ONTARIO COLLEGES IN THE DIGITAL AGE:
UNDERSTANDING THE STUDENT EXPERIENCE, PERCEPTIONS AND
ATTITUDES OF ONLINE LEARNING AT ONE ONTARIO COLLEGE

by

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for the degree of Doctor of Philosophy
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Abstract

The global economy is undergoing drastic upheavals as Canada enters the 21st century. The key driver of this transformation is the emergence of the digital age. The digital age is impacting all facets of Canadian society, including postsecondary education. The integration of educational technologies into curriculum is spawning a new form of learning commonly referred to as online learning. Online learning has the potential to radically alter the manner in which knowledge is taught and learned in Canadian higher education.

This mixed-methods study utilized both quantitative and qualitative data collection methods. The qualitative phase (n = 16) was developed and built upon the development and analysis of the quantitative phase (n = 279), which is based on Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education*, permitting the researcher to probe more deeply into the college students’ attitudes and perceptions of their online learning experience. The participating students represented most of the programs offered by this college.

After the data analysis and interpretations of the findings, several themes emerged. The participants in the online questionnaire were satisfied with their online learning experiences at this one Ontario college. The participants cited the convenience, flexibility and the ability
to control their learning as major benefits associated with online learning. Although the students who participated in the online questionnaire were satisfied with their online learning experiences, the quantitative and qualitative findings of this study provide compelling evidence that, as a matter of preference, students would choose a face-to-face / hybrid course over an online course.

The participants in the semi-structured interviews repeatedly discussed how the interaction and physical contact between faculty and student, and between students enhanced the learning experiences, which contributed to their academic success. The socialization that occurred in the classroom was also a contributing factor for the preference for face-to-face / hybrid instruction.

The results of this study may inform and guide college leadership and faculty about the complexities associated with implementing an online learning strategy at their college. Implications of the conclusions are presented and discussed on how they may impact policy and practices at Ontario’s colleges.
Acknowledgements

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Chapter One:
Introduction and Background

Introduction

The main purpose of this study is to gain insights and examine the college students’ experience and perceptions of online learning in the course of their studies. The results of this research generated a set of principles, recommendations and emerging trends that may guide college administrators, faculty and support staff in their deliberations and strategic planning on how best to integrate online learning into the college curriculum.

There is no single answer, solution or blueprint on how postsecondary institutions should implement an online learning strategy to meet the varying and eclectic expectations of the 21st century student. This is particularly so since today’s students represent a broad range of ages, communication preferences and learning styles (Siemens & Tittenberger, 2009).

It is instructive to note that there is neither consensus nor a generally accepted definition of technology use in education (Achacoso, 2003; Garrison, 2000; Little, 2009; Nichols, 2007; E-Learning Report 2005: A Foundation for Transformation, 2005; Dr. Woodill, personal communication, December 5, 2006). This imprecision creates confusion for theorists, practitioners and researchers (Nichols, 2007). Terms such as e-learning, online learning, and educational technologies may mean different things to different researchers (Dr G. Wyatt, personal communication, April 22, 2008). As such, in this study, online learning and e-learning are used interchangeably. For the purposes of this study, online learning and e-learning are defined as “any learning experience which is facilitated by the use of Internet-based technology tools” (Lopes, 2008, p. 28).

Overview

The advent of the Internet and development of digital technologies is permeating all facets of our existence (Alexander, 2009; Siemens & Tittenberger, 2009). Within the last decade, the explosive growth of the Internet and digital technology has radically altered the manner in which we communicate, work and learn (Alexander, 2009; Bekar & Lipsey, 2006; Nichols, 2009a; Siemens & Tittenberger, 2009). From online banking to e-commerce,
technology is revolutionizing the manner in which we interact with one another and the world around us (Nichols, 2007). Many researchers and commentators compare the Internet’s penetration into our social fabric to that of Gutenberg’s invention of the printing press which contributed to the rise of literacy, provided easier access to information and empowered and encouraged the lower classes of society to influence and shape the direction of the issues most pertinent to them (The Advisory Committee for Online Learning, 2001; Kirtley, 2002).

As a consequence, almost every aspect of the college students’ lives continue to be intertwined and subjected to the rapidly evolving technologies associated with the prolific growth of the Internet, and the ever-expanding innovations of digital technology (Little, 2009; Lohnes & Kinzer, 2007; Nichols, 2009b). Present and future generations of students will have experienced their formative years in the digital age. Echoing this theme is Nicholas Negroponte who wrote “Computing is not about computers anymore. It is about living” (1995, p. 6).

Ontario colleges, like most other industries or service providers in Canada, are influenced by their contact with and exposure to the digital age. Ontario colleges are not immune from the reaches of the Internet, which is often heralded as the most transformative technology ever to face higher education (Hartman, 2008). In response to the influences of the digital age, Ontario colleges have embraced online learning in an effort to offer an alternative learning path for their students. However, the reasons why postsecondary students enroll in online courses and the advantages or disadvantages of online learning, from the student perspective, are not clearly understood (Braun, 2008). I found a dearth of empirical knowledge and research concerning the student online learning experience.

Within the broader scope of the role of technology in one Ontario college, this study will explore and examine the college student experience and their perceptions related to online learning in the course of their studies.

**Background**

There is little doubt that the explosive growth of digital technologies is radically altering the manner in which we communicate and interact. A recent Statistics Canada study survey concluded that nearly three-quarters of Canadians have access to the Internet from
their homes (Veenhof, Wellman, Quell, & Hogan 2008). According to Human Resources Development Canada, over 70% of the new jobs created in Canada will require some post secondary education (Pathway to Prosperity, 2005). As such, there is concern that Canadian educational establishments will not have the capacity to absorb this potential dramatic increase in student enrolment.

Further complicating the perceived shortage of capacity to absorb this potential increase in student enrollment is the movement from an industrial based society to a knowledge-based society. In this economic order, and unlike previous economic revolutions, knowledge and not labour or raw resources, will be the key economic determinant (Drucker, 1994). As such, “education will become the center of the knowledge society, and the school its key institution” (p 66).

As our society gravitates and evolves toward a knowledge-based economy, such a transformation will shape the learning and teaching expectations of the 21st century student. This transformation toward a knowledge society will impact, and cause to disrupt, the manner in which college faculty impart knowledge to students in the digital age.

