FACTORS AFFECTING SECONDARY SCHOOL STUDENTS' PARTICIPATION IN A DISTRIBUTED LEARNING COURSE

by

ANITA HOLLANDS

B.Sc., Simon Fraser University, 1994

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

Department of Curriculum Studies
Faculty of Education

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

June 2003

©Anita Hollands, 2003
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Curriculum Studies

The University of British Columbia
Vancouver, Canada

Date Aug 26, 2003
Abstract

The purpose of this case study was to examine motivational factors influencing the participation of secondary school students enrolled in a grade 11 on-line learning course. The study was guided by two main questions: How frequently students used computer-mediated communication to participate in course discussions and what factors were involved in motivating students to participate actively and thoughtfully in the discussions? The computer-mediated conferencing component of the course was an important factor for students in their learning and understanding of course material. Students found it easier to participate in an on-line learning course as opposed to a face-to-face course for several reasons: anonymity, time-independence, and that it aided in their understanding of the course material. Students found the aspect of time-independence made the course less stressful than their regular face-to-face course. However, time-independence made self-discipline a key factor that influenced students' participation. Students with poor self-discipline found it more difficult to participate than students with good self-discipline. There was very low teacher presence in the computer-mediated discussions, which may also have been a limiting factor in students' participation.
Table of Contents

Abstract ................................................................................................................................. ii

Table of Contents ................................................................................................................ iii

List of Tables ........................................................................................................................ v

List of Figures ........................................................................................................................ vi

Acknowledgements ............................................................................................................. vii

Chapter 1  Introduction ......................................................................................................... 1
  1.1 Distance Education ........................................................................................................ 1
  1.2 Rationale: How this study fits with existing research .................................................. 2
  1.3 Purpose of the Study ...................................................................................................... 4
  1.4 Overview of Methodology .......................................................................................... 5
  1.5 Overview of Study ........................................................................................................ 6

Chapter 2  Review of Literature .......................................................................................... 8
  2.1 Definitions .................................................................................................................... 8
  2.2 The History of Distance Education .............................................................................. 10
  2.3 Distance Education Today .......................................................................................... 17
  2.4 Problems with Distance Education ............................................................................ 20
  2.5 Advantages of On-line learning .................................................................................. 23
      2.5.1 Increased Opportunity for Students ...................................................................... 23
      2.5.2 Flexibility in Scheduling ..................................................................................... 24
      2.5.3 Human Interaction .............................................................................................. 25
      2.5.4 Assessing Student Participation ......................................................................... 26
      2.5.5 Equity Amongst Students .................................................................................. 27
      2.5.6 Delivery of Course Material .............................................................................. 28
  2.6 Computer-Mediated Conferencing ............................................................................. 30
      2.6.1 Teacher Interaction in Computer-Mediated Communication ................................. 33
  2.7 Attitudes of Learning in an On-Line Environment ...................................................... 34
  2.8 Summary ...................................................................................................................... 36

Chapter 3  Methodology ...................................................................................................... 38
  3.1 Context of the Study ..................................................................................................... 38
      3.1.1 The School District .............................................................................................. 38
      3.1.2 The On-line Learning Course and Course Objectives ........................................... 39
      3.1.3 Description of the On-Line Environment ............................................................. 40
  3.2 Description of the Study ............................................................................................. 44
      3.2.1 Design ................................................................................................................ 45
      3.2.2 Research Question ............................................................................................ 49
3.2.3 Research Approach ................................................................. 54
3.2.4 Researcher's Role ................................................................. 55
3.2.5 Participants ................................................................. 55
3.2.6 Student Consent, Instructor and Board Approval .............. 56
3.2.7 Data Collection and Analysis ............................................. 56
3.3 Questionnaire ................................................................. 57
3.4 Transcript Analysis ............................................................ 57
3.5 Interviews ................................................................. 59
3.6 Trustworthiness ............................................................... 61
  3.6.1 Credibility (Internal Validity) ............................................ 62
  3.6.2 Transferability (External Validity) ...................................... 62
  3.6.3 Dependability (Reliability) .............................................. 62
  3.6.4 Confirmability (Objectivity) .......................................... 63

Chapter 4 Results ........................................................................ 64
  4.1 Description of Data ............................................................. 64
  4.2 Frequency of Student Participation in the Course ................... 65
  4.3 Participants’ Dispositional and Characteristic Data .............. 69
    4.3.1 Age and Gender ....................................................... 69
    4.3.2 Participation in a Face-to-Face Course ......................... 70
    4.3.3 Computer Experience ............................................... 72
    4.3.4 Students’ Expectations of the Course ......................... 76
  4.4 Common Themes ............................................................... 78
    4.4.1 Technical Difficulties ............................................... 78
    4.4.2 General Attitude on On-line learning .......................... 81
    4.4.3 Computer-Mediated Conferencing ............................. 90
    4.4.4 Participation and Motivation .................................. 100
  4.5 Summary of Common Themes .......................................... 103

Chapter 5 Discussion .................................................................... 105
  5.1 Discussion of Student Dispositional and Characteristic Data .... 106
  5.2 Discussion of Students Experiences and Perceptions of the On-line learning Course ............................................ 110
  5.3 Conclusions .................................................................. 117
  5.4 Limitations of the Study .................................................. 120
  5.5 Implications for Further Practice .................................... 120
  5.6 Implications for Further Research .................................. 122

References ................................................................................. 124

Appendix A: Consent Form ..................................................... 129

Appendix B: Questionnaire ..................................................... 130
List of Tables
Table 1: Operational questions ................................................................. 52
Table 2: Summary of common themes ......................................................... 65
Table 3: Total number of postings per student .............................................. 66
Table 4: Age and gender ........................................................................... 69
Table 5: Students participation in a face-to-face course .................................. 70
Table 6: Importance for students seeing their teacher and classmates during the course. 72
Table 7: Students computer experience ....................................................... 73
Table 8: Students frequency of computer use by application type .................... 75
Table 9: Typing experience ....................................................................... 76
Table 10: Typing words per minute (WPM) .................................................. 76
Table 11: Hours per week studying on-line for this course ............................. 77
List of Figures
Figure 1: Image of the course interface using the First Class™ conferencing software... 41
Figure 2: Image of the conferences within the course............................................. 41
Figure 3: Image of the assignment conference within the course.......................... 42
Figure 4: Image of the Media Talk computer-mediated conference within the course.... 44
Figure 5: The average number of postings per month.............................................. 67
Figure 6: The average number of postings per week................................................. 68
Figure 7: Students’ participation in a face-to-face course compared with number and
average postings........................................................................................................ 71
Figure 8: Students’ computer experience compared with number and average postings. 74
Figure 9: Students’ expectations compared with the number and average postings ....... 77
Acknowledgements

I would like to acknowledge the contributions of the following people in making this thesis possible. I would like to thank Rene, my husband, Ashley and Rachael, my daughters, for their patience, support, love and endless encouragement. I would like to thank June, my mother for her endless support and Raymond, my father, for his inspiration.

I would like to thank Dr. Marv Westrom for his encouragement and much appreciated feedback. I would also like to thank Dr. Mark Bullen and Dr. Linda Peterat for their insightful feedback on the final document.

I would like to thank the students and course instructor in this study who allowed me to take part in their course and who shared their experiences with me.
Chapter 1 Introduction

1.1 Distance Education

In recent years there has been a rapid increase in distance education courses delivered via the Internet. This is in part due to the demand for flexible distance education opportunities as well as to take advantage of changing trends in education (Simonson, 1996). The use of the World Wide Web has become a dominant focus in distance education for both higher-level educational institutes as well as elementary and secondary level institutes (Hong, Lai & Holton, 2001). Educators from all levels of education, elementary to post-secondary, are increasingly exploring the opportunities and potential for change in this unique educational delivery system (Hong, Lai & Holton, 2001). With the emergence of virtual universities and private for-profit universities, there is greater competition to provide students with more flexible learning opportunities. This has put educational institutes under pressure to pursue new information technology as a mode of delivering distance education (Bates, 1995).

The Internet has the ability to serve large numbers of students in diverse geographical areas, and also has the potential to reduce educational costs (Goldberg, Salari & Swoboda, 1996). The Internet, with multimedia and hypertext capabilities, also has a greater potential for sharing information than other means of transmitting and receiving information. Using the World Wide Web enables students in smaller
communities, where schools are unable to afford programs of study necessary for all learners to achieve their full potential, to access a greater number and a more diverse set of courses.

The development of distance education courses delivered via the Internet has rapidly increased at the post-secondary level and with this growth a great deal of research has been conducted on students attending such courses. The use of the Internet for delivering distance education courses at the secondary school level has not seen as dramatic an increase and very few studies have focused on secondary school students. This study will examine an on-line learning course offered to students at the secondary school level and will focus on secondary school students.

In this chapter, the rationale, purpose, and methods used in this study are outlined and an overview of the study is included.

1.2 Rationale: How this study fits with existing research

Canada has a long established tradition in distance education arising from the need to provide greater access to educational opportunities for students geographically dispersed over large areas. The growth of the Internet and its hyper-media capabilities has provided a means of communicating and delivering distance education courses to students. The rapid growth of distributed learning courses has been predominantly at the post-secondary level, and until recently, interest in research on distributed learning has
also been predominantly at the post-secondary level. Much of the research on distributed learning, and in particular computer-mediated conferencing, has focussed on adult learners, mainly at the graduate and post-graduate levels (Garrison, 1997). There has been a recent trend toward the study of undergraduate students, but few studies have focussed on secondary school students. Further more, much of the research in distributed learning has focused on flexibility in education, increased educational opportunities, equal opportunities amongst students, communication and human interaction (computer-mediated communication), collaborative learning and other learning theories, student achievement and success, student participation, as well as attitudes of learning in an on-line environment (Bates, 1995; Garrison, 1997; Goldberg, 1996; Harasim, 1994; Porter, 1997).

As the emergence of virtual schools increases and more on-line learning courses are being offered at grades 1 to 12, there is growing interest in research at this level. Studies have shown the need for distance education at the secondary level, however few studies have focused on participation of secondary school students in on-line learning courses or on the factors that may motivate students to participate. An extensive review of the literature shows this research study is worth pursuing.
1.3 Purpose of the Study

The purpose of this study was to gain insights into the motivational factors influencing secondary school students to participate in an on-line learning course. This study used a grade 11 course offered to all grade 11 and 12 students attending any one of the ten secondary schools in the school district. The study gathered both quantitative and qualitative data from students in order to understand factors that might affect student participation in the course. The study used an initial questionnaire, student interviews, and transcript analysis data.

This study was undertaken to explore computer-mediated communication in secondary school on-line learning courses and to examine the motivational factors that may influence a student's participation in the course. Informative questions include:

1. What were the students' reasons for taking an on-line learning course?
2. What were the students' expectations for the course and did those expectations change during the course?
3. What technical barriers or difficulties did students face?
4. How frequently did students contribute to the computer-mediated conferences?
5. How did the frequency of the discussions change throughout the course?
6. How did the on-line learning environment provide a supportive environment for learning?
7. What were the students' perceptions of the factors that affected group discussions and participation?
8. What were the students' perceptions of the factors that increased or decreased their motivation to participate?
9. What were the students' perceptions of the positive and negative experiences associated with computer conferencing?
1.4 Overview of Methodology

Data was collected through initial questionnaires, transcript analysis data, and interviews with 20 secondary level students to ascertain their motivation to participate in an on-line learning course. After a preliminary literature review, two general questions emerged and became the focus for the study: how frequently students used computer-mediated communication; and what factors were involved in motivating students to participate actively and thoughtfully in the discussions? The two general questions were then refined into nine specific questions that guided the study.

A tentative plan for sampling, data collection, data analysis and establishing reliability was developed to guide and set parameters for the research. An on-line course was chosen for the study, Media and Culture 11. Questionnaires, transcript analysis data, and interviews were the method of data collection. Questionnaires were given to all 28 students enrolled in the course, of which 20 were completed and returned. Transcript data from students' computer-mediated conferences were collected for those students participating in the study. Interviews were of a semi-structured nature in which the researcher prepared questions as a guide to focus the conversation and generate discussion related to the research questions. Interviews were audio taped and transcribed verbatim.

Although the research questions guided the study, they were mainly open-ended and were subject to review throughout the course of the study. Many evaluators suggest
that the research questions should be tentative as studies often encounter unexpected changes. "Many evaluations are flawed by evaluators who relentlessly insist upon answering initially agreed-upon questions, regardless of intervening events, changes in the object of the evaluation, or new discoveries" (Worthen, Sanders & Fitzpatrick, 1997, p.264). Further, this study used qualitative methods, which should be open and flexible in design. "In planning a qualitative study the researcher cannot fully specify the design in advance. Because the study is taking place in a natural setting, and because the researcher believes that the participants' knowledge is of value, it is inappropriate to make all decisions about the study prior to its implementation" (Worthen et al., 1997, p.264).

1.5 Overview of Study

This study was conducted using a senior level secondary course on Media and Culture. This is an elective course, which is offered in both semesters from September to January and February to June each school year depending on enrolment. The course is designed to introduce learners to the media environment we live in. The course author recognizes the need for providing educational opportunities to a greater number of students. Offering the course through on-line learning takes advantage of non-conventional educational opportunities in order to offer the course to a wider variety of learners from every secondary school in the district. The researcher in this study is not a course instructor or involved in the course design or delivery.
This research used a case study approach to examine the use of computer-mediated communication as a motivational factor for student participation in a secondary school on-line learning course. The purpose of the case study approach is to interact with and observe the sample population in order to investigate the phenomenon or entity being investigated. The study took place in a naturalistic setting and qualitative data was gathered from semi-structured interviews, researcher observations, and transcripts of course discussions. This case study also examined some quantitative characteristics of computer-mediated communication, such as the frequency of participation, the number of messages posted by students, independent versus responsive messages, as well as temporal patterns in participation throughout the course. Student questionnaires were used to gather student characteristics data to examine students’ computer experience prior to enrolling in the course. Therefore, both quantitative and qualitative methods were used to gather data for this study.

This study is presented in five chapters. Chapter one introduces and briefly outlines the study in terms of its rationale, purpose and methodology. Chapter two reviews the relevant literature on on-line learning and computer-mediated communication that informed this study. Chapter three describes the methodology of the study, including the context of the study and a description of the study. In chapter four, the results and data collected in the study are presented. Finally, chapter five discusses relevant issues that arose from the study together with conclusions, limitations of the study, implications for practice and implications for further research.
Chapter 2  Review of Literature

2.1 Definitions

As the terms distance education, distributed learning, on-line learning, and computer-mediated communication are critical to this study these terms will be defined. For the purposes of this study the following definitions are used:

Computer-Mediated Communication

Computer-mediated communication is commonly defined as "a stored transcript of a discussion by a group in easily accessible format. Each conference has access privileges set by the person who opens (creates) the conference, specifying, for example, who can be a member of the conference. Each conference provides a membership list that allows participants to tell who has read what material, so one can know where everyone is in the discussion" (Harasim, Hiltz, Teles & Turoff, 1995, p. 30).

Distance Education

Distance education can be defined as “the way by which learners can study in a flexible manner, by studying at a distance from the originator of the teaching material; students can study at their own time, at the place of their choice, and without face-to-face contact with the teacher” (Bates, 1995, p. 27).
Distributed Learning

Distributed learning is an environment that has "a learner-centred approach to education, which integrates a number of technologies to enable opportunities for activities and interacting in both asynchronous and real-time modes. The model is based on blending a choice of appropriate technologies with aspects of campus-based delivery, open learning systems and distance education. The approach gives instructors the flexibility to customize learning environments to meet the needs of diverse student populations, while providing both high quality and cost-effective learning" (Bates, 1995, p. 6).

On-Line Learning

On-line learning is commonly defined as “the delivery of instruction via the Internet and can include a range of options, such as email correspondence, Web-enhanced instruction, Web-managed instruction, and Web-delivered instruction” (Barron, 1998, p.356).

The distinction between distance, distributed, and on-line learning is often blurred as the definitions somewhat overlap and are not mutually exclusive. Distance learning refers to all learning that takes place remote from the point of instruction; this encompasses all types of learning including on-line and distributed learning. Distributed learning includes both face-to-face and distance learning. However it also encompasses various forms of technology and multimedia, including CD-Rom, tele-learning, Internet,
and video-conferencing. On-line learning generally refers to learning delivered using computer networks, private or public, where instruction is displayed using a web browser. On-line learning is often a large part of distributed learning.

2.2 The History of Distance Education

Distance education has been in practice, worldwide, dating back nearly two hundred years, to the mid 1800's. Before 1900, educational opportunities were rare for the average person. Traditional schools had not been established in many remote areas and post-secondary schools were too expensive for the average person.

The introduction of correspondence education was seen as a solution to this problem. It provided educational opportunities for students living in remote areas where schools had not been established as well as for those in a lower socio-economic class who could not attend an educational institution or hire a private tutor. The introduction of the postal service made it possible for print-based teaching materials to be sent to the student in order for the student to study. During this time, however, correspondence education was seen as inferior, undemocratic and largely as a business opportunity (Nasseh, 1999). However, the need to provide equal access to educational opportunities was recognized as an ideal part of democratic society and therefore continued to grow.

