involved in group discussions.

_____ 5. Engaging in a group discussion with new people makes me tense and nervous.

_____ 6. I am calm and relaxed while participating in group discussions.

_____ 7. Generally, I am nervous when I have to participate in a meeting.

_____ 8. Usually I am calm and relaxed while participating in meetings.

_____ 9. I am very calm and relaxed when I am called upon to express an opinion at a meeting.

_____ 10. I am afraid to express myself at meetings.

_____ 11. Communicating at meetings usually makes me uncomfortable.

_____ 12. I am very relaxed when answering questions at a meeting.

_____ 13. While participating in a conversation with a new acquaintance, I feel very nervous.

_____ 14. I have no fear of speaking up in conversations.

_____ 15. Ordinarily I am very tense and nervous in conversations.

_____ 16. Ordinarily I am very calm and relaxed in conversations.

_____ 17. While conversing with a new acquaintance, I feel very relaxed.

_____ 18. I'm afraid to speak up in conversations.

_____ 19. I have no fear of giving a speech.

_____ 20. Certain parts of my body feel very tense and rigid while giving a speech.

_____ 21. I feel relaxed while giving a speech.

_____ 22. My thoughts become confused and jumbled when I am giving a speech.

_____ 23. I face the prospect of giving a speech with confidence.

_____ 24. While giving a speech I get so nervous, I forget facts I really know.

SCORING: To compute the subscores, add and subtract the items indicated.

DYAD: 18 - (13) + (14) - (15) + (16) + (17) - (18); _____

GROUP: 18 - (1) + (2) - (3) + (4) - (5) + (6);   _____

MEETING: 18 - (7) + (8) + (9) - (10) - (11) + (12);   _____

PUBLIC: 18 + (19) - (20) + (21) - (22) + (23) - (24); _____

OVERALL CA: Dyad + Group + Meeting + Public;   _____

APPENDIX C

LETTER OF PERMISSION TO COURSE INSTRUCTORS

Dear Sirs;

Hello, my name is Dan Taylor. I am a graduate student in the Master of Distance Education program at Athabasca University currently working on the thesis component of the degree requirements. My interest is in computer conferencing and distance education and I have chosen this area for my thesis.

Computer technology because of its ability to facilitate two-way communication is increasingly becoming a communication medium in distance education practice. The introduction of computers to distance education now enables the distance learner to engage in one-to-one and many-to-many interaction. However, as its application has expanded in distance education, it is becoming increasingly apparent that many of the learners do not participate in conferences in spite of the opportunity to do so.

My specific interest is in the reasons for non-participation in computer conferencing and the phenomenon of lurking. (lurking is defined as the act of reading other's computer conference submissions but rarely or never contributing)

To investigate this issue for my thesis, I need to acquire records of computer conference participation activity.

I am writing to you to ask your permission to examine the computer conference records for the Athabasca University course MDDE 601/602/603.

Please be assured that the anonymity and privacy of all participants will be protected. All information will be held in strict confidence and all identifying information will be removed from the records before I receive them. I wish to emphasize that my interest is primarily in the student participation patterns in the conference. The specific content of the conference messages will not be reported in any manner in the study. Access to the data will be restricted to myself, my thesis supervisor, and a member of AU staff. That staff member will be receiving the records, removing any identifying data, and then forwarding the raw data to myself.

Should you have any questions, please do not hesitate to contact me at the following e-mail address; dtaylor@a.stu.athabascau.ca

Thank you for your attention to this request.

Yours truly,

Dan Taylor

APPENDIX D

LETTER OF REQUEST TO PARTICIPANTS

Dear Student

Hello, my name is Dan Taylor. I am a graduate student in the Master of Distance Education program at Athabasca University. I am currently working on the thesis component of the degree requirements. My interest is in computer mediated communications (CMC) and distance education.

Computer technology, because of its ability to support two-way communication, is increasingly becoming a communication medium in distance education practice. One fundamental element of computer mediated communication is computer conferencing which enables many-to-many communication. My thesis topic is concerned with computer conference participation.

The use of computers to mediate communication in distance education is relatively new and thus there are many aspects of the computer conferencing experience that are either not known or poorly understood. Nonetheless, computer technology use in distance education is likely to increase. Therefore, we need to learn more about the computer conference experience. A better understanding of computer conferencing will benefit future students.

An integral element of the computer conference is the learner who is actually involved in it. Information from learners concerning the experience is crucial to

developing a knowledge base. As a participant in a course utilizing computer conferencing, I would like to ask you to share that experience with me.

I request that you complete and return two short questionnaires that are attached to this letter. These will likely take you approximately 15 minutes to complete. Data from these questionnaires will form the basis for my master's thesis.

You may be confident that your anonymity and privacy will be protected. Prior to my receipt, the completed questionnaires will be codified by a Centre for Distance Education staff member so that I will not know the names or identities of the participants. Access to all data will be restricted to that staff member, my thesis supervisor, and myself.

Participation in this study is voluntary. You are free to participate or not participate as you wish.

As a graduate student in distance education yourself, I am confident that increased knowledge about distance education is also important to you and it is in this context that I ask for your assistance.

As a respondent to this study, you are welcome to the results when it is completed. Thank you for your attention to this request.

Yours truly,

Dan Taylor