The use of online learning within higher education, as an alternative to traditional classroom instruction, continues to grow (Birch & Burnett, 2009; Braun, 2008; Keller & Cenerud, 2002; Kim, 2008; Kirtley, 2002; Little, 2009; Nichols, 2009a; Partridge & Edwards, 2005; Song, Singleton, Hill, & Myung, 2004). The Internet and associated digital and educational technologies have been utilized in education for over a decade (Conole, Carusi, de Laat, Wilcox, & Darby, 2006; Zhou & Xu, 2007). Most institutions of higher education have embraced online learning in some capacity (Birch & Burnett, 2009; Kim, 2008; Kook, 2007; Little, 2009; Partridge & Edwards, 2005; Song et al., 2004).

Although higher education students are increasingly demanding greater access to and choice of online courses, many questions remain concerning the veracity and viability of online learning, particularly from the learner perspective (Birch & Burnett, 2009; Song et al., 2004).

Notwithstanding the lofty expectations and the potential of online learning to drastically alter the manner in which information and knowledge is imparted to students (Morrison, 2007), Selwyn, Gorard, and Furlong (2006) and Haymes (2008) caution that the
digital age presents numerous challenges for both faculty and administrators of higher education. Contrary to what many proponents of online learning advocate and believe, online learning is not a universal panacea that will solve the many challenges confronting 21st century higher education (Ennew & Frenandez-Young, 2005; Flynn, Concannon, & Ni Bheachain, 2005; Selwyn et al., 2006). Selwyn et al. (2006, p. 32) amplify this point:

Much of what is assumed about information communications technology (ICT) and adult learning by its proponents stems from a viewpoint where virtually all societal problems, be they economic, political, social, or educational are subject to the technical fix of ICT.

A review of the literature revealed that during the dotcom hype of the late 1990s, a number of postsecondary institutions encountered challenges incorporating online learning into the curriculum. In many instances, postsecondary institutions have abandoned online learning due to cost overruns and poor strategic planning (Conole et al., 2006; Garret, 2004; Meyer, 2006).

**Online Learning in Context**

There is a passionate debate within the literature concerning the effectiveness of online learning in support of student learning (Achacoso, 2003). Incorporating online programming in postsecondary education is a challenging task fraught with many pedagogical and social implications. Conole et al. (2006, p. 137) relate that “in practice, e-learning is complex and involves considerable individual and institutional change, beyond the provision of technology”. As such, many questions arise, concerning the pedagogical impact of online learning and how student learning benefits, if at all, from technology enhanced instruction in postsecondary education. Kerr, Rynearson, and Kerr (2006) assert that many studies have concluded that there is a need for more credible research on the student perspective of online learning. As Hannifin concludes, the research and “movement toward online learning is not grounded in compelling empirical evidence that it is effective and / or beneficial for learning” (as cited in Song et al., 2004, p. 60).

According to Nichols (2007, p. 2) “E-learning’s greatest barrier is neither unreliable technology nor technical complexity. The greatest barrier to e-learning in tertiary education
is a lack of context. Nichols (p. 2) defines the lack of context in the e-learning debate as follows:

E-learning is opposed mainly by those who know least about it. It is still common to find educators who perceive e-learning as internet-only education that encourages a static and content focused series of text pages on screen. Others envisage the shallow and random online messages that are typical of a social real-time chat session, and wonder how this type of communication could add value to academic discourse. Still others see no reason for using e-learning: isn’t the status quo good enough? Some may have experienced e-learning done poorly, and extrapolate their experience into negative impressions of all e-learning. Of course e-learning can be done poorly. But it can also be done well. [emphasis in original]

Similar to Nichols (2007), Selwyn et al. (2006) believe that the confusion regarding the efficacy of online courses in supporting student learning stems from the polarizing nature of the debate surrounding the use of e-learning in postsecondary education. On one extreme are the technological determinists, who believe “Technology guides and shapes society with its own logic as an influence autonomous to social forces. Thus, technology is seen as a driving force of society” (Selwyn et al., 2006, p. 32).

Conversely, on the other extreme of the debate are the social determinists, who “posit that technology is a neutral instrument that can be molded and used for various purposes. In this approach, technologies merely appear in response to society’s demands and the interests of the market” (Selwyn et al., 2006, p. 32). Ehrmann (1999, p. 26) supports the social determinist’s view on the influences of educational technologies in the classroom: “Technologies such as computers (or pencils) don’t have predetermined impacts; it’s their uses that influence outcomes. This statement seems obvious, but many institutions act as if though the mere presence of technology will improve learning” [emphasis in original].

Both views on the effectiveness of online learning in postsecondary education are constricting (Selwyn et al., 2006). Both viewpoints are narrowly interpreted and do not take into consideration the various social, economic and political influences that shape the use of e-learning in postsecondary education.
Theoretical Framework

Similar to Lopes’ (2008) research, this study is grounded on the premise that technology and associated e-learning tools should neither determine, nor be the driving force, behind the pedagogy of postsecondary education (Nichols, 2007). Adding technology into the classroom does not necessarily create a more effective and prolific learning environment (Brown, 2009a; Lightfoot, 2005; Lopes, 2008; Nichols, 2007, 2009b). Rather, e-learning tools, or educational technologies, should be selected based on how well they can be applied as an enabler to enhance the learning process (Brown, 2009a; Ettinger, Holton, & Blass, 2006; Lopes, 2008; Nichols, 2009b; Siemens & Tittenberger, 2009). Lightfoot (2005, p. 209) recommends that “a good educational environment should be grounded in pedagogical fundamentals and enhanced with complementary technology”.

A Theory for Online Learning

Many post secondary institutions have begun implementing some form of online learning programming within the curriculum (Bullen, 2007; Conole et al., 2006; Keller & Cenerud, 2002; Zhou & Xu, 2007). The expectations are high regarding the potential for online learning to alter the manner in which faculty teach and students learn (Diaz, et al., 2009; Morrison, 2007). Andria (2007, p. 4) emphasizes the potentially powerful impact of online learning within postsecondary education:

E-learning affects the design of curriculum, faculty teaching methods, pedagogical considerations, student e-learning expectations, strategic planning and financial allocations. E-learning has the potential to radically alter and redefine the sociocultural roles and relationships between institutions, learners and faculty.