Sir Isaac Pitman offered the first correspondence course in 1840. Pitman saw the need for and potential of correspondence courses and started his business venture offering
a course in shorthand. Students would copy passages of text in shorthand and mail them to Pitman for grading.

Soon after, in 1870, a home study program was established at Cambridge University in England. This greatly reduced the cost of education, as residency was no longer required and students could live and study at home. This opened the doors for many students who otherwise would not have been able to afford this education.

In the late 1800's, Anna Ticknor formed a correspondence school based in Boston in the United States. The purpose of the school was to provide equal access to educational opportunities for women from all socio-economic classes. Courses were completely text based so that printed materials could be sent via regular mail delivery. For over 24 years the school provided correspondence study to 10,000 students, and was one of the largest correspondence schools of the time. However, since it was formed as a society and not recognized as an accredited school, academic degrees could not be granted and courses could not be used for credit at other educational institutions.

In 1883, a correspondence division was established at Cornell University, but it was not successful. Soon after, Chautauqua College opened, and offered credit courses by correspondence. The college was recognized by the State of New York to grant academic degrees to students who successfully completed their program of study by correspondence. This was one of the first degree-granting distance educational institutes in the United States and attracted interest in research regarding the outcomes and effectiveness of distance education (Nasseh, 1999).
Given the success of Chautauqua College, several commercial correspondence educational institutes opened and in addition many public university correspondence services were established. These institutes continued to use print-based media and relied on the national postal service as the only means of communication between the teacher and student. Although this opened up educational opportunities to students in remote areas as well as students from different socio-economic backgrounds, these students were not highly successful, frequently dropped out, and often had low examination scores (Bates, 1995).

In the early 1900's, technology was introduced into education through the use of instructional films. Although initially used in classrooms, instructional films started being used in distance education programs by the early 1920's. During this time, new educational curricula were being designed and developed. Of particular interest to researchers of distance education was the Individualized Instruction Plans that allowed students to study the curriculum through self-instructional lessons (Shrock, 1995). This new curriculum was important to distance education as it proposed separate teaching modules in which students could learn at their own pace, any time and anywhere.

The idea of individualized instruction came from Franklin Bobbit, who first suggested that schools should provide experiences specifically related to skills needed to be successful in the current society. This was one of the first objective based learning theories, in which desirable outcomes were specified first and then planned instructional experiences were created to meet those outcomes (Shrock, 1995).
Bobbit's ideas stimulated further research and the development of new curricula based on individualized instruction. Both instructional films and print based material could now be used to allow students to follow self-paced, self-instructional, and self-corrective curricula (Shrock, 1995). Although instructional films were expensive for individual students enrolled in distance education courses, they were relatively less expensive for extension programs and could be used for the instruction of thousands of students.

In 1919, the Northern British Columbia Distance Education School was established to provide educational opportunities (elementary and secondary) to students in remote areas of British Columbia where schools had not been established. However, the success rate of students initially was not high. This was in part due to the turn-around time between sending and receiving assignments. There was no direct postal route to most rural areas and it took considerable time to mail papers to and from these areas. This was discouraging to students, especially elementary school aged children who were eager to receive feedback from the teacher. The success rate for these students was noticeably higher when a more direct postal route was established and the turn-around time was significantly decreased.

In 1923 in Canada, the Alberta Distance Learning Centre was established to deliver distance education to both adults and school-aged children. Students living in remote areas were able to participate in primary, secondary, and post-secondary education through correspondence. This allowed for equal access to educational
opportunities for all students, regardless of age, gender, race, socio-economic situation, or demographics.

For a short period in the 1930's experiments using radio as a means of curriculum delivery were conducted. However, radio was seen as an inferior method of delivery as it was often difficult for students to receive the transmitted message at the specified times. Students could no longer study anywhere at any time and the radio failed as an instructional delivery method.

In the 1940's, during World War II, instructional films and self-training materials were used extensively to train thousands of military personnel quickly and inexpensively (Shrock, 1995). Although audio recordings were also used at this time, they were seen as inferior compared to the audio-visual capabilities of film. This form of instructional technology quickly became the centre of research and development in the area of instructional design and delivery. (Shrock, 1995).

In the late 1940's and early 1950's, television grew in popularity as a means of course delivery and instructional design. Research in this area showed that student achievement from instructional television was as successful as regular classroom instruction. Studies concluded that technology could not be considered an instructional method, but rather, a tool for transmitting instruction and that this means of transmitting instruction produced no differences in achievement levels of students (Wood & Wylie, 1977). This research validated the use of instructional technology in education, especially
in distance education, and called for more research in the area of individualized instruction approaches.

In the 1960's several universities began offering instructional television for both face-to-face classes as well as distance education classes. Television networks were established and closed circuit systems were created for the purpose of individualized learning instruction. However, this was still relatively expensive, and research grants to design and develop instructional television were diminishing in the United States. In 1969, the British Open University was established to provide distance education through print, television broadcasting, and face-to-face instruction. In the early 1970's the development of microwave technology and low-cost equipment allowed more institutes to set up Instructional Television Fixed Services (ITFS) and broadcast instructional television shows to more students (Bates, 1995).

In 1978, in British Columbia, the Open Learning Institute was established to provide greater access to higher education to more rural areas in the province. In 1980, the provincial government established the Knowledge Network to provide instructional education through television service and in 1988 these two institutes merged to form the Open Learning Agency. The goal of the agency was to provide equal access to education to all learners through alternative delivery methods for instructional education.

By the 1980's lower-cost equipment and easier access to transmission networks encouraged more institutes to offer instructional television and allowed greater accessibility and more selection for students. By the mid-1980's satellite and cable
channels, videocassettes, video discs, and video conferencing became popular tools for instructional design for learning by distance education (Bates, 1995).

In 1989, the Northern Nishnawbe Education Council established elementary, secondary and post-secondary distance education programs for first nations students living on reserves or in remote areas of Ontario. This program, called the Wahsa Project, was developed to allow students to take courses through distance education, by print, radio and television, thereby providing students with equal educational opportunities while not having to leave the reserve or travel to more urban areas to attend school.

Between 1984 and 1990, the BC provincial government divided the province into nine regional distance educational schools with the mandate to work together to deliver the Ministry of Education approved curriculum. In 1995, the Open Learning Agency worked closely with the nine regional schools to develop, test and implement an electronically delivered distance education program. The result of several pilot projects culminated in the creation of the CoNNect program in 2001. This program was developed to provide a province-wide model of delivering an electronically enhanced program to students throughout BC. In 2003, the Open Learning Agency was changed to Open School BC with the mandate to provide products, services and support to teachers and students in distance education.

During the late 1990's and early 2000's advances in technology, especially the onset of computer technology and computer networks, allowed for a faster and more efficient mode of delivering course material and an electronic means of communication
between the teacher and students. Due to these advances in technology, distance education has grown significantly over the past decade. The growth and evolution of distance education has fostered a great deal of interest and research in the design and development of instructional learning. Much of this research has focused on the use of new technologies, distance education's effectiveness and student achievement (Bates, 1995).

2.3 Distance Education Today

In Canada, there are several school-aged and postsecondary institutions which are dedicated to distance education, for example: Athabasca University in Alberta, the British Columbia Connect program, the Canadian Virtual University, and the Télé-Université, part of the Université de Québec network. In addition, most universities and colleges are offering an increasing number of courses by distance education and some offer complete diploma and degree programs through distance education. For example, the University of British Columbia offers the degree of Master of Educational Technology, completely on-line (UBC, 2003).

Recently the Canadian Virtual University was established to offer complete university degrees through distance education (specifically through on-line education). This university was developed in partnership with the following Canadian universities: Athabasca University, Brandon University, British Columbia Open University,
Laurentian University, Royal Roads University, Télé-Université du Québec, The University of Manitoba, Université de Moncton, University College of Cape Breton, and the University of Victoria.

According to a study conducted by the National Centre for Educational Statistics (1998), in 1995, just over 30% of higher education institutions in the U.S. offered distance education courses. The percentage increased to 44 percent in 1998, and is estimated to be over 50% of educational institutes today.

Statistics on the number of course enrolments or students attending distance educational institutes vary considerably worldwide. The statistics in the following paragraphs come from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Centre for Distance Learning (ICDL). In 1995, the ICDL database listed over 30,000 courses offered by 837 institutions in 103 countries around the world.

The Bangladesh Open University was established in 1992 and enrolled over 21,000 students in degree and diploma programs in 1995. Soon after the Open University was founded, the Bangladesh Open School was established in order to increase access to basic secondary school education to students in rural areas. In 1995 there were 14,247 students enrolled in the secondary school completion program (Creed & Perraton, 2001).

Brazil has the largest distance education program worldwide for elementary and secondary students. In 1992, there were over 35 million people in Brazil who did not have basic education. The Telecurso 2000 distance education program was established in
response to the growing number of students dropping out of elementary and secondary school. In 1994, there were 150,000 enrolments in the Telecurso 2000 program. In 1999, the number of enrolments increased to over 200,000 students (Creed & Perraton, 2001).

In China, correspondence education started in the 1950’s and became widespread throughout the country by the 1980’s. The Central Radio and Television University of China was established to provide educational opportunities to students in rural areas of China and by 1996 had over 2.3 million graduates. In 1996, 1.4 million, or nearly 25%, of students in higher education in China were studying through distance education (Creed & Perraton, 2001).

In India, in 1989, the National Open School was established to increase educational opportunities to students and to provide an alternative education to those otherwise unable to obtain pre-tertiary education. This included girls, those from lower socio-economic class, and those living in rural or remote areas. In 1998, there were 130,000 students enrolled in secondary school courses (Creed & Perraton, 2001).

In Mexico, in the early 1960’s, the Telesecundaria program was established to provide direct television teaching to rural communities in order to increase the opportunity for pre-tertiary education to all students in the country. In 1993, the program had over 550,000 students enrolled and in 1999 there were over 800,000 students enrolled (Creed & Perraton, 2001).

Distance education and the role of technology vary considerably between countries. However, what remains consistent is that countries are increasingly offering
more distance education in an attempt to provide greater educational opportunities to students in primary, secondary and post-secondary levels (Creed & Perraton, 2001).

2.4 Problems with Distance Education

Technological advances and the implementation of technology in distance education have not come without scrutiny. Bozeman (1999) states that many critics "doubt the pedagogical superiority of technology-mediated mode of instructional delivery over face-to-face mode (p.4)".

Many educators (Bowers, 2000; Bozeman, 1999; Postman, 1992) claim that institutes are using new technology to simply keep up with changing trends rather than because of their educational merits. Postman (1992) claims that educational institutes have the perception that technology is here and it must be used more and more in teaching. However, given that conception "we will become the kind of people technology requires us to be" (Postman, 1992, p.39). Postman (1992) argues that educators need to have a critical thinking approach to new learning tools such as computers. Educators may recognize the positive potential of technology, but they should not simply accept it because it is here.

However, technology has greatly improved communication issues and course delivery issues in distance education (Bates, 1995; Bates, 2000; Harasim, 1994). Technology has also allowed more efficient modes of delivering course material,
immediate access to libraries, greater accessibility to different courses, and more flexibility in time (Bates, 2000). Technology has allowed more direct communication including real-time interaction enabling students from around the globe to communicate with each other. Technology has allowed students, who were previously unable to enrol in courses due to time, economic situation, or physical constraints, the ability to engage in educational courses from home.

Many educators (Bowers, 2000; Bozeman, 1999; Wallace, 1999) feel that the use of technology and the Internet for instructional education does not provide socialization and human interaction and thereby diminishes culture. Bowers (2000) argues that the domination of western culture by technology causes a standardisation of language as well as social and cultural issues. Technology that reinforces the attitudes and cultures of Western society marginalizes local cultures. Further, Bowers (2000) claims that computers disengage users from their local context and create individualism and anthropocentrism. The use of computers in education is the cause of the failings of the current educational system. Bowers (2000) describes this failing as having a lack of local culture, decontextualized environments, and too much individual autonomy without any moral responsibility.

According to Wallace (1999) the Internet does not provide socialization and human interaction. Further, Wallace (1999) claims that the more time spent on-line causes depression, loneliness and a deterioration of human relationships. Wallace’s (1999) opinion is that the Internet is void of human relations and human interactions that
foster cooperation and a sense of social responsibility. Oppenheimer (1997) claims that dialogue can occur between students and teachers in an on-line environment, however, “the dialogue lacks the unpredictability and richness that occurs in face-to-face discussions” (Oppenheimer, 1997, p.2). Without these social interactions, learners are left with a dehumanized educational culture (Postman, 1992). Further, Rogers and Laws (1997), claim that it is socialization and human interaction that leads to a social construction of knowledge, and that this is of fundamental importance to learning. Postman (1992) agrees, but stresses that social interactions can only be achieved in a face-to-face environment.

In contrast, Saba (1999) argues that it is not the Internet or distance learning that creates an environment void of human interaction; it is the instructor and the establishment of an open and constant dialogue, which creates the extent to which the environment has a human touch. Being face-to-face, or in the same physical space with another human being does not guarantee genuine communication, or authentic interaction. "The instructor and a group of learners can be distant if dialogue is not present, even if they are under the same roof. Likewise, in the presence of dialogue, the instructor and learners can be close together, even if they are physically miles apart" (Saba, 1999, p.2). Environments rich in dialogue, debate, and open communication create a "community of learners" which is important in the construction of knowledge regardless of physical space (Rogers & Laws, 1997). Rourke and Anderson (2002) found that on-line communication could be as rich as face-to-face communication as it allows
students to reflect on other students' contributions and to articulate well thought out responses. They also found that teacher presence is essential to on-line communication that is rich in dialogue and debate of issues.

2.5 Advantages of On-line learning

Over the past several years, educators have debated the relative merits of on-line education (Goldberg, Salari & Swoboda, 1996). Educators agree that on-line courses offer many advantages over those that are lecture-based, including increased opportunity for students and flexibility in scheduling and time (Clark & Pitt, 1997; Farrell, 1998; Goldberg, Salari & Swoboda, 1996; Rogers & Laws, 1997). However, some educators argue that on-line education lacks human interaction, makes it difficult for teachers to assess student participation and causes an inequity amongst students who cannot afford the required technology (Bozeman, 1999; Postman, 1992). Goldberg (1996) suggests that these losses can easily be overcome by creating an effective on-line course, which addresses the concerns of the teacher and student.

2.5.1 Increased Opportunity for Students

As Farrell (1998) noted, one of the advantages of educational institutes offering on-line courses is that they allow students the opportunity to participate in courses or
programs that would not otherwise be available to them. Minoli (1996) states the major obstacles facing adults who want to participate in higher education are:

- inconvenient class hours
- home and job responsibilities
- business travel
- campus inaccessibility
- child or elderly care
- physical handicaps
- commuting costs.

Students living in remote or rural regions where commuting to traditional learning institutions are difficult, are now able to participate and complete many programs from their own home or local school. Students with disabilities who are not physically able to attend and complete traditional courses are now able to easily participate in courses from their own home (Rogers & Laws, 1997). Students who work full time or choose to stay at home to care for children are often not able to take time off to attend classes during the day. The Internet provides an accessible and affordable means for those students to continue with higher education (Minoli, 1996).

### 2.5.2 Flexibility in Scheduling

On-line education also allows flexibility in scheduling for students and teachers. As Minoli (1996) suggests, students with full time jobs or children are offered the opportunity to take courses and incorporate the course work into their daily schedules when time permits. According to Rogers & Laws (1997), a more flexible schedule helps students feel less pressured and, therefore, able to focus more on course work. Farrell
(1998) found that increased flexibility offered through on-line courses resulted in increased achievement and completion rates.

Similarly for teachers, on-line education allows teachers and educational institutes the flexibility to offer courses during a semester without the worry of conflicting course schedules (Rogers & Laws, 1997). Goldberg, Salari & Swoboda (1996) showed that on-line courses offer teachers the ability to serve a large number of students with relatively little cost.

2.5.3 Human Interaction

Offering courses through the Internet does not come without criticism by educators. One of the largest concerns by educators surrounding distance education over the Internet is the lack of socialization and human interactions (Oppenheimer, 1997). According to Bozeman (1999), many critics "doubt the pedagogical superiority of technology-mediated mode of instructional delivery over face-to-face mode" (p. 4). Postman (1992) agrees that face-to-face interactions between students and teachers tend to foster group learning, cooperation and a sense of social responsibility and without the social interactions would result in a dehumanized educational culture.

Porter (1997) argues that conferencing applications used over the Internet or other local networks offer on-line (real-time) conferencing, which gives students and teachers the opportunity to dialogue in real-time about specific topics. Additional audio and video hardware and software lend opportunity for audio and video conferencing within their own home. This simulates face-to-face discussions while allowing all the advantages of
on-line courses. Discussion groups such as listserv or newsgroups allow teachers and students to easily discuss topics of study in an asynchronous environment. This replaces traditional methods of face-to-face interactions and still allows for the flexibility of taking a course through the Internet.