However, from a learning theory perspective, the implementation of online learning programs within postsecondary institutions present many pedagogical challenges for administrators, faculty and students (Nichols, 2007; Selwyn et al., 2006; Haymes, 2008; Zhou & Xu, 2007). Bullen (2007, p. vii) suggests that “many faculty and institutions are using e-learning without a solid understanding of how to plan and develop instruction, the underlying teaching and learning theories, and what makes the Internet a unique medium for
teaching and learning. Often we make technological decisions in education without considering the pedagogical implications”.

Nichols (2007, p. 6) believes that technology is “pedagogically neutral” since it can support many of the accepted pedagogies. As Nichols (p. 6) discusses, Thorpe and Weller suggest that e-learning can be applied to varying pedagogies including

1. constructivism;
2. resources-based learning;
3. collaborative learning;
4. problem-based learning;
5. narrative-based teaching; and
6. situated learning.

E-Learning Pedagogy

Lieblein (2000, p. 163) believes “there is neither an ideal online learning environment nor an ideal approach to online pedagogy”. Yellowees and Marks (2006) suggest examining the best practices associated with adult education and determine how effectively these best practices can be applied in an e-learning / online learning format. According to Waterhouse (2005, p. 31), it is generally accepted that the Seven Principles for Good Practice in Undergraduate Education, as developed by Chickering and Gamson (1987), “represent fundamentally sound practices that, when followed, lead toward high quality teaching” and learning.

Amplifying the Nichols’ (2007) assertion that technology is “pedagogically neutral”, Waterhouse (2005, p. 31) suggest that “the Seven Principles apply to elearning as well as to a traditional instructional environment and in essence constitute a checklist of good instructional practices to follow when you design an elearning course”. Chickering and Gamson’s (1987) Seven Principles for Good Practice in Undergraduate Education are listed and described as follows (http://www.aahea.org/bulletins/articles/sevenprinciples1987.htm):
1. Good practice encourages contact between students and faculty. Frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well, enhances students' intellectual commitment and encourages them to think about their own values and future plans;

2. Good practice develops reciprocity and cooperation among students. Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding;

3. Good practice uses active learning techniques. Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves;

4. Good practice gives students prompt feedback. Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during college, and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves;

5. Good practice emphasizes time on task. Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis of high performance for all;
6. Good practice communicates high expectations. Expect more and you will get more. High expectations are important for everyone -- for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts; and

7. Good practice respects diverse talents and ways of learning. There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

As developed by Waterhouse (2005, p. 32), Figure 1 provides examples on how Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education* may be applied to an online or e-learning program.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Application of principle to elearning</th>
</tr>
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</table>
| 1. Encourage contact between students and faculty | • Online announcements  
• Electronic discussions  
• Online tutoring  
• Online office hours  
• Online chats |
| 2. Develop reciprocity and cooperation among students | • Online team projects  
• Online forums and chats  
• Online group tests  
• Email  
• Online peer evaluations |
<table>
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<tr>
<th>Principle</th>
<th>Application of principle to elearning</th>
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<tbody>
<tr>
<td>3. Use active learning techniques</td>
<td>• Online research</td>
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<td>• Online field trips</td>
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<td>• Online case studies</td>
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<td>• Online role playing</td>
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<td>• Online discussion of internships and field experiences</td>
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<td>4. Give students prompt feedback</td>
<td>• Online pretests, self-tests, and exams and instantaneous grades</td>
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<td>• Online access to grade book and individual grades</td>
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<td>• Virtual office hours</td>
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<td>• Electronic feedback from instructor and peers</td>
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<td>5. Emphasize time on task</td>
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<td>• Electronic tracking of student activity</td>
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<td>• Online discussions to document student participation</td>
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<td>• Online calendars to prompt students on course events</td>
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### Principle Application of principle to elearning

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| 6. Communicate high expectations               | • Online syllabus with course goals clearly stated  
|                                                | • Online contract or code of conduct to establish an agreement between instructor and student on expected performance  
|                                                | • Online announcements to encourage students to set high standards  
|                                                | • Online discussions to have students participate in goal setting  
|                                                | • Online instructor comments that set an example of effective communications for students to emulate  
|                                                | • Online portfolios to publicly display examples of student work  |
| 7. Respect diverse talents and ways of learning| • Policies posted online that address respect for diversity  
|                                                | • Online assignments that promote interaction with content, address a variety of learning styles, and provide students with choices  
|                                                | • Online surveys to determine students’ special needs and learning styles.  |

*Figure 1. Seven principles for good practice in undergraduate education applied to elearning (Source: Waterhouse, 2005, p. 32).*

Nichols (2007, p. 8), however, cautions that online learning has the potential to become an effective teaching tool to support student learning provided the need to which it is applied is identified first…Technical interventions that are introduced to solve particular education problems are frequently successful, whereas supply driven technologies such as those introduced with learning management systems (LMSs) tend to languish unless their use is educationally driven.
Reeves and Reeves, as cited by Bangert (2004, p. 221) concurs: “What must be emphasized here is that the pedagogy implicitly defined by the Seven Principles framework will ultimately determine the effectiveness of on-line teaching and not the technology associated with course authoring tools”.

Ascough (2002, p. 17) similarly concludes that “…the use of technology should be driven by sound pedagogical principles…putting pedagogy before technology will allow for the effective delivery of online distance education courses”. Nichols (2009a, p. 2) concurs with this assessment: “effective design and facilitation are likely to result in successful online discourse, but ultimately the learners themselves – not the technologies (or even, to some extent, the interventions applied) – will determine the degree of success”.

In relation to online course development, Beetham and Sharpe (2007, p. 3) suggest that faculty and postsecondary education leaders should not attempt to find a new pedagogy to support online teaching and learning but rather “should be in the business of locating the new technologies within proven practices and models of teaching”. Thorpe and Goodwin (2006, p. 203) support this view suggesting that online learning has yet to reach its potential because it is mired “primarily by a pedagogy of instructivism”.

The rationale and reasons on the use of Chickering and Gamson’s *Seven Principles for Good Practice in Undergraduate Education* in this study is explained in the theoretical research framework section at the conclusion of Chapter Two.

**The Postsecondary Student Perspective of Online Learning**

There are many constituents affected by the use of online learning in postsecondary education (Lane & Yamashiro, 2008). These constituents include, but are not limited to faculty, students, administrators, and technical support staff. Postsecondary institutions considering using online learning as part of the curriculum, should research the viewpoints of all constituents before implementing an online learning strategy.