2.5.4 Assessing Student Participation

In traditional courses, teachers are able to assess students' participation and interest in a course (McCormick & Pressley, 1997). Teachers can gauge whether a student attends class, is prepared for class, asks meaningful questions, or interacts with course material, teacher and other students. Teachers can track students' participation and guide or help them to succeed in the course through scaffolding or other teaching methods. In an on-line course, teachers can track students' participation and progress by reviewing the quality and quantity of the students' interactions with the course material and messages posted throughout the course. A student profile can be created which tracks the number of times a student accesses specific web pages related to the course, such as course notes, bulletin boards, class discussions, or chat rooms. This information can be posted for both the student and the teacher. This gives teachers a clear indication of student participation and interaction with course material and other students. The teacher can then guide students' participation as they would in a face-to-face course.

However, Goldberg (1996) found that teachers criticize the ease of tracking student's participation and progress in an on-line course other than when assignments are
due or tests are given. Teachers cannot witness students' participation and are therefore sceptical of the tracking process.

To track student progress, Goldberg (1996) suggests creating a self-evaluation for students to complete at specific time intervals, for example, at the end of each section of course notes. A self-evaluation provides students with instant feedback on their progress and allows teachers to monitor the student's level of understanding. Teachers can then guide or scaffold students when necessary.

2.5.5 Equity Amongst Students

Another concern by educators is that of equity amongst students with different income levels. Meristotis (2001) argues that the growth of information technology and on-line education is likely to cause equity issues regarding access for students who are not computer literate or do not have access to computers. Although computers are relatively inexpensive and the price of Internet Service Providers, as well as multimedia peripheral devices, are dropping, taking an on-line course has a greater overhead cost associated with it. Many students on low incomes are not able to afford the necessary tools to participate in on-line education. Many learning institutes offer access to computer labs as well as access to the Internet for those students who cannot afford to purchase their own computer. However, a study of learning institutes in British Columbia showed that labs are often restricted in use and only available to certain students during limited hours (Harby & Hammond-Kaarremaa, 1992). This undermines the advantage of
on-line courses having the flexibility for students to work anywhere at anytime (Rogers & Laws, 1997).

2.5.6 Delivery of Course Material

Traditionally, distance education was delivered through correspondence using regular post mail. Students interact with teachers by sending assignments, questions, or notes about the course through regular mail. Similarly, teachers could pass on information to students as well as assignments and other requirements through regular mail. Rogers and Laws (1997) pointed out that this practice is slow and not extremely efficient. However, according to Armstrong (1996), there are some benefits to regular post mail. Downloading material from the Internet can be slow and frustrating for those students using modems or other Internet connections with low bandwidth. Armstrong (1996) found it more effective to send videos or audiotapes as well as large text-based material to students using regular mail, and reserve the use of the Internet for communication and information retrieval.

Armstrong (1996) agreed that electronic mail offers an inexpensive, effective and convenient mode of communication amongst teachers, colleagues and students. As well, attachments to e-mail messages offer a convenient way of transferring pictures, sounds, and text documents. Creating distribution lists can enhance electronic mail so one message can be written and sent to many people. Chute, Thompson and Hancock (1999) outlined another benefit of electronic mail is that students can determine the time and
place to write a message. This allows students to reflect on questions and provide meaningful and well thought out responses.

Another aspect of delivery is the organization and presentation of course material. Bailey and Blythe (1998) suggest that in an effective on-line course, the course information and material must be clearly organized, complete, and presented in a manner that allows students to easily navigate to any page or section within the course. Navigation is critical in any on-line course so students are not lost in a maze of links (Bailey & Blythe, 1998).

Barron (1998) stated the importance of students having easy access to all pertinent information for the course and that there is structure in the design and layout of the course. The initial page of a web site should contain all the necessary information and links that students need and should be immediately viewed (Barron, 1998). Web pages, which include large graphics or take several minutes to download, can cause students to become frustrated and possibly lose their interest in the course (Bailey & Blythe, 1998). According to Goldberg, Salari and Swoboda (1996), course notes should be presented in the middle of each page and a button bar should appear at the top to provide easy navigation to the previous page, the next page, the table of contents, and any tools incorporated into the web page. Tools might include an on-line dictionary of terms used in the course, a search engine of topics or keywords, end of section exercises, and possibly a history which shows students all pages accessed and the number of times each was accessed (Goldberg, Salari & Swoboda, 1996).
2.6 Computer-Mediated Conferencing

According to Bell and Meyer (1999), communication between the instructor and student is a vital element for the success of any distance educational course. Media and technology have played an essential role in the establishment of teacher and student communication. Traditionally distance education required communication between teacher and student through correspondence, sending messages via the postal system, and this still applies today in developing countries. However, depending on the reliability and efficiency of the country's postal system, this mode of communication can be inefficient and cause time delays in a students program of study. Telephone or facsimile communication is often too expensive as teachers and students are often in different cities, provinces or countries. With advances in technology, communication can be inexpensive and efficient through the use of computer-mediated communication and electronic mail.

Harasim (1994) described the potential of computer-mediated communication as an interactive learning environment that facilitates the social aspect of learning which was only possible in face-to-face courses. When learning through distance education, students can easily feel isolated from the teacher and other students in the course. According to Harasim (1994), the greatest strength of technology in distance education is its ability to provide a social and interactive environment that has the potential for collaborative learning. This interactive learning environment can be created regardless of
time or location of teachers and students, thus providing a flexible medium for social and active dialogue.

Farrell (1998) noted a recent trend by educational institutes is creating on-line learning courses that mirror the traditional classroom to the greatest possible extent. Further, Moore and Kearsley (1996) suggest that on-line learning will provide an alternative to face-to-face traditional education. On-line learning is unique in that students can learn "anywhere, anytime" given it's asynchronous nature while at the same time, students can collaborate and share ideas through computer-mediated communication using either asynchronous or synchronous modes (Garrison, 1997).

In an effective classroom, Porter (1997) argues that students should feel free or safe to express themselves, to generate and challenge ideas, to ask and answer questions, to make incorrect assumptions without being ridiculed, and to interact with others free of anxieties of making mistakes. To participate and interact in a classroom, students must feel safe from being judged or ridiculed. Face-to-face interaction often deters students from speaking freely or asking questions (McCormick & Pressley, 1997). Ellsworth (1995) showed that introverted students found it easier to communicate and interact with others through the Internet than in face-to-face situations. By creating guidelines for proper classroom procedures and communication, teachers can promote frequent discussions where students are free to express themselves, ask questions, share ideas, and take risks to learn more (Porter, 1997). In Goldberg's (1997) study, students in first year university, participating in on-line courses, stated they were less intimidated and felt
bolder with expressing their opinions and participating in class discussions in an asynchronous environment than they would in a synchronous environment.

Several studies (McCormick & Pressley, 1997; Miltiadou, 1999; Porter, 1997) suggested that an environment free of anxiety where students feel safe to contribute ideas and opinions, will motivate students to actively participate and learn. However, few studies have investigated motivational factors in conjunction with computer conferencing in an on-line learning course. Miltiadou (1999) states "it is imperative that more research is conducted in order to identify which motivational attributes of distance learners are vital in order to succeed in such environment. Very few studies have been identified in the literature on various motivational constructs and the use of CMC in on-line courses … it is imperative that more research is needed in order to shed light on which motivational constructs can be identified as predictors of success in an on-line environment. The lack of sufficient studies coupled with the rapid growth of on-line courses demand more investigation in the area" (p. 3).

In the past, distance education in Canada has been mainly offered by higher education learning institutes. Farrell (1998) noted a recent initiative to offer on-line distance education courses in the K-12 school sector. In British Columbia, the Open School/ Regional District offers on-line high school graduation programs for all students throughout the province. Students in small schools, remote areas, learning centres, or at-home based programs are given the opportunity to work towards secondary completion using computer conferencing, e-mail, audio conferencing, and resource material available
on-line. In technology based distributed learning courses, students are able to work independently with frequent interactions between the teacher or fellow classmates. Farrell (1998) emphasizes the advantage of this type of program is that students are given the opportunity to enrol in courses not offered by their school or through an at-home based program, thereby expanding students options for learning.

2.6.1 Teacher Interaction in Computer-Mediated Communication

In a recent study, Bell and Meyer (1999) found that the most effective and highly-rated distance learning courses are those which are enriched with communication. Courses that used discussion forums, chat rooms, white boards and/or desktop videoconferencing to encourage collaboration and interaction among students were found to be the most effective. According to Stacey & Rice (2002), it is essential that the course instructor interact with the students to maintain student participation and ensure enriched communication. Anderson, Rourke, Garrison and Archer (2001) claim that course instructors have three roles in encouraging and ensuring valuable on-line discussions. The first role is to design and organize instructional units that are suitable for discussion. The second role is to facilitate on-line discussion by participating and encouraging students to participate. The third role is direct instruction of students that includes presenting course content and providing assessment and feedback to students. Anderson, Rourke, Garrison and Archer's (2001) study showed that students participated more actively and thoughtfully when there was a higher level of teacher presence. Stacey and Rice’s (2002)
study found that teacher presence in on-line discussion generated a more reflective discussion and engaged students to participate more actively.

Hong, Lai and Holton (2003) found that in the absence of teacher presence in on-line communication caused students to participate less, to read postings but not reply or get involved in discussions, and to feel lost in the discussions. They also found that students who did not feel that they received individual attention by the course instructor participated less in the on-line discussions. In contrast, Stacey and Rice (2002) found that students felt motivated to participate more when they received individual feedback from the course instructor. These studies show that teacher participation and involvement in on-line discussions is a necessary component to motivate students' participation.

2.7 Attitudes of Learning in an On-Line Environment

The attitude or level of comfort a student feels about learning in an asynchronous environment, influences the student's interactions with the teacher, classmates, and course content. In order to be successful in an on-line course, students must feel comfortable with using computers and using an on-line environment (Clark & Pitt, 1997). This includes being familiar with navigating around the Internet, using e-mail, and transferring and retrieving documents. Rogers and Laws (1997) showed that students who were not comfortable using computers before the course had higher failure and drop out rates than those students with prior knowledge or experience using computers.
Ellsworth (1995) suggested that the successful integration of an on-line environment involve three stages of learning for students. The first stage involves learning how on-line work fits into the overall course. Students need to be able to connect what is being taught with the method of teaching and mode of delivery. This can be dealt with at the beginning of the course through course objectives and expectations. The second stage involves the how-to skills. Students need to know exactly how to use the technology to interact with the teacher and course content. Students should know early on in the course how to communicate with the teacher or other students through the use of e-mail. As well, students should know how to access course material and relevant information pertaining to the course. The third stage in Ellsworth's (1995) model involves mastering the technology tools. This includes problem solving, information retrieval, and course interactions such as assignments or applying skills learned. Students need to know how to complete assignments as well as how to submit them.

Goldberg (1997) found that first year university students needed more encouragement to explore different tools in an on-line environment, such as conferencing systems, chat rooms, e-mail and group presentation areas. Goldberg's (1997) studies showed that first year students were less likely to participate in class and take advantage of the resources available to them as compared to third year students. First year students were not as accustomed to or as comfortable with using an asynchronous environment as third year students. However, once encouraged to participate using the on-line conferencing system, more than half of the first year students in the course claimed they
felt comfortable participating in class discussions when they normally never participate or feel too intimidated to participate in face-to-face class discussions.

2.8 Summary

On-line learning, as described above, is an innovative learning environment that has received support in the literature. Firstly, on-line learning offers a more efficient mode of delivery of course material as compared with traditional distance education. Dissemination of information is fast and efficient through the use of the Internet. On-line learning increases opportunities for students by allowing them to participate in courses or programs that would not otherwise be available to them. Educational institutes in small or rural communities often cannot afford to offer courses in all the subject areas necessary for students to achieve their full potential. Through on-line learning, learners are able to participate in a wider variety of courses.

On-line learning offers flexibility in scheduling of courses. For learners at all levels, elementary to post secondary, may find it difficult to incorporate courses into their daily lives. A more flexible schedule allows adult learners who face scheduling conflicts from career and family responsibilities to attend courses.

On-line learning allows for more efficient and interactive communication between the instructor and the student as compared with traditional distance education. On-line learning offers a means of interaction and communication that more closely resembles a
face-to-face classroom. This is one of the most important components of on-line learning for ensuring both the success of the distance learning course and active participation from the students (Bell & Meyer, 1999). Research has shown that student's achievement levels and success rates have increased in on-line learning courses that are enriched with communication (Bernard, Lou & Abrami, 2002). A recent trend with educational institutes has been to create on-line learning courses that mirror the traditional classroom to the greatest possible extent (Farrell, 1998). Research on the attitudes of students participating in computer-mediated communication has shown that some students are more comfortable discussing issues in this on-line environment as opposed to a regular classroom setting. Students who do not normally participate in face-to-face classrooms find it easier to participate in on-line learning courses using computer-mediated conferences.

As shown, much of the research in this area has focused on adult learners. There are few studies that have investigated participation of students at the secondary school level. With a growing number of on-line learning courses offered to elementary and secondary school students, there is a need to investigate further at this age/grade level. The purpose of this study was to gain insights into the motivational factors influencing secondary students to participate in an on-line learning course.
Chapter 3 Methodology

The purpose of this study was to gain insights into the motivational factors influencing secondary students to participate in an on-line learning course. This chapter is comprised of two components: the context of the study and the description of the study. The context describes where the course took place and the characteristics of the course. The description of the study addresses the design, the researcher's role, the participants, the research approach, and the data collection and analysis.

3.1 Context of the Study

This section describes the school district, the course objectives, and the on-line environment.

3.1.1 The School District

This study was carried out in a medium sized urban school district in British Columbia. The school district currently comprises of ten secondary schools serving more than 11,000 students and 42 elementary schools serving over 14,000 children.

There are currently two on-line learning courses offered in the district, Writing 12 and Media and Culture 11. This study used one section of the Media and Culture 11 course, which ran from September 2001 to February 2002. Grade 11 and 12 students from any of the ten secondary schools are allowed to enrol in these two courses.
3.1.2 The On-line Learning Course and Course Objectives

The objective of the Media and Culture 11 course is to examine the media environment in which we live while allowing students the opportunity to cover course material using computer conferencing as the instructional vehicle. The course has three main objectives as follows:

- Students should be able to recognize the key concepts involved in the media.
- Students should be able to understand and recognize the various media forms with which they come into contact: TV, radio, magazines, film, newspapers, etc.
- Students should have an in-depth understanding of media issues such as News Gathering, Advertising, Gender Issues, Violence, etc.

Computer-mediated communication (asynchronous and synchronous) is a powerful means of allowing students to discuss ideas, raise questions, share ideas, collaborate, and give each other peer support. The course instructor believes in the importance of a collaborative environment for learners, therefore, communication of ideas and skills are integrated into course activities in different ways. An asynchronous text-based forum is used in this course for students to discuss and share ideas. This is a public forum and all students are expected to participate by discussing issues relevant to the course material. As well, students are expected to communicate questions to the instructor and various media resources (radio station managers, magazine editors, etc.) using electronic mail.
3.1.3 Description of the On-Line Environment

The First Class™ Conferencing Software was used in this course to deliver course material and to facilitate students' communication and discussions. Students had a choice of accessing the course either through the World Wide Web or through a modem dial-up connection to the district's network using the First Class™ software application. The software application was installed in all computer labs available to students in each of the ten secondary schools in the district. These computer labs are open to students at various times throughout the day. Times varied between the different schools. The software application was also available to students who chose to use their home computers to access the course. The installation program was made available to students on floppy discs available at the school or by downloading from the school district's web site.

Students were given a login ID and Password used to gain access to the course materials and conferences available using the First Class™ software. Once logged in, students had a choice of several conferences, their MailBox to access electronic mail, Address Book to store e-mail addresses, a Calendar allowing them to keep track of important dates, an Important Info conference where important system messages are posted to everyone in the district, and the course conference folder allowing students access to course material and asynchronous discussion forums. This is shown in the following image (Note: The name of the District server has been covered to maintain confidentiality):
The course conference, Media & Culture 11, was designed to allow students to easily navigate between the course assignments, notes, handouts, and discussions. Students access the Media & Culture 11 conference by double-clicking on the folder. The following image shows the conferences available to students and is herein referred to as the course desktop.

Figure 1: Image of the course interface using the First Class™ conferencing software

Figure 2: Image of the conferences within the course
The course desktop has six separate conference folders that allow students access to participate in the course (Hand it in here!, Media Talk, Check it out, Interactive, Any Questions) and to access course material (Assignments). A red flag appears next to a folder to indicate that new information or a new message has been posted within the folder. The red flag disappears once the student has opened all unread messages. Students can then open any folder to access that particular section of the course. For example, to access each day's lesson and course handouts, students can double click on the "Assignments" folder. This will open a new window, as shown below:

![Image of the assignment conference within the course](image_url)

Handouts as well as daily lesson plans are located in this folder and are organized and labelled accordingly. Students are expected to logon every day (Monday to Friday) to
read the appropriate lesson. Course handouts and daily lesson plans provide students with information on a particular subject or issue and often require students to discuss ideas pertaining to that issue within the Media Talk conference.

There were 75 lessons in the course, with one new lesson being presented each day. The lessons were not posted in advance, but past lessons were available in the "Lesson Archive" folder. Students were expected to log on each day, read the daily lesson and then respond to the lesson. The majority of the daily lessons (70 out of 75) required students to participate in the class discussions. The course instructor monitored the class discussions, but did not participate in the discussions.

In order to participate in the class discussions, students must open the folder "Media Talk". Media Talk is an example of computer-mediated communication where students have the ability to discuss various different course topics through posted messages. Students can start a discussion by creating a new message and posting it (saving it) to the conference. Each message should have a subject so that other students and the course instructor can easily determine the content of the message posted. Other students can then open the message, read and/or reply to the message. Students can decide which messages they want to read and/or respond to. In this course, the instructor read the messages but did not participate in the class discussions or reply to any of the messages posted by the students.
By double clicking on the Media Talk icon from the course desktop, the following window will open (the names have been blocked out to ensure student anonymity):

![Media Talk window](image)

**Figure 4: Image of the Media Talk computer-mediated conference within the course**

In this conference, students have access to read and respond to any of the posted messages. They also have access to post independent messages. The course instructor and researcher have access to the history of each message which provides a list of students who have read each message as well as who has replied to each message.

### 3.2 Description of the Study

This section describes the design of the study, research questions and approach, the researcher's role, the participants, the data collection and analysis of data.
3.2.1 Design

Two general questions were the focus for the study: how frequently students used computer-mediated communication and what factors were involved in motivating students to participate actively and thoughtfully in the discussions? The two general questions were then refined into nine specific questions that guided the study. Both quantitative and qualitative research approaches were used. Quantitative data was collected through initial questionnaires and an analysis of the frequency of messages posted. Qualitative data was collected through face-to-face student interviews and transcript analysis.

A tentative plan for sampling, data collection, data analysis and establishing reliability was developed to guide and set parameters for the research. An on-line course was chosen for the study, Media and Culture 11. Questionnaires, transcript analysis data, and interviews were the method of data collection. Questionnaires were given to all 28 students enrolled in the course, of which 20 were completed and returned. Transcript data from student's computer-mediated conferences were collected for those students participating in the study. Interviews were of a semi-structured nature in which the researcher prepared questions as a guide to focus the conversation and generate discussion related to the research questions. Interviews were audio taped and transcribed verbatim.

Although the research questions guided the study, they were mainly open-ended questions that were subject to review throughout the course of the study. Many
qualitative evaluators suggest that the research questions should be tentative as studies often encounter unexpected changes. "Many evaluations are flawed by evaluators who relentlessly insist upon answering initially agreed-upon questions, regardless of intervening events, changes in the object of the evaluation, or new discoveries" (Worthen et al., 1997, p.264). Further, this study used qualitative methods, which should be open and flexible in design. “In planning a qualitative study the researcher cannot fully specify the design in advance. Because the study is taking place in a natural setting, and because the researcher believes that the participants' knowledge is of value, it is inappropriate to make all decisions about the study prior to its implementation” (Worthen et al., 1997, p.264).

An initial questionnaire completed by each student at the beginning of the course was used to obtain background and characteristics data on each student (see Appendix B). The purpose of the questionnaire was to gather data about students' computer experience, expectations for the course, and reasons for taking the course in order to help understand the factors that may motivate students to participate. For example, students with little knowledge and experience using computers might get frustrated easily and therefore not participate as much or as often as students who are comfortable using computers. Students with faster typing skills may find it easier to participate and may type more messages than those students with slower typing skills. Students enrolling in the course for the sole purpose of increasing their grade point average might be more motivated to
participate and achieve good results, then a student enrolling in the course to be with their friends.

Student dispositional data was collected to determine student's age, grade level (grade 11 or 12 students), current use of computers, how comfortable they felt they were using computers and various different types of computer applications, their reasons for enrolling in the course, the importance of communicating with their classmates and teacher, and the number of hours they expected to spend studying for this course. Analysis of this data was expected to aid in understanding the following research questions:

- What were the students' reasons for taking an on-line learning course?
- What technical barriers or difficulties did they face?

Semi-structured interviews with students were prearranged and conducted throughout the duration of the course. Interview questions were prepared as a guide to focus the conversation and generate discussion. A trial interview was completed prior to interviewing students. This led to modifications and refinements of the original guiding questions.

Data from these interviews were collected in order to gain an understanding of the students' perceptions that may have motivated them to participate in their learning. Analysis of this data was expected to aid in understanding the following research questions:

- What were the students' perceptions of the positive and negative experiences associated with computer-mediated conferencing?
• How did the on-line learning environment provide a supportive environment for learning?
• What were the students' perceptions of the factors that affected group discussions and participation?
• What were the students' perceptions of the factors that increased or decreased their motivation to participate?

In addition to the questionnaire and interviews with the students, transcripts of the conferences were used to describe and understand the learning environment and give insight into temporal patterns of responses, such as, students encouraging or discouraging others to respond, and students posting independent versus responsive messages.

In order to determine the frequency of participation and the number of messages posted by students, a record of all computer conferencing messages was collected and analyzed. Data collection looked at:

• The number of students posting messages
• The frequency and temporal patterns of messages posted per student

This data was analysed both weekly and in total for the duration of the course.

Analysis of this data was expected to aid in the understanding of temporal patterns and frequency of participation of students. The analysis was used to answer the following research questions:

• How frequently did students contribute to the computer-mediated conferences?
• How did the frequency of the discussions change throughout the course?
3.2.2 Research Question

The purpose of this study was to explore and gain insights into the motivational factors influencing secondary students to participate in an on-line learning course. The study was guided by two main questions:

- How frequently did students use computer-mediated communication?
- What factors were involved in motivating students to participate actively and thoughtfully in the discussions?

In order to answer the two main questions, the study was guided by the following informative questions:

1. What were the students' reasons for taking an on-line learning course?
2. What were the students' expectations for the course and did those expectations change during the course?
3. What technical barriers or difficulties did students face?
4. How frequently did students contribute to the computer-mediated conferences?
5. How did the frequency of the discussions change throughout the course?
6. How did the on-line learning environment provide a supportive environment for learning?
7. What were the students' perceptions of the factors that affected group discussions and participation?
8. What were the students' perceptions of the factors that increased or decreased their motivation to participate?
9. What were the students' perceptions of the positive and negative experiences associated with computer conferencing?

Questions 1 and 2 relate to the students' purpose for enrolling in the course and might be a factor in their motivation to participate. McCormick & Pressley (1997) suggest that students' motives for entering into a course may affect their learning outcomes and participation in the course. Students enrolling because they are interested...
in the subject matter may be more motivated to participate than a student who enrolled in the course due to peer pressure or other reasons.

Question 3 relates to the technical support for students. Students' who feel frustrated from not having the technical knowledge to confidently access and participate in a technology-based course are more likely to withdraw or participate less frequently (McCormick & Pressley, 1997).

Questions 4 and 5 relate to the nature of computer conferencing as a text-based asynchronous mode of discussion, which facilitates reflective thinking and allows frequent and active participation. Goldberg (1997) found that students were less intimidated about communicating in an asynchronous environment. Harasim (1994) suggests that overcoming this intimidation should lead to more frequent participation as well as more reflective thought.

Questions 6, 7, 8 and 9 relate to the students perceptions of the course environment in terms of creating an environment where students feel safe to contribute to discussion forums and state their opinion. This might play a key role in student's participation (McCormick & Pressley, 1997). Students' perception of that environment and the characteristics affecting that environment may shed some light on the factors involved in motivating students to participate actively and thoughtfully in computer conferencing.

Although the above questions guided the study to explore motivational factors influencing secondary students to participate in an on-line learning course, the questions
were open-ended in nature and meant to focus the conversation and generate discussion related to the research questions. Interviews were audio taped and transcribed verbatim.

Many evaluators suggest that the research questions should be tentative as studies often encounter unexpected changes. "Many evaluations are flawed by evaluators who relentlessly insist upon answering initially agreed-upon questions, regardless of intervening events, changes in the object of the evaluation, or new discoveries" (Worthen et al., 1997, p.264). Further, this study uses qualitative methods, which should be open and flexible in design. "In planning a qualitative study the researcher cannot fully specify the design in advance. Because the study is taking place in a natural setting, and because the researcher believes that the participants' knowledge is of value, it is inappropriate to make all decisions about the study prior to its implementation" (Worthen et al., 1997, p.264).

The following table of operational questions was used to guide students and facilitate discussions in the interview. Although the questions were predetermined before the start of the interviews, some modifications were made throughout the duration of the interview process as themes emerged from student responses.
Table 1: Operational questions

<table>
<thead>
<tr>
<th>Operational Questions</th>
<th>Type of Data Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Questions</strong></td>
<td></td>
</tr>
<tr>
<td>What were the students' general feelings on taking an on-line learning course?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' reasons for enrolling in the course?</td>
<td>Interview Data and Questionnaire</td>
</tr>
<tr>
<td>What were the features or attributes of online learning did the students like or dislike?</td>
<td>Interview Data</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td></td>
</tr>
<tr>
<td>What technical barriers or difficulties did students face?</td>
<td>Interview Data and Questionnaire</td>
</tr>
<tr>
<td>Did student's previous experience with computers contribute to their comfort levels in this course?</td>
<td>Interview Data and Questionnaire</td>
</tr>
<tr>
<td>What was student's previous experience with computer-mediated conferencing and did it increase their comfort levels in this course?</td>
<td>Interview Data and Questionnaire</td>
</tr>
<tr>
<td>What support did the students feel was in place to assist them if they were having technical difficulties?</td>
<td>Interview Data</td>
</tr>
<tr>
<td><strong>Computer-Mediated Communication</strong></td>
<td></td>
</tr>
<tr>
<td>How frequently did students contribute to the computer conferences?</td>
<td>Data from transcripts of the Media Talk conference:</td>
</tr>
<tr>
<td></td>
<td>Total number of messages posted per student</td>
</tr>
<tr>
<td></td>
<td>Total number of messages posted for all students</td>
</tr>
<tr>
<td></td>
<td>Mean and median number of messages</td>
</tr>
<tr>
<td>Question</td>
<td>Source</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>How did the frequency of the number of messages posted change throughout the course?</td>
<td>Data from transcripts of the Media Talk conference: Number of messages posted per student on a weekly basis Total number of messages posted for all students on a weekly basis</td>
</tr>
<tr>
<td>What were the students overall perceptions of using computer-mediated conferencing as a means of discussion?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' perceptions of the factors that affected group discussions and participation?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' perceptions of factors that specifically encouraged or discouraged them from participating in the conferences?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>Did the computer-mediated communication assist students in understanding course material?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' perceptions of the positive and negative experiences associated with computer conferencing?</td>
<td>Interview Data</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td></td>
</tr>
<tr>
<td>What were the students' expectations for the course and did those expectations change during the course?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>Question</td>
<td>Source</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>What were the students' perceptions of the factors that increased or decreased their motivation to participate?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' perceptions of the factors that may have specifically hindered their level of participation?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>What were the students' perceptions of the length of time spent studying in the course? And was this time more or less than expected?</td>
<td>Interview Data</td>
</tr>
<tr>
<td>Did the students create any routines for self-discipline or self-motivation to help them in this course?</td>
<td>Interview Data</td>
</tr>
</tbody>
</table>

### 3.2.3 Research Approach

This research used a case study approach to examine the use of computer-mediated communication and the motivational factors influencing students' participation in an on-line learning course.

The purpose of a case study approach is to interact with and observe the sample population in order to investigate the phenomenon or entity being evaluated (Worthen et al., 1997). Case studies are not usually employed to make generalizations on a whole population based on a sample, but rather to extrapolate data and allow readers to interpret the results based on their own program setting (Worthen et al., 1997). In this case study the phenomenon being examined is the use of computer-mediated communication and the
motivational factors influencing students’ participation in an on-line learning course. In this naturalistic setting, qualitative data was gathered from semi-structured interviews and transcripts of course discussions. This case study also examined the quantitative characteristics of computer-mediated communication such as, the frequency of participation, the number of messages posted by students, independent versus responsive messages, as well as temporal patterns in participation throughout the course. This data was gathered from the computer-mediated conference transcripts. Therefore, both quantitative and qualitative methods were used to gather data for this study.

3.2.4 Researcher’s Role

In this study, one researcher was involved in collecting and analyzing the data. This researcher was not involved in the design, implementation, or instruction of the course being studied. The researcher designed the questionnaire and interview protocols, and made contact with the students to ask for consent to participate, to give out questionnaires, and to conduct the interviews. The researcher also collected all the data including the transcripts of the computer-mediated conference, analyzed the data and documented the findings.

3.2.5 Participants

There were 28 grade 11 and 12 students enrolled in the course. These students attend, on a regular basis, one of the ten secondary schools in the district. Therefore it is highly likely that some students knew one another. However, students were not expected
to meet face-to-face for this course. Students were encouraged to meet and discuss course-related issues only within the on-line environment. Students were expected to participate every week in the course by contributing their opinions and thoughts to the on-line discussion forums.

Students were initially contacted through e-mail and asked to participate in this study. Of the 28 registered students, only 4 students responded by returning the consent form and questionnaire. Students were then contacted in person at their school. Questionnaires and consent forms were given out to all students and interview times were set. A total of 20 of the 28 students agreed to participate in the study.

3.2.6 Student Consent, Instructor and Board Approval

Students and their parents were asked to sign an informed consent before participating in the study (see Appendix A). All students enrolled in the class were asked to participate. Students were informed that all data from interviews, questionnaires, and transcripts would remain confidential and be used only for the purposes outlined in this study. In addition, permission from the course instructor and from the school board was given before the research was conducted.

3.2.7 Data Collection and Analysis

Data for this study were gathered in three ways: an initial questionnaire, a collection of transcripts from the computer-mediated conference, and semi-structured face-to-face interviews with the student and researcher.
3.3 Questionnaire

A questionnaire was given to students at their school at the beginning of the course. The questionnaire was used to determine student's age, grade level (grade 11 or 12), current use of computers, how comfortable they felt they were using computers and various different types of computer applications, their reasons for enrolling in the course, the importance of communicating with their classmates and teacher, and the number of hours they expected to spend studying for this course. The researcher hand-delivered the questionnaires to the students, some students completed and returned the questionnaires at that time, while others chose to take them home to complete and send back to the researcher.

3.4 Transcript Analysis

Transcript analysis took place throughout the course. In order to determine the frequency of participation and the number of messages posted by students, a record of all computer conferencing messages was collected and analyzed. The researcher noted daily messages posted by each student. The number of messages posted by each student and the weekly variations in the frequency were noted and tabulated. As well, the total number of messages per student and the mean and median number for all students
participating in the survey were also noted and tabulated. This gave an indication of the frequency of participation amongst the students.

The researcher read each message posted to determine whether the message encouraged participation, discouraged participation or was neutral (neither encouraged or discouraged). A preliminary look at the transcripts was conducted to determine factors that encouraged or discouraged participation. Students who posed questions prompting others to state opinions in their messages were classified as encouraging participation. These students were seeking others to either agree with their statements or to provide differing viewpoints. This category included messages where students may have agreed or disagreed with other student’s opinions but they also prompted further discussion.

Students who openly rejected other student’s opinions or statements with no indication of prompting further discussion were classified as discouraging participation.

Students who stated their opinion or made some statement with no indication of prompting further discussion were classified as being neutral. These messages did not encourage nor discourage further discussion.

After careful analysis, all transcripts were classified into one of these three categories. The categories were designed to be mutually exclusive so there were to be no overlap between the categories. At the beginning of the course, the course instructor met face-to-face with the students to discuss course etiquette. Students were encouraged to state their opinions on issues in the course and discuss those opinions and how they differ from others. However, they were expected to discuss these issues void of any derogatory
remarks to other students. Therefore, the researcher expected that there would be a low number of discouraging messages throughout the course.

3.5 Interviews

The interviews were conducted face-to-face at each student's school. The interviews took place between October 2001 and February 2002. All interviews were prearranged between the researcher and the student and each interview lasted between 30 and 60 minutes. The interviews were conducted in either an empty conference room in the counselling department of the school or in a conference room in the school library. The interview protocol began with a general introduction, reiterating information pertinent to the study regarding purpose, confidentiality, and informed consent. This information had been given to students with the questionnaires and the consent forms for both parent and student to sign. Students were informed that the interview would be audio taped for the purpose of this study only. This information was also on the consent form. The introduction also informed participants about the general direction of the interview and asked them to comment freely throughout the interview. Interview questions were grouped into four categories as outlined in Table 1: general feeling of online learning, technical difficulties, computer-mediated communication, and motivational factors.
Following the introduction, students were asked general questions on why they took the course, what their expectations were when they enrolled in the course and whether those expectations had changed, what it meant to participate in an on-line learning course, how it is different from a face-to-face course and how they felt about participating in an on-line learning course. Probes were used to elicit elaboration and clarify responses.