Much of the literature concerning the postsecondary student experience of online learning is anecdotal in nature (Bennett, Maton, & Kervin, 2008; Lane & Yamashiro, 2008; Menchik, 2004; Song et al., 2004; Siemens & Tittenberger, 2009) and has not been validated by rigorous research (Nichols, 2009b). The literature is replete with personal observations,
and filled with broad and sweeping perceptions on why contemporary postsecondary students embrace and desire online learning.

**Purpose of the Study**

The main purpose of this study was to gain insights and examine the college students’ experience, perceptions and attitudes of online learning in the course of their studies at this one Ontario college. A secondary, but related purpose of this study was to identify, from the student perspective, the key factors that encourage or inhibit students to embrace online learning. More specifically, this study aims to address the following research questions that emerged from the literature review (Bangert, 2008; Braun, 2008; Lopes, 2008; Wyatt, 2005; Young & Norgard, 2006). The insights derived from this research provide college leaders and faculty with credible information on college students’ preferences and overall satisfaction with the use of educational technologies in support of their studies.

**Research Questions**

The primary research topic of this study is: Understanding students’ experience, perceptions and attitudes of online learning in the course of their studies at one Ontario college. Several research questions were utilized to obtain more detailed and specific information to seek clarity concerning the student experience with online learning. Combining the common themes, questions and findings of the Bangert (2008), Braun (2008), Kirtley (2002), Lopes (2008), Wyatt (2005), Caruso and Kvavik (2005), Salaway, and Borreson-Caruso (2006), Salaway and Borreson-Caruso (2007) and Young and Norgard (2006) surveys, coupled with those questions inspired by the literature review, the author researched the following questions in support of this mixed-methods study:

1. How do students perceive their online learning experience within a college program?
2. What factors / characteristics of online learning enhance the learning experience as perceived by these students?
3. What factors / characteristics of online learning discourage or interfere with the learning experience as perceived by these students?
4. What student qualities are important in successfully completing an online course?

and

5. Do students feel that online learning offers a challenging academic experience when compared with traditional instruction?

As explained and amplified in Chapter Three, the researcher selected the mixed-methods sequential explanatory design as the research methodology in this study. The mixed-methods explanatory design consists of two distinct data collection phases: a larger and comprehensive quantitative phase (web-based questionnaire), followed by a smaller, qualitative phase (semi-structured interviews). As stated by Ivankova, Creswell, and Stick (2006), “A quantitative phase comes first in the sequence because the study goal is to seek an in-depth explanation of the results from the quantitative measures”. Creswell, Plano-Clark, Gutman, and Hanson (2003, p. 227) conclude “the purpose of the sequential explanatory design is typically to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study”. As such, based on the literature and on the results that emerged after the quantitative analysis (questions 12 – 13), the following questions were asked during the semi structured interviews:

Qualitative Method – Semi-Structured Interview Questions

1. Much is written about the Internet skills of college students. You are identified in the literature as a group who are tech savvy and very comfortable using computers and the Internet. Do you think this is true about yourself? Is it also true about your friends?

2. Please provide comments on how you perceived that online learning proved beneficial to your learning experience.

3. Please provide comments on how you perceive online learning to detract or interfere from your learning experience.

4. What can you tell me about the student to student and student to faculty interaction during your online learning experience?

5. How satisfied have you been with your online learning experience?
6. In your view what would a quality learning experience be? To what extent was your learning experience a quality one?

7. Please compare how academically demanding the online courses you have taken were when compared with traditional classroom courses.

8. Did your online courses meet your expectations? Why or why not?

9. What are the major obstacles you see to more effective use of computer and information technology in your courses?

10. In every class, some students tend to excel academically. Please identify those student qualities, which you believe are necessary for students to possess in order to be successful online learners.

11. What advice would you give your faculty and college leadership on how to improve your online learning experience? What should they be doing to enhance your learning experience? What should they not be doing?

12. Over half of the respondents (50.4%) reported learning more in a face-to-face setting as opposed to online learning. What are your thoughts?

13. When given the choice between selecting an online, hybrid or face-to-face course as a matter of preference, 11.2% chose online programming. How do you explain this difference in opinion?

Significance of Study

Online learning is having and will continue to impact the manner in which many Ontario college students learn. However, much of the literature studying the student experience is grounded in anecdotal observations and, often, not based on rigorous research methods (Siemens & Tittenberger, 2009). Studies concerning the student perspective of online learning are sparse (Smart & Cappel, 2006; Keller & Cenerud, 2002) and “limited by a shortage of scientifically credible evaluation” (Gilbert, Morton, & Rowley, 2007, p. 562). As such, few scholarly studies have explored the student perceptions and perspectives of their online learning experience (Bennett et al., 2008; Finegold & Cooke, 2006; Gilbert et al., 2007; Keller & Cenerud, 2002; Kerr et al., 2006; Kirtley, 2002; Menchik, 2004; Roberts,
Although students are only one of many relevant constituents that influence the success or failure of online learning, understanding the student perspective of online learning is critical to the successful implementation of an online learning platform at Ontario colleges. Skolnik (2000, p. 61) amplifies this point: “While students are the main beneficiaries of the virtual university, not much is known about their attitudes or receptivity towards it”. As Smart and Cappel (2006, p. 202) point out in *Students’ Perceptions of Online Learning: A Comparative Study*:

Although e-learning (and various blended approaches that integrate online components into traditional classes) continues to grow rapidly, it still remains at an early stage of development. Consequently, the developers and deliverers of online learning need more understanding of how students perceive and react to elements of e-learning (since student perception and attitude is critical to motivation and learning) along with how to apply these approaches more effectively to enhance learning.

Barone (2005, p. 14.3) adds to this growing theme of needing to understand student motivations for enrolling in online courses in postsecondary education:

> Fundamental to the ability to transform the academy is the wisdom and humility to know students, their motivations, their goals and their learning styles. Institutions cannot simply assume they know their students through the collective experience of faculty and administrators. They must create a culture of evidence.