Students were then asked about their computer skills, their previous experience using computers and whether they experienced any technical difficulties with the course conferencing software. Probes were used to elicit elaboration and clarify responses. This data was then compared to the questionnaire data as a check for student reliability.

Students were then asked questions that dealt specifically with the Media Talk conference, a computer-mediated conference used to engage students in group discussions and to post their opinions of different media related issues. Students were asked questions regarding their perception and feelings on computer-mediated conferencing, how they participated, and what factors influenced their participation. Students were also asked to share any personal experiences that may have influenced the way in which they participated. Again, probes were used to elicit elaboration and further discussion and to clarify any responses.

The last set of questions was used to determine motivational factors of student participation. Students were asked to provide personal examples of experiences that may have increased or decreased their motivation to participate in the course and to state any
factors they felt motivated them to participate in the course. At the end of the interview students were asked to add any further comments about on-line learning that they felt were important in influencing their participation in the course.

Analysis of the interview data involved identifying emerging themes and noting patterns in the data. Once themes were identified, data could then be coded and categorized accordingly, clustering similar student responses. The data analysis process began after the first interview and was an on-going process until all interviews were complete. First, each interview was transcribed, then read and reread until a satisfactory understanding was made. Notes and a summary of emerging themes were made. An initial coding scheme was created on the basis of the operational questions, however, this was later modified as patterns and themes arose from later interviews. After all interviews were complete, data was coded and categorized.

The themes that emerged from this process are described in chapter four. Along with the description of the themes are the individual statements of the students.

3.6 Trustworthiness

In qualitative research, a key issue is judging trustworthiness, which is the quality of the research design and data. Like quantitative research, qualitative studies must also be based on the systematic collection of data, using acceptable and applicable research procedures, and allowing the procedures and data analysis to be open to systematic
critical analysis from others. The following four criteria are used to examine trustworthiness: credibility, transferability, dependability, and confirmability.

3.6.1 Credibility (Internal Validity)

Credibility is defined as the match between the constructed realities of the participants and the reconstructions of the researcher. In this study, member checks were used to ensure credibility. At the end of the study, students were e-mailed a copy of the transcribed interview and asked to reply if they felt it was misrepresented in any way or if they wanted to add more data. No students replied to the e-mail indicating they felt the data was represented fairly and accurately.

3.6.2 Transferability (External Validity)

Transferability refers to whether the findings of this study can be transferred to the readers' own context or used to make a generalization to a larger or broader group.

Due to the naturalistic setting of this study, transfer of the results and conclusions to other situations depends on the degree of similarity between the original situation and the situation to which it is transferred. No specific claims for transferability are made for this study.

3.6.3 Dependability (Reliability)

Dependability in qualitative research refers to the probability that the study, replicated under similar conditions using similar subjects, will yield the same or similar findings. In this study, a detailed record of research design, methodology, data collection,
raw data, audiotapes and transcribed records, emergent themes, transcripts of student conferences were recorded and are available for examination.

3.6.4 Confirmability (Objectivity)

In qualitative research, confirmability is the equivalent to objectivity. It refers to the assurance that the data analysis and interpretations are rooted in the subjects and are free from the natural subjectivity and bias of the researcher. In this study, a detailed record of all the raw data is available for examination and comparison with the findings and conclusions.
Chapter 4 Results

4.1 Description of Data

The participants' experiences of participating in a secondary school on-line learning course are described in three sections in this chapter. The first section describes the frequency of students' participation in the course. This data was taken from the number of transcripts posted per student each day throughout the course. The second section describes students' dispositional data and participation characteristics, which was extracted from the questionnaire. This data explores students' age and gender, computer experience, and is compared to frequency of participation in the course. The third section explores students' personal experiences, perceptions and attitudes on on-line learning courses. Interview questions were divided into categories as described in Chapter 3.

Interview data was analyzed by category in terms of common themes. Each interview was examined for themes pertaining to the experience and motivational factors that may have influenced students' participation in an on-line learning course. When a theme emerged from the data, the attributes of the theme were identified. The results obtained from this process are presented in terms of common theme by category.

Twelve themes emerged from the data and were categorized into four groups: general attitude; technology; computer-mediated communication; and other motivational
factors. The following table outlines each category and the common themes that emerged from the data.

Table 2: Summary of common themes

<table>
<thead>
<tr>
<th>Categories</th>
<th>Common Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Time Limit</td>
</tr>
<tr>
<td></td>
<td>Previous computers and Internet experience</td>
</tr>
<tr>
<td>General Attitude</td>
<td>Time and Place Independence</td>
</tr>
<tr>
<td></td>
<td>Self Discipline</td>
</tr>
<tr>
<td></td>
<td>Accessibility of course material</td>
</tr>
<tr>
<td></td>
<td>Teacher Interaction</td>
</tr>
<tr>
<td>Computer-Mediated Communication</td>
<td>Helps Understanding</td>
</tr>
<tr>
<td></td>
<td>Anonymity</td>
</tr>
<tr>
<td></td>
<td>Discussion Etiquette</td>
</tr>
<tr>
<td></td>
<td>Time Issues</td>
</tr>
<tr>
<td>Other Motivational Factors</td>
<td>Grade</td>
</tr>
<tr>
<td></td>
<td>Course Credit</td>
</tr>
</tbody>
</table>

4.2 Frequency of Student Participation in the Course

Of those students who participated in this study, there were a total of 875 postings throughout the duration of the course. The course was five months long (from September 8 to February 8). Monthly totals were taken every 4 weeks starting September 8 with the exception of the last week in December, as there were no postings that week (December 24 – December 30). This was due to the Christmas holiday and that students were not at school that week nor were there any assignments or work required that week.

The mean number of postings per student throughout the duration of the course was 43.75 and the median was 50. However, male students posted more messages than
female students. Fifty six percent of females posted 40 or more messages as compared to 82% of males who posted 40 or more messages. Forty four percent of females posted fewer than 40 messages whereas only 18% of males posted fewer than 40 messages.

Table 3: Total number of postings per student

<table>
<thead>
<tr>
<th>Number of Postings</th>
<th>Less than 10</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Males</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

The average number of postings per month fluctuated throughout the course. There was a steady increase in the number of postings per month for the first four months. In the last month of the course there was a significant increase in the number of postings, from 160 in the month of December to 302 in the month of January. The number of postings increased by nearly 200% in the final month of the course. This may be in part due to students catching up on missed assignments or realizing that they had not participated as much as they should have throughout the course and are now catching up.

Figure 6 shows the average number of postings per month for all students in the course.
The average number of postings per month fluctuated throughout the duration of the course. At the beginning of the course, there were fewer postings per month than at the end of the course. During the first 4 weeks of the course there was an average of 5.35 postings per month per student (taken from September 8 to October 7). This may partially be due to students registering late for the course and/or students becoming familiar with the course setting and conferencing software. As well, a few students stated they had difficulty logging on to the course web site and/or installing the First Class conferencing software. In the last four weeks of the course (January 7 to February 8) there were an average of 15.1 messages posted per student per month.

Figure 8 shows the average number of postings per student per week.
Figure 6: The average number of postings per week

This graph suggests that students kept a fairly steady average number of postings per week. There was a definite drop in postings during week 12, November 26 – December 2, from an average of 2.3 postings per student for the week prior to an average of 0.95 postings per week per student. This week corresponds to the midterm exam week for students and, although students did not have a midterm exam in this course, students were likely writing exams in many of their other courses. There were no postings during week 16. This week corresponds to the week of Christmas holidays (December 24 – January 1) and students were not expected to participate during that time. There was a definite increase in the number of postings during the last two weeks of the course. This may be in part due to students finishing assignments or realizing they had not participated as much as required for the course.
4.3 Participants' Dispositional and Characteristic Data

Characteristic and dispositional data for each student was gathered using a questionnaire that was given to each student at the beginning of the course. Students were given the choice to complete and return the questionnaire to the researcher at that time, or to take the questionnaire home to complete and send to the researcher at a later date. The following sections 4.2.1 to 4.2.4 present students characteristic data gathered from the questionnaire and the frequency of student participation in the course from the number of messages posted in the MediaTalk conference.

4.3.1 Age and Gender

Of those 20 students who participated in this study 11 were male and 9 were female. Students were in either grade 11 or 12 and they ranged from 15 to 18 years of age. Specifically, two (10%) students were 15 years old, seven (35%) were 16 years old, nine (45%) were 17 years old, and two (10%) students were 18 years old.

<table>
<thead>
<tr>
<th>Table 4: Age and gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Eleven of the twenty students (55%) were aged 17 and 18 and were registered in grade 12. The other nine students (45%) students were aged 15 and 16 and were registered in grade 11. However, the majority of students, 18 out of 20 (90%), were aged 16 and 17.

4.3.2 Participation in a Face-to-Face Course

On the questionnaire, students were asked how often they participate in a regular face-to-face course as well as how important it was that they would not see the teacher or their classmates face-to-face. Male students indicated that they participate more often in a regular course as compared to female students. All eleven male students indicated that they participate often as opposed to nearly 67% of female students who indicated they participate often in a face-to-face course. Three students (15%) indicated that they sometimes participate and no students indicated that they never or occasionally participate. The following table shows the participation of the students in a face-to-face course.

**Table 5: Students participation in a face-to-face course**

<table>
<thead>
<tr>
<th>Level</th>
<th>Never</th>
<th>Occasionally</th>
<th>Sometimes</th>
<th>Often</th>
<th>Every Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>13</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparing this data to the number of actual postings per student showed that the students, who stated they participated sometimes in a face-to-face course, participated close to the average (43.75) number in this on-line course. Students who participated every day in a face-to-face course participated less than average (43.75) in this on-line course. The following table shows the number of postings per student and the average number of postings per student as compared to their participation in a face-to-face course.

<table>
<thead>
<tr>
<th>Sometimes</th>
<th>Often</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>20-30</td>
<td>40-50</td>
</tr>
<tr>
<td>10-20</td>
<td>30-40</td>
<td>50-60</td>
</tr>
<tr>
<td>20-30</td>
<td>40-50</td>
<td>60-70</td>
</tr>
</tbody>
</table>

**Figure 7: Students’ participation in a face-to-face course compared with number and average postings**

On the questionnaire, students were asked how they felt about not seeing their teacher or their classmates in an on-line learning course. Most students indicated that it wasn’t important to them whether they saw their teacher and classmates or not. Eighty percent of students indicated they were neutral or did not care whether they saw their teacher and their classmates during this course. One student (5%) indicated they preferred to see the teacher, one student (5%) indicated they were somewhat neutral but preferred
to see teacher and two students (10%) indicated they were somewhat neutral but preferred not to see the teacher. No students indicated they strongly preferred not to see the teacher or their classmates. The following table shows the importance of seeing the teacher and classmates.

Table 6: Importance for students seeing their teacher and classmates during the course

<table>
<thead>
<tr>
<th>Preference</th>
<th>Prefer to see teacher</th>
<th>Somewhat neutral</th>
<th>Neutral (did not care)</th>
<th>Somewhat neutral</th>
<th>Prefer not to see teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>1</td>
<td>16</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

4.3.3 Computer Experience

All students reported that this was their first distance education course as well as their first on-line course. Students had no prior experience using the First Class conferencing software nor did they have any previous experience participating in group discussions for a course. However the majority of students reported frequent use of synchronous Internet chat, such as MSN or ICQ. Thirteen students (65%) reported using synchronous Internet chat every day, five students (25%) reported frequent use (more than once per week), and two students (10%) stated that they never use this form of Internet communication. Further, all students indicated that they use the Internet
frequently. Eighteen students (90%) reported daily use while two students (10%) reported frequent use (more than once per week but not every day).

All students indicated they had experience using computers and they felt they were at least "Somewhat Okay" using computers and computer applications. However, more male students felt they were “Very Good” as compared to females and more females felt they were “Somewhat okay” as compared to males.

Fifty five percent of students felt they were “Very Good” using computers. Of those students, 73% (8 of 11 students) were male and 27% (3 of 11 students) were female. Of the eleven male students enrolled in this course, 73% felt they were “Very Good” as compared to only 33% of the nine female students enrolled in this course.

There were nearly an equal number of males (15%) and females (20%) who felt they were “Good” at using computers. This represents 27% of the eleven male students in the course and 44% of the nine female students enrolled in this course.

There were only two students who indicated they felt “Somewhat Okay” using computers representing 10% of the 20 students. However, both students were females. Twenty two percent of the females enrolled in the course only felt “Somewhat Okay” using computers.

Table 7: Students computer experience

<table>
<thead>
<tr>
<th>Level</th>
<th>Somewhat Ok</th>
<th>Good</th>
<th>Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>7</td>
<td>11</td>
</tr>
</tbody>
</table>
It is interesting to note that the two students who stated they felt only “Somewhat Okay” participated less in the course than their peers who stated they felt “Very Good” using computers. The following figure shows students computer experience compared with the number of postings and the average number of postings.

![Students' computer experience compared with number and average postings](image)

Students were asked to specify the frequency with which they use various computer applications. All students indicated they used a word processing application at least sometimes (for the purposes of this study, sometimes was defined as approximately once per week). Five students (25%) use a word processing application every day, nine students (45%) use it often (more than once per week), and six students (30%) use it sometimes.

All students indicated they use the Internet more than once per week, 2 students (10%) indicated they use the Internet often (more than once per week) and 18 (90%)
indicated they use the Internet every day. All but one student use an Internet chat application, such as MSN or ICQ, more than once per week. Two students indicated they have never used an Internet chat application, five students (25%) indicated they use it more than once per week, and 13 students (65%) indicated they use it every day. For the purpose of this study, occasionally refers to less than once per week, sometimes refers to once per week, often refers to more than once per week.

Table 8: Students frequency of computer use by application type

<table>
<thead>
<tr>
<th>Level</th>
<th>Never</th>
<th>Occasionally</th>
<th>Sometimes</th>
<th>Often</th>
<th>Every Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Processing</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet Browser</td>
<td>2</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet Chat</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Most students indicated on the questionnaire that they were good typists. Eighteen out of 20 students (90%) indicated they typed using 10 fingers and 12 of the 20 students (60%) indicated they could type more than 40 words per minute. Three students reported they were unsure of their typing speed and five students (25%) reported typing 40 words per minute or less.
Table 9: Typing experience

<table>
<thead>
<tr>
<th># of fingers:</th>
<th>1 finger</th>
<th>2 finger</th>
<th>10 finger</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>1</td>
<td>18</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 10: Typing words per minute (WPM)

<table>
<thead>
<tr>
<th>WPM</th>
<th>Unsure</th>
<th>30 or less</th>
<th>31-40</th>
<th>41-50</th>
<th>51 or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

4.3.4 Students’ Expectations of the Course

Students indicated they expected to spend more time on-line studying for the course, however, they also reported spending some time off-line studying for the course: 65% of students reported that expect to spend 1-2 hours per week studying for the course while not on-line, while 40% expect to spend 1-2 hours on-line studying, 35% expect to spend 3-4 hours on-line and a further 25% expect to spend 5-6 hours on-line studying for the course.
Table 11: Hours per week studying on-line for this course

<table>
<thead>
<tr>
<th>Hours per Week</th>
<th>0-1</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studying on-line</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Studying off-line</td>
<td>7</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following figure shows a comparison between students’ participation rates and students’ expectations for the course.

![Figure 9: Students’ expectations compared with the number and average postings](image)

It is interesting to note that the students who expected to spend the least amount of time participated less than average (34.5) while the majority of students who expected to spend the most time studying on-line for this course participated more than average (55.4).
4.4 Common Themes

Twelve themes emerged from the interview data and were categorized into four groups: technology; general attitude; computer-mediated communication; and other motivational factors. The results obtained from this process are presented in terms of common theme by category and are described below.

4.4.1 Technical Difficulties

There were four operational questions which students were asked to determine whether they had any technical difficulties with the course (see Table 1: Operational Questions). The first question was designed to elicit any general technical difficulties that students might have. The second and third questions were designed to determine whether students' previous computer experience had either helped or hindered them. The fourth question was designed to find out if students felt they had support to help them if they were having technical difficulties. In this course students had several means of support: the course teacher, their school librarian, and the district technical support staff. However, the fourth question was meant to find out if students knew about this support and if they needed support during the course.

At the beginning of the course, students met face-to-face with the course teacher and were given a tutorial on how to download and use the course software application, First Class™. This was intended to minimize any technical difficulties students might
have and to answer any questions about logging on to the course and navigating around
the conferences within the course. If students had any technical difficulties, the course
teacher was available for further questions and help. The students were also told that the
librarian at their school could assist them and answer questions they may have had about
the course software. Students were also told they could meet face-to-face with the course
teacher or electronically mail the teacher at any time about any questions they may have
throughout the course.

In the interviews, only four students (20%) mentioned they had technical
difficulties. Only two of the students had difficulties downloading the software and were
given diskettes to use to load the software onto their home computers. These students had
no further difficulties. One student had difficulty with their initial password, but was
given instructions on how to change the password and had no further technical
difficulties. One student had difficulties with his or her e-mail but upon further probing
explained that the difficulties were because the student was accustomed to using
Microsoft Outlook for e-mail and was not familiar with the e-mail system used in the
course software. All four students felt their technical difficulties were dealt with quickly
and that there was support for them if they experienced difficulties throughout the
remainder of the course.

Two other common themes arose from the interview data when discussing
technology and on-line learning: time limits placed on the course software; and the asset
of having previous experience with both computers and the Internet. These themes are discussed in more detail below.

**Time Limit**

The school district gives teachers and students a limit on the amount of time they can log onto the server each day. Students have a limit of two hours per day that they can be logged on to the server. Five of the twenty students interviewed mentioned that the software application has a time limit and that students were given only a certain amount of time per day to logon to the course software. Once the time limit was up, students had to wait until the next day to log back onto the course. These students mentioned that this caused some difficulties for them as they often lost what they were working on and had to wait until the following day to finish. A sample of students’ responses is shown below.

Student 1: “Something I don’t like about it is the time limit you have on it per day because sometimes you need more time to finish everything. It's like that’s all the time you get and you get logged off and it shuts down on you. That’s really bad. Then you have to wait a day before you can log on again.”

Student 2: “I don't like the time limit per day because I'll be right in the middle of typing and it just shuts down. It doesn't always save everything you have typed. It just saves up to the last few sentences and then shuts down. It can be very frustrating to lose stuff and to have to wait till the next day to finish your work.”
Previous experience with computers and the Internet

All twenty of the students interviewed in this course had some previous computer experience. As a result, students were not faced with many technical difficulties. All students stated that they felt comfortable using computers and using the computer-mediated conferencing application for this course. A sample of students' responses is shown below.

Student 16: “It was really easy to use the program - there's help sections. It's obvious where things are the folders are called lessons, hand in, and stuff. So it's really easy to use. No problem downloading the program at all. The teacher went through how to use the program at the beginning of the semester, so it was really easy to follow. Plus you can always ask questions by emailing the teacher. Having had experience with email and ICQ has really helped me.”

Student 17: “I have been using computers since I was in Grade 6 so I think computers are easy to use now. The program is really easy because the folders have names and you go to lessons to find out what to do and Media Talk to state your opinion and hand in to hand in assignments. It's really straightforward.”

4.4.2 General Attitude on On-line learning

There were three operational questions which students were asked to find out their overall attitude of taking an on-line learning course (see Table 1: Operational Questions). The first question was designed to elicit any positive or negative feelings students may have had concerning on-line learning. The second question was designed to explore the
reasons why students enrolled in the course. The third question was designed to bring forth any features about on-line learning which students liked or disliked.

The overall attitude of taking an on-line learning course, for all of the students, was a positive experience. All twenty students reported that they liked taking an on-line course. Students did not elaborate on this question and probes to elicit reasons for liking an on-line learning course did not bring forth more detailed responses.

In the interviews, students mentioned one of four reasons for enrolling in the course: time independence, they could participate in the course at anytime; to get a spare block during school time; interest in the subject matter; and as a graduation requirement. This data was compared with the questionnaire data for reliability. On the questionnaire students were asked the importance of these factors when enrolling in the course. Students’ interview data matched their responses on the questionnaire in each case. Of the twenty students interviewed 12 (60%) enrolled in the course because they could participate at anytime, 1 enrolled in the course to get a spare block, 6 (30%) students enrolled in the course due to interest in the subject matter, and 1 (5%) student said they needed the course for graduation.

Four common themes emerged from student interviews when discussing features or attributes of on-line learning which students liked or disliked: time and place independence; self-discipline; accessibility of course notes, material, and student comments; teacher interaction and accessibility of teacher help. These four themes are discussed in more detail below.
Time and Place Independence

Most of the students stated that they liked the independence of being able to complete coursework at any time and in any place (home or school). Eighteen (90%) of the twenty students interviewed mentioned time and place independence as a positive factor of the course. The other two students did not mention time and place independence in any way. Students who mentioned time and place independence had varied reasons for this preference: not having to be physically in class and listening to a teacher; being able to complete the course work at their own pace; being able to complete course work at a time preferable to their schedule; and being able to complete coursework at home. A sample of students’ comments is shown below.

Student 2: “I like going at my own pace and it's a pretty easy way to take a course.”

Student 8: "You can do the class whenever you want. There is no deadline and you don't have to be in class so you can do it whenever and at home if you want to."

Student 9: "I like it because I can do it on my own time and it gives me more time for school. I get a spare and I can use that spare to work on school work and I can work at home or on the weekend.”

Student 11: "When you are in class you listen to a teacher and you take notes and you read your notes. On-line you have all your notes and that's why you can have flexible time. I do this course according to my schedule like for example today I have a test for tomorrow I have to study for. So I will do the on-line work later."
Student 12: “I like taking the on-line course because you don’t actually have to go to class. You get a spare and then you can do the work as I please. So if I can’t do the work after school I can just go into the library and do the work. Sometimes if you can’t get your work done and you fall behind it can be bad.”

Student 16: “I think it's really good because when we are in grade 12 we don't always have time in school to go through a bunch of courses and you can do it at home on your own time or on the weekend. You can pretty much do all the weeks work on the weekend - you can just take a couple hours and do it all. So I think its really good that way.”

Self-discipline

One of the negative attributes mentioned by students was that it takes self-discipline to keep up with the course work and that a student could fall behind very quickly in this course. Twelve students (60%) mentioned that it was easy to fall behind if they did not have the self-discipline to keep up the course work. However of those students, nine mentioned that if they did fall behind, it was much easier to catch up in an on-line learning course as opposed to a regular face-to-face course. Students stated that in a regular face-to-face course it was much more difficult to get missed notes and assignments. However, in an on-line course all the course notes and assignments are available and students could access them at any time.

In this particular course, students had to participate in the computer-mediated discussions and complete all the required assignments by the end course date (February 8, 2002). Assignments were handed out periodically throughout the course however students had no set due dates for these assignments. Further probes revealed that students
found this less stressful and easier to deal with than strict deadlines given throughout the course. Students realized that the work had to be completed in order to finish the course, but preferred to do the work on their own time. Of the twelve students who mentioned self-discipline as a negative factor of on-line learning, eight found it less stressful to have flexible due dates and were still motivated to participate and complete the course. A sample of students’ responses is shown below.

Student 1: “You have to do all the assignments by the end of the course so you may as well do them early on and get them over with rather than at the end of the course. So that’s what motivates me to do it. Otherwise it’s sometimes physically easier to put up your hand in class than it is to go to a computer and log on and read and reply to messages. But I think it is easier in a way to give my opinion in this course than in a regular course. I think that you just want to participate because otherwise you are going to fail the course and then what’s the point in taking it. ... You can work on the weekends or whenever you want, and you get a spare class during the day to work on your other courses. There’s no stress doing it this way like there is in other courses. It’s like I’ll do it whenever and I want to finish so I just do it.”

Student 3: “I am really far behind. I like to sleep-in in the morning so I don’t get to school early to work on it when I really should. Sometimes it’s really hard to make myself get up and just do it... I have to really motivate myself sometimes but then I just think I want to get through this course so I do it...I am really far behind and because there is no due date it doesn’t matter when I do it. It is easier to catch up because you can do it at any time.”

Student 5: “It is easier to catch up, but I’ve found that I really have to motivate myself to actually do it. Because if you aren’t going to a class every day you don’t have to be somewhere to learn, it really takes a lot more self discipline to really go along with the course. But then once you log on its really easy because everything is right
there for you, not like in a regular class where you have to ask the
teacher what you missed and they may not have the notes and it's just a lot harder.”

Student 10: “I don't have to think "oh I have other homework". It's on-line and I can do it whenever. There's no real deadlines. Some things are due, but the deadlines are minor - we can do it whenever. It really helps to have a spare block when I need time to get other homework done. That's not why I took the course. It was more out of interest. I thought it would be a lot harder - I thought I would get really bogged down in the course and have to be really dedicated in order to finish it. But now that I started the course I think it's really easy to keep up and it's easier than I thought it would be. It's not too hard. I pretty much do this course on the spur of the moment. If I find I have some spare time, I think "Yeah I'll start doing some work in this course." I get it done this way. I think the fact that the course is on-line reduces a lot of the stress because when it's face to face you always get nervous and stuff like that and it can kind of screw you up. But when its on-line there's no real pressure so everybody's cool.”

Student 11: “I do the work when I can find the time. It's kind of bad this way to because it's not one of the priorities so I always put it to the last and that's one bad thing about an on-line course. Because no one is checking on you to do the work, it's very easy to fall behind. Almost everyone does at some point. Catching up depends on the effort you want to put in. If you have the effort than you will. But if you are not doing it because you are lazy or not willing to or forget or because you are taking the course for the spare than probably it's not easy to catch up. I would say it would be much easier to catch up in an on-line course because if you miss a class than you miss what the teacher says and than you don't have notes but the stuff on-line is written there, the handouts are there and everything is accessible all the time.”

Student 14: “I think it's nice not having deadlines on assignments. Like I just did 15 lessons on one weekend and so, if you don't want to do and you don't do it its nobody else's fault just your own. So you have to do it. All the lessons are right there and there all laid out. So the lessons, if you leave like 10 of them, it's not too hard to
catch up. It's sometimes easier to focus on a whole bunch of lessons at one time. So I just sit down for an hour and do a whole bunch of lessons. It's sometimes easier than doing one lesson at a time.”

Student 19: “I will be too lazy to do it and there's no one to make you do it so it's more like self-discipline. You have to know when to do it yourself. I thought it would be really easy, but it's a little bit harder. For me the self-discipline is really hard, for others it may not, but for me it is.”

Student 20: “Sometimes it's hard to get motivate to do it though. I have to really push myself.”

Course Material is Easily Accessible

The third theme, which emerged from the student interviews, was that course notes, material and students’ comments were available and easily accessible at any time. Students found this a positive factor for three reasons. The first reason was that it is much easier to catch up on missed work if you fall behind or are absent from school for some reason. The second reason students mentioned accessibility as a positive factor is that they found it easier and faster to read through lessons and course material. Students found that they could read the daily lessons, respond, and complete all requirements for that lesson in much less time than in a regular class. Third, students mentioned accessibility as a positive factor because they could read other students’ comments before responding themselves. There were many reasons why students felt that reading other students’ comments was a positive factor and these are dealt with in detail in the Computer-mediated Conference Section.
Of the twenty students, ten (50%) mentioned this as a positive attribute to on-line learning. The other ten students did not mention accessibility of course material in any way. A sample of students’ responses is shown below.

Student 11: “When you are in class you listen to a teacher and you take notes and you read your notes. On-line you have all your notes and that’s why you can have flexible time... it would be much easier to catch up in an on-line course because if you miss a class than you miss what the teacher says and than you don't have notes but the stuff on-line is written there, the handouts are there and everything is accessible all the time.”

Student 12: “I like how we can post our answers and then you can read other peoples opinions and that helps a lot.”

Student 15: “Learning on-line I think works out better for most people to take this course. To wait in class for like an hour to get out just a few sentences that you could have learned in a few minutes cause the teachers have to drag it on - well you can learn it in that short time and it's done. Otherwise your wasting so much time listening and being in class when you don't really need to. That is a lot easier than school.”

Student 16: “If you are in a classroom you have to sit through the 75 min of the classroom and they might be saying things repeatedly because other people don't understand, but maybe you do and you just have to sit there. It really shortens things because its just teaching one person at a time instead of 30 people. It just has to make sure that one person understands not 30 all at once. It's totally easier having all the lessons right there, because if you miss one day you can just go back and look. If you miss a class you have to find the notes and figure out what the teacher was saying that day and it's harder to find out and catch up.”
Teacher Interaction

In this on-line course, the course instructor did not interact or participate in the class discussions. Although the course instructor read and monitored the postings and e-mailed students individually, the course instructor did not participate in or facilitate the discussions. The lack of teacher interaction was mentioned by students as a negative attributed. Five students (25%) mentioned that they felt it was more difficult to ask questions and seek help from the teacher in an on-line learning course than in a regular face-to-face course. These students stated that asking questions in a regular classroom generated an immediate response from the teacher. However, in an on-line learning course, communicating electronically meant that students had to wait for a response from the teacher. Even in those cases where the response came that day, students felt it was preferable to ask questions face-to-face and get an immediate response. A sample of students' responses is shown below.

Student 5: “You need more teacher-student interaction to really understand. Sending e-mails back and fourth isn’t always the best way to communicate when you need an instant response.”

Student 15: “It's better learning on-line. Because you don't have to listen to teachers who are droning on for hours and hours about stuff you don't really need to know. You can get all you need to know in just a short time it's written down in just a few sentences. I think it's easier to learn on-line this way.”

Student 19: "Sometimes if you have questions, or you don't understand what the question is from the homework you can't really get help right away you have to wait till the next day to see
the teacher so you can't do the work that you are supposed to do that day. If you don't understand what it is, so then you have to ask questions but you don't have a teacher to help you."

4.4.3 Computer-Mediated Conferencing

One of the main components of the Media and Culture course was the computer-mediated conferencing, called Media Talk. In this conference, students were expected to interact, share ideas, submit their own opinions on various issues, and discuss course related issues. In the interviews, there were five operational questions which students were asked to explore their opinions on computer-mediated communication (see Table 1: Operational Questions). The first question was designed to elicit students' perceptions of using computer-mediated conferencing as a means of discussion. The second and third questions were designed to elicit students' perceptions of factors that may have affected group discussions, encouraging or discouraging discussions. The fourth question was designed to inquire whether computer-mediated conferencing aided in students understanding of course material. The final question was designed to elicit any positive or negative experiences students may have had. Every student reported that it was a positive experience generally, and that there were no negative experiences at all. However, students did not report any specific positive experiences with using computer-mediated conferencing. Analysis of the interview data revealed four common themes: understanding course material, anonymity, time issues, and discussion etiquette.

Transcript data was also analyzed to explore discussion etiquette and how encouraging or
discouraging responses might affect the course discussion. These themes are discussed in detail below.

**Helps Understanding**

All twenty students interviewed reported that computer-mediated conferencing helped in the understanding of course material. Students stated that by reading other student’s postings helped them gain a better understanding of what was required. A sample of students’ responses is shown below.

Student 1: “There's no point doing it if you don't understand what you are supposed to do. Usually you can just look to see what others have done, than you get a better understanding of what you are supposed to do. It's easy to e-mail the teacher and he sends just you an e-mail back explaining what to do. Then you don't look stupid in front of the class because you didn't know or understand the directions or assignment.”

Student 4: “Reading other peoples opinions really help me understand what I am supposed to do and make my own opinion. Like sometimes I am not sure if I agree with an issue or not. Then I can read what other people say and I agree or not - so it helps me make up my own mind. If I really don't understand I can e-mail the teacher and he sends me an e-mail back explaining further what I am supposed to do. So it's nice that way. I don't feel stupid asking a question when I don't understand.”

Student 5: “I found that if I didn't know what I was supposed to be doing on a particular assignment I could go and look at what someone else had done and that would help me. Not so much to write or steal an opinion, but more to get an understanding of what to do. So I know what the teacher is looking for in an assignment. It makes that a lot easier.”
Student 15: “If you don't really get something you can just read what other people have written and it might give you a better idea of what's going on and what to write.”

Anonymity

Eight of the twenty students interviewed mentioned that it was easier for them to state their opinion in an on-line discussion than in a regular face-to-face class. Students indicated that they felt it was a safer means of stating their opinion for two reasons: self-respect and the system limits the possibility of an argument. In terms of self-respect, students felt that they could state what they wanted without worrying about what other students thought. Students felt that it was easier to state their opinion when they were not face-to-face because they were either too shy or too worried about what other people may think or say. The second reason students stated for preferring on-line discussions was that there is little possibility of getting into an argument or even a fight over diverse opinions. A sample of students’ responses is shown below.

Student 2: “It's really easy and it's great being able to look at what everyone else has done. I really like the interactive part and I think it is more interactive. I think more people are less worried about what other people think because you are on the Internet. And doing things on-line rather than in the classroom is easier. More people tend to hold back in the classroom versus the Internet because you aren't worried about what other people think.”

Student 14: “In a group discussion, it may take longer but then not everyone gets a chance to say something. Plus people don’t participate as much. Sometimes people are too scared to put up
their hand, so they don’t get a chance to say anything. In this course, everyone has to say something and post their opinion.”

Student 19: “Media talk allows you to post your opinion and you can read everyone else's opinion. So you can say what you think and then you can read like what other people think and so it's almost like a forum. So you can have a discussion, I think this and you think that and you have this discussion back and fourth about your different opinions and it's not face-to-face so there's less conflict. Like they're not going to jump at you and beat you up. It's over a keyboard. It's easier to say what you think and want over the Internet. When you don't know who you are talking to you can just assume they are not going to hurt you like if you're in person.”