A review of the literature revealed a limited knowledge base, particularly in the Ontario college milieu, on how Ontario college students perceive their interaction with online learning during the course of their studies. Aside from the recent study conducted by Lopes (2008), which researched the efficacy and student perspective of a course management system in learning, the researcher did not uncover any meaningful or comprehensive Canadian based studies, in the college sector, concerning the student experience and perception of their online learning experience. It is anticipated that this research will contribute to a very thin, if non-existent, body of Canadian scholarship, providing a baseline or platform of research from which further studies could examine student perceptions of technology use in college curriculum.
Competition in attracting students is increasing among postsecondary institutions interested in the delivery of online learning (Morrison, 2007; Finegold & Cooke, 2006; Lao & Gonzales, 2005; Song, Singleton, Hill, & Myung, 2004; Tricker et al., 2001). Ontario college presidents, faculty and administrators, if they wish to be competitive and relevant in the delivery of online instruction, must be able to understand, and subsequently satisfy, the educational needs and expectations of those students interested in online learning (Kirtley, 2002).

There are six potential benefits of the research results for college administrators and faculty to consider:

1. articulating the student perceptions and attitudes concerning their online learning experiences at this college;
2. identifying the reasons and factors which enhanced the online learning experience;
3. identifying the reasons and factors which interfered with the online learning experience;
4. discussing how the delivery of online learning compares with traditional face to face classroom instruction;
5. from the student perspective, describing the student characteristics which are important in successfully completing an online course; and
6. describing those factors that college faculty and administrators should consider as they progressively move forward and endeavour to integrate digital technologies into the curriculum, thus creating a pedagogy suitable to the needs and expectations of the 21st century student.

**Limitations of the Research**

Since this research focuses on students at a multi-cultural college, located within a large urban area, there are several limitations to this study. The research design selected for this study does not permit for the extrapolation of results and findings to other Ontario
colleges. The student perceptions, attitudes and experiences of online learning at this college, may neither be applicable nor transferable beyond the students who participated in this study.

Another limitation of this study is that student perceptions of their learning experiences are subjective, and as such, difficult to accurately measure. Compounding this limitation is the fact that learning is an individualized, and interconnected process, influenced by numerous variables, including the context and environmental setting in which the learning occurs (Lopes, 2008; Merriam & Caffarella, 1991). As a result, there is no attempt to generalize the findings of this study beyond the participants since many of the variables associated with the perception of one’s learning could neither be controlled nor adequately described (Lopes, 2008).

The last limitation of this study is that the online courses discussed and referenced in both the online and interview questionnaires are classified at this college as general education / elective courses and are typically not part of the core course curriculum.

**Epistemological Stance**

The researcher has neither been employed by nor associated with an Ontario college. As such, the researcher was not influenced by any prevailing viewpoints or agendas that may be present at Ontario colleges pertaining to the college students’ perception of their online learning experience.

The researcher has been guided by the student-centred philosophy of teaching and learning as expressed by Carl Rogers, Malcolm Knowles, Robert Barr and John Tagg, and Terry O’Banion. The student-centred approach to learning is not to transfer knowledge but to create environments and experiences that bring students to discover and construct knowledge for themselves, to make students members of communities of learners that make discoveries and solve problems. The college aims, in fact, to create a series of ever more powerful learning environments. (Barr & Tagg, 1995, p. 15)

In relation to the use of educational technologies in the classroom, the researcher believes there may be a blend, depending on the content of the subject matter, of both the instructivism and constructivist philosophies of teaching and learning. There is a school of thought, which is gaining currency among education researchers, that recommends
constructivist models of learning as a guiding design methodology for the delivery of Internet based courses (Bangert, 2004; Hobbs, 2002; Neo, 2005; Schroeder & Spannagel, 2006).

In an effort to minimize researcher bias, the researcher selected a mixed-methods research design since this design process requires triangulation that seeks corroboration between the quantitative and qualitative methods.

**Outline of the Remaining Chapters**

This study is divided into five chapters. Chapter Two is divided into two sections. Section one provides a review of the literature as it relates to student perceptions, attitudes and experiences with online learning. Section two is a review of the recent research concerning the postsecondary student experience of online learning. Chapter Three describes the research design and methodology of this study, including the rationale of selecting a mixed-methods study design. Chapter Four presents an analysis of the findings. Chapter Five presents the findings, as they relate to the five research questions, and the implications and recommendations of this study.

**Definition of Terms**

For the purposes of this research, the following definitions are used:

**Augmented Learning**
The use of technology to extend the physical classroom. This may be as simple as incorporating web quests into student work, or the use of an online discussion forum. The primary intent of augmenting classroom instruction is to increase effectiveness of learning by providing contact with experts, diverse viewpoints and dialogue (Siemens & Tittenberger, 2009, p. 16).

**Blended / Hybrid Course**
The instructor uses information and communications technologies to replace part of face-to-face in-class instruction. For example, students may be required to participate in technology-enabled activities such as online discussions or project collaborations as part of their course work. They might participate in simulations or participate in virtual classes using video
conferencing. Blended learning may be used for several reasons that include one or more of the following: enriching and elaborating upon lectures, shifting presentation functions to the online environment so that class time may be used for other purposes, using the same set of classrooms to support a greater number of courses, and increasing access to courses for students unable to attend all lectures (E-Learning Report 2005: A Foundation for Transformation, 2005, pp. 27 – 28).

**Digital Age**

The shift in focus from “information” to “knowledge” is an improvement. But I prefer a different conception: the “Creative Society.” As I see it, success in the future will be based not on how much we know, but on our ability to think and act creatively. The proliferation of digital technologies has accentuated the need for creative thinking in all aspects of our lives, and has also provided tools that can help us improve and reinvent ourselves. Throughout the world, computing and communications technologies are sparking a new entrepreneurial spirit, the creation of innovative products and services, and increased productivity. The importance of a well-educated, creative citizenry is greater than ever before (Resnick, 2002, p. 36).

**Disruptive Technology**

Most technological industries pass through many generations. Most are incremental, offering better technologies for doing the same work within the same paradigm. Some are disruptive, changing the entire course of the industry. Disruptive, revolutionary changes are the ones that change people’s lives, and these are the changes most difficult for companies to cope with (Norman, 1998, p. 232).

**Distance Education**

Distance learning is learning whereby students and instructors are engaged in learning activities in different locations and typically do not come face-to-face with each other. Courses delivered totally online are examples of modern-day distance learning. Also defined as any learning experience in which all of the teaching is conducted by someone who is separated by space and/or time from the learner. Communication occurs entirely either in
print or electronically. In recent years distance learning is used almost exclusively to mean that the learning occurs in a technology (Internet) based environment (Waterhouse, 2005, p. 44) and (Lopes, 2008, p. 27).