Time Issues

Ten (50%) students mentioned time as being either a negative or positive aspect to computer-mediated conferencing. However, upon further probing, two sub-themes arose regarding time issues. The first sub-theme dealt with the actual time it takes to read all the postings as compared to the time it takes in class to listen to teachers and other students. Six students mentioned this sub-theme. The second sub-theme that arose dealt with the nature of asynchronous learning. Students had more time to think about answers before responding or posting a message. Four students mentioned this was a positive aspect of on-line learning.

Two students felt that it would take too much time to read all the postings in the conference however both students and four other students stated that a positive aspect of computer-mediated conferencing was being able to pick and choose which postings they wanted to read. In this way, students could spend only as much time as they wanted
reading postings. In a regular class, students are forced to listen to class discussions, whereas in computer-mediated conferencing, students are able to read as many or as few discussions as they want. A sample of students’ responses is shown below.

Student 2: “Plus, on the stuff I am interested in I can read what everyone thinks. But the stuff I don't care about I don't have to read. It's nice because in class you have to listen to what everyone says, you can't just turn them off or shut them down. But in an on-line course, you can choose what you want to read and just ignore the other stuff.”

Student 13: “There are so many postings that I don't have time to read them all. I just pick and choose the ones I want to read. There are just so many of them, they just keep coming up there the whole time and there's too many to read. It would take too much time.”

Student 14: “It would take way too much time to read everyone's postings. There are a few people's postings that I read most of the time, but I don't have time to read everyone's. It would take way more time in a regular class. In a regular class, you wouldn't listen to everyone give their opinion because there wouldn't be time.”

Student 15: “It's better learning on-line. Because you don't have to listen to teachers who are droning on for hours and hours about stuff you don't really need to know. You can get all you need to know in just a short time it's written down in just a few sentences. I think it's easier to learn on-line this way.”

Four students mentioned that having time to think about answers before stating their opinion was an advantage of on-line learning as compared to a regular class discussion. A sample of students’ responses is shown below.
Student 2: “In class, it's like why bother, especially if you don't have an opinion or much to say at the time. It happened to me before when I was asked to say something about TV and I really never watch TV, so it was hard for me to say anything and that wasn't very good. But in this class I can think about it for a while and then state my opinion and it doesn't matter when I do it because there aren't any real deadlines as long as I get it in before the end of class.”

Student 3: “In class too many people have too much to say, so you don't ever say anything. Even though it sometimes takes a while, in this class you can really think about what you want to say and then type it up. In class it's hard to say your opinion right away when you don't have time to think about it.”

Student 4: “Sometimes in a regular class you are just asked to say something and you don't have time to think about it first and that's hard. This class you have time to think about before saying anything. You can read what other people say and you can search the Internet on the topic and then say what you understand about it. Having that time is really good.”

Discussion Etiquette

The fourth theme that emerged from the interviews was that of discussion etiquette and whether students were encouraging or discouraging other students from participating in group discussions. Ten of the twenty students interviewed stated that other students were respectful of their opinions even if they did not agree with what was stated. The other ten students interviewed did not mention discussion etiquette in any way. Students stated that they felt it was good that other students had different opinions as it helped broaden their perspectives, and they were able to learn from other people's views. Students also mentioned that in discussions, students were polite about stating that
they didn’t agree with something that was said and the reasons why they didn’t agree. At the beginning of the course, students met face-to-face with the teacher to discuss course etiquette when participating in the computer-mediated discussions. Students were told that their messages would be monitored and that they would be e-mailed a first time warning and then reprimanded if there were any inappropriate or rude postings. A sample of students’ responses is shown below.

Student 3: “Everyone is really nice about their opinions. Like sometimes someone will say that they don’t agree with someone else but they do it in a way that is okay. It’s just an opinion.”

Student 6: “When people reply to something I have said or because they have a different opinion, that’s okay, they are really nice about it. Usually they don’t say “Well I don’t agree with you” they say something like they think differently or that their opinion is different.”

Student 8: “I can just type up my opinion and that’s fine. No one ever says anything bad that I have a different opinion than they do.”

An analysis of transcript data was also used to determine whether students were encouraging, discouraging or neutral in the group discussions in the course postings. Only transcripts of students agreeing to participate in this study were used and analyzed. Students who posed questions prompting others to state opinions in their messages where classified as encouraging participation. These students were seeking others to either agree with their statements or to provide differing viewpoints. Students who openly rejected
other students' opinions or statements with no indication of prompting further discussion were classified as discouraging participation. Students who stated their opinion or made some statement with no indication of prompting further discussion were classified as being neutral. These messages did not encourage or discourage further discussion.

The majority of postings either agreed/disagreed or stated an opinion without prompting further discussion or discouraging further discussion on that topic. Of the 875 messages posted by students, 849 messages were classified as neutral. The remaining 24 messages were classified as encouraging and 2 were classified as discouraging. For each of the 24 messages classified as encouraging, at least one student posted a reply message. There were a total of 53 postings that were actual replies to other student's postings and 822 that were initial responses. Of the replies, only two were based on a disagreement with the original sender, and these were the only two postings classified as discouraging. The remaining 51 reply messages were based on statements of agreement. These replies were all classified as neutral as they neither encouraged nor discouraged further response. The following are samples of students posting from the transcripts of the course discussions.

**Encouraging Postings**

Students who posed questions that prompted other students to reply were categorized as encouraging postings. The following student postings are samples encouraging postings.
Student 3: “Is it just me or does anyone else think that the cover of a CD has no relation to the music? I don't think you can tell what the music is going to be like at all by the cover of the CD, sometimes you can tell what genre it will be because like if it has a picture of an older man with a violin on it you know its obviously not going to be rap or anything like that.”

Student 17: “It changes my entire perception of the world, everything is influenced by the media, it bombards us with information but is it always real?”

Student 14: “Questioning the information presented to me in the media makes me wonder if all my outlooks on the world are truly false. It is unsettling to know that there are people out there with the power to manipulate a nation through media. It makes me wonder???”

Student 16: “Sure art can exist in the media. I believe it all depends on the intent of the producer, most of them intend on selling a product or presenting a certain point of view, hardly ever to make the viewers actually feel something! Media, it is just such a broad subject, yet when it comes down to it, isn't it one's interpretations of the message received that determines whether or not it is art?”

Discouraging Postings

Students who openly rejected or disagreed with other student’s opinions without prompting further discussion were classified as discouraging. These postings discouraged further discussion of an issue. The following student postings are samples discouraging postings. The names of students mentioned in the posting have been replaced with XXXX to preserve anonymity.
Student 13: “I disagree with XXXX, its almost as if Wal Mart is taking sides with certain bands. The CD’s have warning labels on them for a reason, so if its got explicit lyrics or crude content then you see the label and put it down, and if you don’t like the look of a cover, cover your eyes.”

Student 16: “I disagree with XXXX because in the media you are censored so that you can never fully express yourself.”

Neutral Postings

Students who stated their opinion with no indication of prompting further discussion were categorized as neutral postings. These postings neither encouraged nor discouraged further discussion. The majority of postings (97%) in this course were classified in this category.

Student 2: “I agree with XXXX in saying all that is left is opinions. It's inevitable that when a story is told from one person to another their own personal convictions and opinions will somehow be integrated in with the facts, and it's really hard to draw the line between fact and opinion in these cases. It's pretty much impossible in fact.”

Student 3: “I agree with XXXX since I also believe that media violence does not contribute to actual violence in most cases. It depends on the person and what is happening in his life.”

Student 8: “I think girls already look to magazines, or other sources for what they think they should look like. And i think it is next to impossible to look like the people in magazines and such, because everything is touched up, and perfected with computers.”
Basically most of the people you see in magazines are altered. So for a model, who's goal/job it is to look good, and who's life would revolve around their looks, it would be very hard expectations to live up to. Men are different. I don't think men care AS MUCH as girls do about looking like guys in magazines. I don't know too many guys that go, oh man, I wish I looked like this dude in that magazine.”

Student 10: “I agree with XXXX but only because the television is the medium, it doesn't, it can't have its own "culture". Just like the radio, and newspapers, they can't have their own "cultures" because all they're, are mediums, a source to mankind.”

4.4.4 Participation and Motivation

There were five operational questions in which students were asked to explore some of the reasons that may motivate them to participate in this on-line course (see Table 1: Operational Questions). The first and fourth questions were designed to elicit any changes in students’ expectations for the course and to find out how much time that they had expected to spend completing the requirements for this course. The second and third questions were designed to elicit students’ perceptions of what may have influenced or hindered their participation. The last question was designed to elicit any self-motivation or self-discipline techniques students may have used to help them complete the course.

All students interviewed stated that their expectations for the course and the time spent completing the on-line tasks, discussions, and other course requirements were accurate. Students expected to spend a certain amount of time on-line discussing issues
and completing assignments. The time they actually spent completing those tasks was the same as what they had expected.

During the interviews students were asked what motivated them to participate in the course and in the on-line discussions. Students mentioned one of two reasons: to get a good grade; and to complete the course for credit regardless of the grade they would get. Five (25%) students were motivated by the grade they would get in the course and fifteen (75%) students were motivated by course credit regardless of the actual grade.

**Motivated by Grade**

Five students mentioned that they were motivated to participate based on the grade they would get in this course. Upon further probing, students felt that by participating more in on-line discussions or simply keeping up to date in posting their own opinions, they would learn more or get a better understanding of the course material and thereby a better grade in the course. A sample of students’ responses is shown below.

Student 18: “For me, I want the mark. It takes me 10 minutes per day it doesn't really do anything - just log on and do it. That's my motivation.”

Student 19: “My grade totally motivates me to keep going, keeping it up. Obviously if you miss a couple of lessons you will fall behind, what the rest of the lessons are about. Because we've had sections and different topics and like each week we will do a different topic type thing. So if you miss one week, you miss a whole topic. So you have to stay with it, 2 or 3 days of lessons so you can't fall too far behind, because if you do you'll have to learn the two weeks ago topic like three weeks after. Then everyone's
already finished it. So, I don't know if that really motivates you, but for the class you'll fall behind if you don't do it every day or every other day at least. So that should be motivation enough for some people.”

Motivated by Course Credit

Fifteen students mentioned they were motivated to participate so they would get credit for this course. Upon further probing, the actual grade attained at the end of the course was irrelevant to these students. These students felt that since they enrolled in the course, they needed to complete the course and that was their main source of motivation for completing. A sample of students’ responses is shown below.

Student 1: “You have to do all the assignments by the end of the course so you may as well do them early on and get them over with rather than at the end of the course. So that's what motivates me to do it. ... I think that you just want to participate because otherwise you are going to fail the course and then what's the point in taking it. So that's your motivation for participating. It's not hard to log on and read everything and it's easier sometimes to talk about topics then in a regular course, so that also motivates you. Sometimes you really want to talk about these issues but in a regular course you wouldn't because too many other people have too much to say. So you don't get a chance. In this course it's really easy to participate and give your opinion. I prefer doing the MediaTalk things better than handing it in to the teacher. Because then you can get other peoples input before you say anything. Like you could be totally off when you write to the teacher. We get a spare for this course, so it's really nice. You can work on the weekends or whenever you want, and you get a spare class during the day to work on your other courses. There's no stress doing it this was like there is in other courses. It's like I'll do it whenever and I want to finish so I just do it.”
Student 8: “Because there is no deadlines or anything pushing you to do the assignments you have to really motivate yourself to get going. If you don't get going you're going to fail, so why take the course. There's no stress in doing it this way and that's good, but you really have to push yourself.”

Student 14: “I think it's nice not having deadlines on assignments. Like I just did 15 lessons on one weekend and so, if you don't want to do and you don't do it its nobody else's fault just your own. So you have to do it. All the lessons are right there and there all laid out. So the lessons, if you leave like 10 of them, it's not too hard to catch up. Its sometimes easier to focus on a whole bunch of lessons at one time. So I just sit down for an hour and do a whole bunch of lessons. It's sometimes easier than doing one lesson at a time. The effort you put into an on-line class is different than in a face to face class - you don't have to do it if you don't want to each week. But then it all equals out in the end. It's just different. Really just finishing this course motivates me to get it all done.”

4.5 Summary of Common Themes

This chapter has identified and explored the common themes of the twenty students who enrolled in an on-line learning course. Each student’s experience was unique in how they participated, what motivated them to participate and their perceptions of an on-line learning course. However, common themes of experiences and perceptions emerged from the data. There were twelve common themes identified and grouped into four categories. Time and place independence, accessibility of course material, self-discipline, and teacher interaction were the four common themes in the general attitude category. Time limitations and previous experience with computers and the Internet were the two common themes in the technology category. Understanding, anonymity, time
issues (on-line versus class time, and having time to think before responding), and
discussion etiquette (encouraging, discouraging and neutral responses) were the four
common themes in the computer-mediated communication group. Grade and course
credit were the two common themes in the Motivation category.

In the final chapter, the major findings related to the research questions will be
discussed and conclusions formed. The limitations of the study and implications for
practice and further research will also be explored.
The purpose of the study was to examine motivational factors influencing secondary students' participation in an on-line learning course. The discussion, conclusions, limitations and implications that appear in this chapter are drawn from an analysis of both quantitative and qualitative data of the experiences of twenty secondary school students.

Two research questions provided the focus for the study:

- How frequently students used computer-mediated communication?
- What factors were involved in motivating students to participate actively and thoughtfully in the discussions?

The findings that addressed both research questions were outlined in chapter four. The frequency of messages posted per student were tabulated and used to address the first and second research questions. The tabulation provided information on the frequency of student participation and on temporal patterns of their participation.

The number of messages posted by students was tabulated and used to explore comparisons and relationships with student characteristic data from the student questionnaires. Comparisons between the number of messages posted and student characteristic data were outlined in chapter four. Student interview data was analyzed to address the second research question. Twelve common themes were identified and grouped into four categories. Each common theme was explored in terms of the students' experiences.
The results from chapter four are discussed in detail in two sections of this chapter. The first section discusses the frequency of students' participation and the analysis of the number of messages posted and student characteristic data. This data was presented in sections 4.2 and 4.3.1 to 4.3.4 and is primarily from student questionnaires and transcripts. The second section of this chapter discusses students' experiences and perceptions of participating in an on-line learning course. This data was presented in sections 4.4.1 to 4.4.4 and is primarily from student interviews and transcripts.

5.1 Discussion of Student Dispositional and Characteristic Data

Much of the questionnaire data was designed to determine students' skills and experience using computers. Clark & Pitt (1997) suggest that students must feel comfortable with using computers in order to be successful in an on-line learning course. Rogers & Laws (1997) also showed that students who were not comfortable using computers had a higher failure rate in on-line learning courses. In this study the questionnaire was used to gather information about students' comfort levels using computers and then to explore any relationships with data from the frequency of students' participation. It was expected that students who had more experience using computers and who felt comfortable using computers would have a higher participation rate and students who were less experienced would have lower participation rates.
The questionnaire and interview data showed that all of the students who participated in this study were comfortable using computers prior to the commencement of the course. Further, the majority of students had a high-level of computer skills and experience before starting the course, including those students who participated least in the course. It is difficult to conclude that students who were not comfortable using computers or who had a low level of computer skills had lower participation rates or vice versa. The majority of students were comfortable using computers and had a high-level of computer skills, yet participation rates varied considerably. However, it is interesting to note that the only two students who felt only “Somewhat Okay” using computers were both female and both had a low number of postings throughout the course.

Comparatively, the majority of students who felt they were “Very Good” at using computers were male and participated more actively in the course than did their female counterparts. This is consistent with the literature.

In addition to students’ comfort levels using a computer, students were also asked how often they use a computer, which application they use most often, and information on their typing skills. This data was collected to explore relationships between specific computer applications and students’ participation rates. It was expected that students using the Internet or Internet chat applications daily might have an impact on students’ participation in an online course.

However, it was difficult to conclude that students who use the Internet daily had higher participation rates as the majority of students used the Internet daily, yet
participation rates amongst those students varied considerably. It was interesting to note
that two students indicated they had never used any form of Internet chat application and
those two students had lower than average participation rates. Certainly daily use of
computers has an impact on students' computer experience, skills and comfort levels,
however, I am not convinced that daily use of the Internet or Internet chat applications
directly affected students' participation in this on-line course.

Similarly, with typing skills, it was expected that a high-level of typing skills
might also have an impact on students' participation rates. However, the majority of
students had a high-level of typing skills before starting this course. The two students
with the lowest typing speed of 30 words per minute or less had high participation rates,
whereas two of the six students with typing speeds of over 50 words per minute had the
lowest participation rates in the course. Therefore, typing skills did not seem to have a
direct impact on students' participation rates in this course.

On the questionnaire, students were asked how much time they expected to be on-
line studying for this course. This question was asked at the beginning of the course to
explore students' attitudes in terms of how much time they were expecting to dedicate to
this course. Research has shown that students with positive expectations for the course,
who are comfortable using the on-line environment for communication, and who
understand the expectations for the course had higher participation rates (Ellsworth,
1995; Goldberg, 1997). It was expected that students who had a positive attitude towards
the course and expected to spend more time interacting in the course might have higher
participation rates. A comparison between students’ expectations for the course and participations rates showed that students who expected to spend more time on-line in the course had a higher number of postings than those students who expected to spend less time on-line in the course. Therefore, a conclusion can be made that students’ expectations for the course did affect their participation rates.

Studies have shown that students who are shy to participate in a regular course often feel more comfortable participating in an on-line course (Porter, 1997; Goldberg, 1997). In this study, students were asked how often they participated in discussions in a regular course to see if a relationship existed with the number of messages students posted in the on-line learning course. It was difficult to draw a conclusion as the majority of students indicated they often or always participate in a regular course. However, 15% of students indicated that they only sometimes participate in discussions in face-to-face courses. Those three students posted a high number of messages in the on-line learning course. It is interesting to note that during the student interviews those three students also mentioned that they felt more comfortable participating in an on-line learning course due to anonymity. This is consistent with the literature.
5.2 Discussion of Students Experiences and Perceptions of the On-line learning Course

The student interview data was designed to explore students' experiences and perceptions of participating in the on-line learning course with a focus on factors that may have contributed to motivating students to participate. Twelve common themes emerged from this data and were categorized into four groups. The following discussion of students' experiences will be separated into these common themes. The data discussed in this section was presented in sections 4.4.1 to 4.4.4.

In the interviews students were asked questions regarding technical difficulties they may have experienced which could have caused them to feel less comfortable using computers or using the on-line learning environment in this course. Research has shown that students who were technically challenged experienced frustration with the on-line environment (Bailey & Blythe, 1998). This frustration could lead to lower participation rates, especially if the student feels lost in the course and cannot easily navigate to any section or page.

In this course, it was expected that students who had technical difficulties with the course would have lower participation rates. However, students experienced very few technical difficulties and all difficulties were resolved quickly. Further, students indicated they felt technical support was there for them if they did experience any difficulties. This may have led to higher comfort levels using the course software. However, it did not result in higher participation rates for students. Although this was students first distance
education course, students had a high level of computer skills and experience prior to starting the course. This was believed to be part of the reason students had few technical difficulties.

In order to minimize any technical difficulties students may have encountered with the course software, the instructor met face-to-face with the students to give them a tutorial on how to download and operate First Class™. This was a good preventative strategy to limit the number of technical difficulties students may have encountered as well as to show support to the students and ensure students knew where to go for support. Technical difficulties were, therefore, not a significant factor affecting students’ participation in this course.

One of the advantages of on-line learning is the increased opportunity for learning through flexibility in scheduling and time (Farrell, 1998; Minoli, 1996; Rogers & Laws, 1997). The majority of students in this study indicated that the reason for enrolling in the on-line learning course was because of flexibility in scheduling and time. Students could enrol in this course regardless of the regular scheduled timetable, as well as receiving a spare block for studying. Further, the majority of students mentioned that time and place independence was a positive factor in on-line learning. Students who mentioned time and place independence had varied reasons for this preference: not having to physically be in class; being able to complete the course work at their own pace; being able to complete course work at a time preferable to their schedule; and being able to complete coursework at home. The findings in this study are consistent with the literature.
According to Farrell (1998), increased flexibility coupled with time and place independence allows students to feel less pressured in an on-line learning course. However, Goldberg (1997) found that students had to be self-disciplined in order to complete an on-line learning course, which may add more stress to students.

During the student interviews, the majority of students mentioned that although it takes good self-discipline to motivate them to participate, they found this on-line environment less stressful and easier to participate because of the flexibility in scheduling and time and place independence. It is interesting to note that the students that mentioned self-discipline had above average participation rates in this course. It is possible that students' awareness of their own self-discipline and the realization that one needed good self-discipline to be successful in this course made them realize they needed greater effort to participate. Therefore awareness that one needed good self-discipline may have been a motivating factor of students' participation. However, it is difficult to draw any conclusions regarding students' stress levels. Consistent with Farrell's (1998) study, students in this course felt less pressure and lower stress, however, this seemed to have little affect on students' level of participation.

Bailey and Blithe (1998) suggest that in an effective on-line learning course, the course information and material must be clearly organized, complete, and presented in a manner that allows students to easily navigate to any page or section within the course. This is essential to an on-line course so that students don’t get lost or frustrated navigating through many links. It was expected that if students didn’t know how to
navigate, got lost navigating through the course, or didn’t know where to post messages, they would get frustrated and participate less in the course. However, students felt the design of this course made it easy to navigate through the course and the material was easily accessible. It is difficult to conclude that students’ participation rates were affected by the course design. Students did not find the course difficult or frustrating to access and did not mention that the ease of navigation encouraged participation. However, it is interesting to note that students found having all the course notes, lessons, and discussions easily accessible was less stressful and more beneficial to them as compared to a face-to-face course.

All twenty students reported that having the lessons and discussions easily accessible and available aided in their understanding of the course material. Although they did not mention that this encouraged them to participate more, students did mention several factors that may have had some impact on their participation rates. These factors are discussed below.

Students found that the computer-mediated conference allowed them more time to think about their responses and to post a more articulated and well thought out response. Students mentioned that in a face-to-face class there often wasn’t time to think about what they wanted to say and so they either risked saying something that might not make sense or was inappropriate, or they didn’t participate in the class discussion. Students stated that reading other student’s postings helped them gain a better understanding of what was required of them, especially if they didn’t understand a question or an
assignment. Students also mentioned that reading other students postings allowed them to think about their own opinions and get a broader perspective on issues. Students did not mention that this directly increased their participation rates. However, it was felt that this was a factor which may have indirectly influenced students' participation, since students who did not understand what was expected would not participate in the discussion. Rather than risk an incorrect response, students that did not understand what was expected would not participate. Students gained a better understanding of course issues by reading other students' postings, and this allowed the students to feel they could participate in discussions on that particular issue. Therefore, a conclusion can be made that the asynchronous discussions helped students understanding of the course material, which in turn allowed students to feel they could participate.

Further, reading their peers responses may have increased students confidence to express their own opinions. Porter (1997) found that in an effective classroom students must feel free and safe to express themselves, to generate ideas, to ask and answer questions, to make incorrect assumptions without being ridiculed, and to interact with others, free of the anxiety of making mistakes. In this study, students mentioned it was easier for them to state their opinion in computer-mediated discussions for two reasons: anonymity and because they felt it limited the possibility of starting an argument.

In terms of anonymity, students felt confident that they could state what they wanted to without worrying about what other students thought. Students mentioned that it was easier to state their opinion when they are not face-to-face with their classmates.
because they did not have to worry about what their classmates may think or say in response. Most of these students did not know or had not met the other students in the class. Students stated that in a face-to-face course they often scaled down what they really wanted to say or said nothing at all due to fear of what their classmates might say or think. Students also mentioned that they valued their peers' opinions; however, there was no indication that the other students knew their opinion was valued. According to Stacey and Rice (2002), students who felt their opinions were valued and relevant might be motivated to participate more. It is difficult to draw a conclusion based on this as it was unclear whether students knew their opinions were valued.

The second reason students stated for preferring computer-mediated discussions was that there was little possibility of getting into an argument or even a fight over diverse opinions. Students stated that other students were respectful of their opinions even if they did not agree with what was stated. Further, students stated that they felt reading other peoples diverse opinions was a positive factor in their learning as it helped broaden their perspectives and they were able to learn from other peoples views. Students also mentioned that in discussions, students were polite about stating that they didn’t agree with something that was said and given the reasons why they didn’t agree. It was thought that if students were not respectful of each other, that participation levels would decrease. However, this was not a factor in this study as students were respectful of each other and each other’s opinions and diverse views. This level of respect was largely due to the fact that students were told at the beginning of the course that the course instructor
would monitor all messages. Although students were encouraged to discuss other students’ opinions, they were discouraged from doing so in a derogatory way. Students discussed etiquette for participating in computer-mediated discussions with the course instructor and were aware of what constituted rude or disrespectful behaviour.

Several studies have shown that teacher presence and interaction is essential to engage students and facilitate valuable class discussions (Anderson, Rourke, Garrison, & Archer, 2001; Rourke & Anderson, 2002). In this course, the course instructor posted lessons for students to respond to and discuss, but did not participate or join in the actual discussions. Several students found the lack of teacher presence was a negative aspect of this course. Although students felt the course instructor was quick to reply to emails, they also felt electronic mail was slower and less effective than an immediate response in a face-to-face class. Although students did not mention that this discouraged their participation, the lack of teacher presence may have been a limiting factor in further discussions of course issues.

In the interviews, students were asked specifically what motivated them to participate in the course. Students responded in only two ways: course completion and course grade. The majority of students stated that completing the course motivated them to participate and complete all requirements for the course. These students were not motivated by grade but by the course credit they needed for their grade 12 graduation requirements. The remaining students stated that they were motivated by the grade that they would be assigned upon completion of the course. These students wanted to obtain a
high grade for the course. It is interesting to note that none of the students were motivated to participate more frequently for their own learning or for their own interest, even amongst students who stated they were very interested in the course topic. Students participated more frequently to satisfy course requirements or obtain a high grade in the course.

5.3 Conclusions

The purpose of this study was to explore factors that may have influenced students' participation in an on-line course. A review of the literature revealed several factors that influenced participation of students in graduate or post-graduate course. However, few studies have explored whether these factors can also be applied to secondary school students. The findings of this study led to the following general conclusions regarding the motivational factors that influenced students' participation in this on-line learning course.

One of the major critics of distance education and on-line learning is the lack of human interaction and communication. This study showed that this critical factor can be overcome using computer-mediated communication. However, some instructional strategies may be necessary to increase communication and ensure that discussions are relevant. Consistent with the literature on computer-mediated conferencing, students found it easier and in some cases preferable to participate in computer-mediated
discussions as opposed to participating in face-to-face discussions. There was very low teacher presence in the computer-mediated discussions, which may also have been a limiting factor in students’ participation.

Self-discipline was a major factor that influenced students’ participation in this course. Students with poor self-discipline found it more difficult to participate than students with good self-discipline. The majority of students stated that they needed good self-discipline in order to participate frequently in the course. Consistent with Farrell’s (1998) findings, students found this course less stressful due to the flexibility of the course and time independence.

Although computer experience, comfort levels and technical difficulties were factors that affected students’ participation in this particular course, data was inconclusive. It was assumed that students’ with little experience using computers might not participate as frequently as students’ who had experience using computers and were comfortable in an on-line environment. This was inconclusive as all the students in this course were experienced using computers and were comfortable in an on-line environment, yet participation levels varied significantly amongst the students.

Similarly with students typing skills, it was assumed that students who had low typing skills would participate less and students who could type quickly and accurately would participate more frequently. This data was also inconclusive as the majority of students indicated they were good typists.
Lastly, students' participation was influenced by course requirements and by their grade. Students stated they were motivated by course requirements. In order to complete the course and get credit for the course, students were required to participate in the computer-mediated discussions. Students stated that this influenced their motivation to participate. Other students stated they were motivated to participate in the course discussions to obtain a higher grade in the course.

In addition to the above general conclusions, the findings of this study identified several important characteristics of on-line learning. The computer-mediated conferencing component of the course was an important factor for students in their learning and understanding of course material. Students mentioned three aspects of computer-mediated conferencing that they felt were positive factors in on-line learning. First, the conference aided in their understanding of course material. Secondly, anonymity made students' feel safer to state their opinions in this environment as opposed to a face-to-face class. Lastly, time-independence allowed students more freedom to think about their opinions, the opinions of their classmates, and how they wanted to respond.

Due to the naturalistic setting of this study, transfer of the results and conclusions to other situations depends on the degree of similarity between the original situation and the situation to which it is transferred. No specific claims for transferability are made for this study.
5.4 Limitations of the Study

This study focussed on only twenty secondary students enrolled in one on-line learning course. As a result, the findings of this study cannot be generalized to other secondary school on-line learning courses or contexts. However, the reader may consider the degree to which the context of this study is similar to the context being examined and then judge the applicability of the findings.

Another limitation of this study was the absence of any outlying data. There was little dispersion in the questionnaire data. Although there was a range in students' socio-economic and ethnic background, students were homogenous in their experiences, typing ability, and use of computers. Students had a uniformly high level of computer skills and experience, which precluded an investigation of the impact of technical skill on motivation and frequency of participation in the course.

5.5 Implications for Further Practice

The students' experiences in an on-line learning course and the exploration of factors affecting students' participation was a worthwhile venture. Students indicated they were comfortable using the First Class™ conferencing software as a mode of computer-mediated communication and found this mode of communication often more
beneficial to their learning than face-to-face communication. This study found that students' participation was influenced by many factors, including previous experience with computers, computer skills, comfort levels using computers, and course expectations.

Arising from the experiences of the students are several implications that might enhance discussions and encourage students to participate more in an on-line course. First, to further engage students in discussions, teacher participation and interaction in the discussions should be considered. Stacey and Rice (2002) found that giving students feedback and acknowledging students' participation was a motivating factor. In this course, the teacher did not participate in any of the discussion. Some students indicated a lack of teacher presence and stated they felt the need for teacher interaction. Offering students feedback on their responses or on their participation as well as ensuring students feel their participation is valued and relevant might motivate students to participate more. As well, teachers might consider prompting and facilitating students' discussions in order to encourage students to participate more.

A second implication involves teacher intervention when students are not participating. Although participation in this course was mandatory and participation marks were given, a few students felt that they could complete the course requirements with minimal participation. In order to engage students fully in discussions it might be necessary for course instructors to prompt students using traditional instructional strategies, such as scaffolding, collaborative learning, or peer mentoring (McCormick and
Pressley, 1997). Deadlines for participating might also be implemented to ensure students are keeping up with course assignments and lessons. In this course, the instructor did not place deadlines on the completion of course assignments other than all assignments and discussions must be submitted before the end of the course. However, it is conceivable that a student could wait until close to the end of the course before submitting any assignment or participating in discussions. This might hinder students' participation rates. Having deadlines and giving feedback and assessment periodically throughout the course might ensure that students participate more frequently and regularly throughout the course.

A further implication involves students' expectations for this course. At the beginning of the course, the instructor met with the students face-to-face to show students how to use the course conferencing software. At that time it might be beneficial to the students for the instructor to outline all course expectations and ensure that students understand they are expected to participate in on-line discussions and the amount of time students might expect to spend interacting and participating in the course.

5.6 Implications for Further Research

As a result of this study, a number of topics appear to warrant further investigation. To what extent do factors such as technical expertise, typing skill, and self-motivation affect successful participation in an online course? How is respect for others
created and maintained in online discussions? To what extent does the awareness that students’ opinions are valued affect participation? What specific things can the course instructor do to encourage participation and success? What specific things can course designers do to encourage participation and success?
References


The use of computer-mediated communication as a collaborative learning tool for secondary school students enrolled in an on-line learning course

Questionnaire

Please answer all questions in the space provided. You may use pen or pencil. This questionnaire should take no more than 30 minutes to complete.

1. Please enter your age: ___________ grade: ___________

2. Gender: Male _____ Female _____

3. Which school do you normally attend: _______________________________

4. Is this your first on-line course? Yes____ No____

5. Is this your first distance education course? Yes____ No____

6. Please indicate how you feel about communicating/participating in a regular course (not on-line)?

<table>
<thead>
<tr>
<th>Very Shy (Never Participate)</th>
<th>Rarely Participate</th>
<th>Sometimes Participate</th>
<th>Often Participate</th>
<th>Very Talkative (Always Participate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

7. When enrolling in this course, how important were the following factors (please rank each item from "not at all important" to "very important").

<table>
<thead>
<tr>
<th>Not at all Important</th>
<th>Somewhat Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) The course is on-line</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>ii) Time Independence (you can study at any time)</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>iii) Your friends are in the course</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
</tbody>
</table>
iv) The topic of the course

v) The course is a graduation requirement

vi) Other:

vii) Other:

8. Is it important to you that you will not see your teacher or classmates face-to-face?

<table>
<thead>
<tr>
<th>Important (do not like it)</th>
<th>Neutral (do not care)</th>
<th>Important (Prefer it)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

9. Please indicate how good you feel you are on the general use of computer applications (Please rank from "never used a computer" to "very good, can easily use most applications").

<table>
<thead>
<tr>
<th>Never Used</th>
<th>Somewhat Okay</th>
<th>Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

10. Please rank how often you use the following applications. (please rank each item from "never used / don't know how" to "use often / everyday").

i) Word Processing Applications (ie. Word, WordPerfect)

ii) Internet Browser (ie. Internet Explorer, Netscape)

iii) Internet Chat Rooms (ie. ICQ, MSN)

iv) Computer Conferencing Applications (ie. First Class, Web CT, School Net)
v) Computer Games (ie. WarCraft, Znes, Solitaire)

11. When typing using a keyboard, do you consider yourself:
   1-finger typist
   2-finger typist
   10-finger typist
   Other:

   What do you estimate is your typing speed:_________(words per minute)

12. How many hours per week do you expect to spend on-line in this course?

How many hours per week do you expect to spend studying for this course while NOT on-line?

14. Do you expect to spend more or less time studying for this course as compared to a regular course offered at your school? more ______ less ______

why?______________________________