**Educational Technology**
The technology of education is the body of material and methods used to extend or enhance the ability to learn, collect data, solve problems, and promote communication among faculty and student (Boettcher & Conrad, 1999, p. 7).

**E-Learning**
The use of technological tools (primarily those can be made available over networks such as the Internet) for education. E-learning is pedagogy that is empowered by digital technology. It may be offline (and non-networked) technologies on CD-ROM or DVD. E-learning usually includes digital resources and computer interfaced communications as tools for learning (Nichols, 2007, p. 4). At its most simple, e-learning can be thought of as the sum of technology and pedagogy (p. 24).

**Elearning Pedagogy**
The pedagogical principles and related instructional strategies applicable to an elearning environment (Waterhouse, 2005, p. 4).

**Information and Communications Technology**
Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology (United Nations Educational, Scientific and Cultural Organization, 2002, p. 13).

**Learning Management System**
A collection of eLearning tools available through a shared administrative interface. A learning management system can be thought of as a platform in which online courses or online components of courses are assembled and used from (Nichols, 2003, p. 2).
**Online Course**

Learning resources and activities are situated on the web. Supplementary resources such as texts and print packages may be used, but most if not all instruction and communication with the instructor and among the students takes place online (Pirani, 2005, as cited in E-Learning Report 2005: A Foundation for Transformation, 2005, p. 28).

**Online Learning**

Pure online learning uses e-learning tools in a distance education mode. It uses technology (usually the Internet) as the sole medium for all student learning and contact...education facilitated only through digital technology, usually the Internet. An online course typically lacks both physical learning materials and physical meetings, but the term is also used to describe the online component of an on-campus or distance education course. The term is sometimes used to refer to CD-Rom – or DVD-based courses as well as web-based ones (Nichols, 2007, p. 4).

**Pedagogy**

Understood to refer to teacher-oriented instruction, however it is now increasingly used to describe the application of sound education practice (Nichols, 2003, p. 2).

**Traditional course supplemented by technology**

Information and communications technologies are implemented for administrative reasons and/or to enrich the course. For example, course notes, syllabi, and grades may be placed on the web. The instructor may use e-mail and online discussion groups and provide online links to external resources. However, there is little or no reduction of face-to-face class time (E-Learning Report 2005: A Foundation for Transformation, 2005, p. 27).
Chapter Two:
Review of the Literature

Introduction

The objective of the literature review is to establish the theoretical and contextual foundation upon which this research is based. This chapter is divided into two sections:

1. the first section reviews the literature, as it relates to the social, economic and political drivers that influence the use, and non-use of online learning in postsecondary education; and

2. the second section, reviews and focuses on the common themes that emerged from the few studies which exist, that researched the student experience of online learning within the postsecondary milieu.

Given that little research has been conducted on the student experience related to online learning, particularly within the Ontario college system, this broad perspective provides grounding in understanding the various interrelated factors that influence students’ perceptions of their online learning experience in the postsecondary environment (Cameron, 2003). This chapter also encompasses issues and factors that contribute, influence and drive the direction of online learning implementation in postsecondary education.

Online Learning: The Student Experience

Introduction

All of us wish we had good data about teaching, learning, and technology, but few institutions are doing the work to get it. That’s dangerous. Technology changes quickly and unpredictably. IT budgets remain tight. Lacking data, faculty and administrators make big investments of time and money with their eyes closed. In today’s world, it is important to get information that helps us see what we’re doing, fix problems, and document achievements. (Ehrmann, 1999, p. 25)

As suggested in the above quote, Stephen Ehrmann, in Asking the Hard Questions About Technology Use and Education (1999), underscores the criticality of postsecondary
administrators possessing as many facts as possible, and conducting as much research as is necessary, before investing heavily in educational technology. Understanding the student perspective and listening to the student voice, is one method in which postsecondary education leaders can inform themselves before embarking on costly investments in pursuing an e-learning strategy.

Nichols (2003, p. 5) amplifies this point: “Understanding e-learning behaviour is an important step toward effective e-learning. Effective e-learning practice considers the way in which end-users will engage with the learning opportunities provided to them”. Therefore, Ontario college and faculty leaders, who aim to deliver quality online programming, require a solid understanding on the expectations of the 21st century student, and also need to grasp the myriad of political, social and economic factors that influence, discourage or encourage student use of online learning in postsecondary education.

**Why Online Learning Is Important to Postsecondary Education**

According to Human Resources Development Canada, over 70% of the new jobs created in Canada will require some postsecondary education (Pathway to Prosperity, 2005). As such, there is a concern from some researchers that postsecondary institutions will not have the capacity to absorb this potential global demand and dramatic increase in student enrolment (Seeley Brown & Adler, 2008). This issue was cited by Peter Drucker as early as 1997. Drucker believed that postsecondary institutions which did not integrate online learning into the curriculum, may face extinction: “Already we are beginning to deliver more lectures and classes off campus via satellite or two-way video at a fraction of the cost. The college won’t survive as a residential institution. Today’s buildings are hopelessly unsuited and totally unneeded” (as cited in Lezner & Johnson, 1997, p. 12).

Similarly, Richard Katz, Vice-President of EDUCAUSE and founding director of the influential EDUCAUSE Centre for Applied Research (ECAR) believes that “some colleges and universities might disappear. Some might actually acquire other institutions. One might even imagine a Darwinian process emerging, with some institutions devouring their competition in ‘hostile takeovers’. All such events have occurred in deregulated industries in
the past, and all are possible in the future we envision for higher education” (Katz, 1999, p. 15).


Online Learning represents a means to build on that foundation by enriching the quality of post-secondary learning, extending it beyond the campus to where Canadians live and work, and creating new synergies and greater critical mass with postsecondary education…Implementation of this plan is urgent. If we do nothing, our position among the world leaders in online learning will quickly disappear, our institutions will face stiff and perhaps damaging competition, and Canadian both as individuals and members of communities will find themselves trailing the people of other G-8 countries in the race for jobs and economic growth. (pp. 6 – 7)

Notwithstanding the above dire predictions, postsecondary institutions continue to function, and there is no indication that those postsecondary schools in Canada that did not participate in the online learning euphoria, are about to close. The initial claims by Drucker (1994) and Katz (1999), suggesting that e-learning would radically alter the teaching and learning processes of higher education, proved inaccurate (Nichols, 2007). The literature is replete with examples citing those institutions of higher learning, which include the UKe-University, the US based Western’s Governors’ University and the US Open University, that failed to live up to the lofty expectations set by the early proponents of e-learning (Garrett, 2004; Hooper, 2008; Meyer, 2006; Nichols, 2007).

However, researchers suggest that postsecondary students “have increasingly high expectations for using technology in their studies” (Brown, 2009a; Everhart, 2001, p. 1). Johnstone (2007) concludes that most postsecondary institutions now offer students the choice of both online and face-to-face courses. Researchers such as Finegold and Cooke (2006, p. 201) postulate that “Higher education institutions are increasingly introducing courses partially or completely online in order to increase participation and social heterogeneity and to compete with other institutions”.

In 2005, the University of Alberta published *E-Learning Report 2005: A Foundation for Transformation*, which outlined a vision and a foundation on how best to use information technology in support of learning. This paper rationalized the importance of educational
technology and “identified the following factors that contribute to the need to transform teaching and learning in higher education” (E-Learning Report 2005: A Foundation for Transformation, 2005, p. 9):

1. Evolving nature of “basic skills” required to be competent professionals;
2. The opportunities provided by the increased effectiveness and reduced costs of information and communications technologies;
3. Pervasive use of information technology by students leading to changes in learning preferences;
4. Growing demand for alternative learning models to improve learning and increase accessibility; and
5. Greater availability of electronic learning resources and scholarly publications.

Based on the above, the fundamental question for Ontario college administrators and faculty is how to integrate successfully online learning strategies into their curricula (Kordel, 2008; Thalheimer, 2002). Savukinas (2002, p. 59) echoes this thought “It is too early to say where the final balance between traditional and technology-based education is likely to be. However, IT’s greatest impact so far is a complement rather than a substitute for traditional education”. It is not a question of whether online learning will remain part of the educational landscape, but rather how will e-learning impact the manner in which higher education institutions teach and learn in the 21st century classroom. (Alanis, 2004).

Many educators and industry pundits over estimated the immediate impact of the potential of online learning in postsecondary education. In essence, they overestimated the impact over the short term. According to Howell, Williams, and Lindsay, (2003) educational leaders lacked the vision and failed to systematically implement strategic policies and aims to integrate successfully online learning into the practices of higher education.

Although these claims supporting an immediate and disruptive impact of online learning within postsecondary education did not materialize in the short term, it is instructive to examine the political, social and economic drivers of the digital age that are compelling
institutions of higher education to re-examine the manner in which faculty teach and students learn in the 21st century classroom.

**The Driving Forces of the Digital Age and Their Impact on Postsecondary Education**

**Introduction**

The literature review highlighted a number of significant emerging political, social and economic drivers that are influencing the educational practices of the digital age (Siemens & Tittenberger, 2009; Sontag, 2009; Sprague, Maddux, Ferdig, & Albion, 2007). Many researchers are convinced that the eventual confluence of these drivers, and the application of information communications technology to educational practices, will transform the teaching and learning process of postsecondary education (Bekar & Lipsey, 2006; Legassie, 2004; Sontag, 2009). The following section will detail the critical drivers, spawned by the digital age, that are influencing the manner and ways in which students learn in the 21st century classroom.

**Technological Developments**

Over the past 15 years, computing power, communication speeds (bandwidths) and memory capacity have risen by a factor of 1000 (Siemens, 2004). According to Lawrence (2008), Prensky (2009), Siemens & Tittenberger, (2009), and Woods (2004, p. 29) “The speed and power of Web-based technologies are continually and dramatically increasing every year”. Furthermore, the World Wide Web, through the use of e-mail and the use of the web to post and access information, permits hundreds of millions of people to remain connected sharing thoughts, ideas and discussing issues (Dunderstadt, 2002; The Advisory Committee for Online Learning, 2001; Sprague et al., 2007).

A recent study by the Pew Internet and American Life Project revealed that 47% of American adults have access to a broadband connection at home (Horrigan & Smith, 2007). This figure is a 5% increase from 2006 (Horrigan & Smith, 2007). Similarly, a 2008 Statistics Canada study concluded that 73% of Canadians, aged 16 and older, accessed the
Internet for personal non-business reasons in 2007 (Veenhof, Wellman, Quell, & Hogan, 2008).

Such improvement of technical capacity provides users with enhanced methods “for creating, storing, analyzing, displaying and distributing information rapidly around the world” (The Advisory Committee for Online Learning, 2001, p. 21). The power of computing devices, on average, doubles every 18 months (McCredie, 2003). As time progresses, the price of digital equipment dwindles daily, creating the opportunity for postsecondary students of owning advanced technological equipment a distinct reality, regardless of social status and educational accomplishments.

**The Emerging Knowledge Society and Technical Change**

Dunderstadt (2002), Levine (2003) and Siemens and Tittenberger (2009) state that we are moving from an industrial based society to a knowledge based society. Unlike the agrarian or industrial era, the knowledge-based society is driven in part by the digital technologies that are radically altering our social and educational institutions (Dunderstadt, 2002; Siemens & Tittenberger, 2009; Thierstein, 2009).

As described in The Advisory Committee for Online Learning (2001, p 1) “Information – its creation, acquisition, adaptation and dissemination – has become the currency of our time”. Within the knowledge society, post secondary institutions play a critical role to the economic and social success of any advanced society (The Advisory Committee for Online Learning, 2001). In this economic order, and unlike previous economic revolutions, knowledge, and not labour or raw resources, will be the key resource (Drucker, 1994).

Drucker posits that “education will become the center of the knowledge society, and the school its key institution” (Drucker, 1994, p. 66). In contrast to the agrarian and the industrial revolutions, employers, who operate in a knowledge society and compete in a global economy, want employees who can be life-long learners (Milliron & Miles, 2000; Seely Brown & Adler, 2008). As cited in Skolnik (2004, p. 4), David Laidler describes the unique relationship between the knowledge economy and technical changes occurring in the digital era:
the key to securing a rising standard of living at the turn of the millennium lies in the creation and dissemination of knowledge, particularly technical knowledge. The “new economy” is said to be a “knowledge economy”, and within it, universities are often presented as having special roles to play as creators of new ideas in their research function and as producers of human capital capable of exploiting those ideas in their teaching function. In this way of looking at things, the output of universities is a vital input into the material progress of the market economy.

In order for Canada to remain a meaningful contributor in a global economy, some researchers suggest that this country must increase access to higher education, resulting in a larger and better-educated work force (The Advisory Committee for Online Learning, 2001). Therefore, online learning is one-delivery method Ontario colleges can implement that both increases access to postsecondary education and simultaneously, increases the number of highly skilled and well-educated employees.

Globalization and Economic Change

Middlehurst (2003, p. 3) defines the characteristics of the information age to include “high-speed communication and transaction systems, widespread access to codified knowledge and global interdependence of economic and environmental systems”. He relates that globalization is the critical economic factor emerging from the constantly evolving information age.

Skolnik (2004, p. 4) defines globalization as “a process in which nations are integrated into a highly competitive international economic system in which the perceived ability of each nation to compete economically in this system becomes the driving force in public policy not only in the economic sphere, but increasingly in the cultural and social spheres as well, including especially postsecondary education”. Similar to Skolnik, Witherspun (2007, p. 198) emphasizes the criticality of an educated workforce: “Governments know that if a country is to be globally competitive, it must have a workforce that understands and takes a leading role in modern day technologies”. For countries to compete meaningfully in a globalized economy, their citizens must be able to work with colleagues from diverse backgrounds, and become proficient in the use of information technology tools in the performance of their jobs (Seely Brown & Adler, 2008).
As a consequence, Canada needs an educated work force to effectively compete in a global economy (Dhanarajan, 2002). The information age, within the emerging global economy, is expected to become the most competitive era the world has ever seen (Drucker, 1994; Siemens & Tittenberger, 2009). Therefore, education in a global economy runs the risk of becoming a “metaphor for wealth’ (Clarke, 2001, p. 5). Skolnik (2004, p. 6) echoes this sentiment: “The worldwide growth in demand for economically linked forms of higher education and the associated commercial opportunities that this has spawned has led increasingly to viewing higher education as an internationally traded commodity”.

In order to capitalize on education as an internationally traded commodity, many traditional institutions of higher education feel compelled to compete for students and are offering Internet based courses (Lao & Gonzales, 2005; McCredie, 2003). The University of Phoenix, a private-for profit corporation, was one of the first to recognize the emerging demand for online learning (Kinser, 2006; McCredie, 2003). In 2004, the University of Phoenix enrolled 48% of all online graduate business students, 40% of all online graduate nursing students and 27% of all online education students in America (Johnstone, 2007).

Canada’s Athabasca University is also considered one of foremost open / distance universities in the world (Skolnik, 2005). For academic year 2007, total enrolment was over 37,000 students. Enrolment growth increased 39% from 2002 – 2007 (Athabasca University website, 2008).

The concept of “borderless education” (Morrison & Kumar, 2008; Middlehurst, 2003, p. 3) is becoming a key factor college administrators and faculty must consider within their strategic information technology polices should they desire to remain relevant, and germane educational providers in the information age. An emerging byproduct of a “borderless education” is the unprecedented choice in schools and course selection it offers students. A “borderless education” not only empowers students as consumers, but also compels some institutions of higher learning to view and treat potential students as customers, who have a choice in the education market place.


**Student as Consumer**

Referring to postsecondary students as customers or consumers is improper and irreverent to some faculty and administrators (Wagner, 2005). Unlike previous cohorts, 21st century students are more concerned with how their degree will affect their earning potential and quality of life (Wagner, 2005).

On a similar note, Skolnik (1998) makes reference to “The Me University”. “The Me University” is a futuristic programmable computer based interface that would be capable of searching the web for educational courses that are of interest to the learner. In other words, the learner could conceivably build a customized degree program taking courses via the Internet from a variety of universities both domestically and abroad (Skolnik, 1998). Mark Taylor (2006, p. 50) explains this consumer relationship between student and academic institution as follows: “In educational settings, as in every other area of life, the “producer to consumer” dominates, both in student goals and in students’ relationship with the school. As with most customers today, students seek instant gratification, look for the best deal, want to negotiate, and might become litigious if disappointed”.

Some students of the digital age view education and knowledge as a commodity subject to market forces where institutions of higher education, in order to survive as a competitive business, would need to offer courses that satisfy student consumer demand (Skolnik, 1998). Furthermore, the digital age student could use this new found “purchasing power” (Morrison & Kumar, 2008; Oblinger, 2003, p. 42) to compare offerings from a variety of institutions of higher education and select a program that best suits one’s learning needs.

The learner as consumer radically alters the relationship between the student and the education institute and the implications are far reaching. George Connick describes this altered relationship “as a shift from a campus centric to a consumer centric model” (as cited in Skolnik, 1998, p. 643). As a result of the consumer-centric model, Oblinger (2003) describes four implications for institutions of higher learning:

1. Elimination of delays – The learners of the 21st century lived their formative years in the digital age. Having relied on the Internet for communication, research
and socializing, the learner views technology as “…a natural part of the environment” (Oblinger, 2003, p. 38). Learners expect higher education to integrate digital technologies into in the post secondary school experience;

2. Customer Service – Students expect a user friendly admissions process. Oblinger (2003) praises Athabasca University for the user friendly manner of the digital technologies that are integrated into registrar, library, and other student related services;

3. Experiential, Interactive, and Authentic Learning – Students of the digital age expect faculty to use educational technologies that encourage student participation in their learning experience; and

4. Staying connected – Students expect institutions of higher education to be capable of connecting to communication devices such as PDAs, laptops and Blackberries in order to relay information in a timely fashion.

Changes in Student Demographics: The Non-Traditional Student

The convergence of technical and demographic pressures is forcing educational institutions to re-examine the way in which education is delivered (Moore, 2001; Morrison & Kumar, 2008; Philip, 2007; Seely Brown & Adler, 2008; Sontag, 2009). According to some researchers, as society shifts toward the information and knowledge age, postsecondary institutions, in order to remain relevant, may need to refocus their learning services to meet the demands and learning requirements of the 21st century student.

The demographics and learning expectations of the non-traditional student differ significantly from those of previous generations (Oblinger, 2003; O’Malley & McGraw (1999); Ramaley, 2005; Rovai, Ponton, Wighting, & Baker, 2007; Sontag, 2009). Today’s student has been dramatically influenced by information technology (Oblinger, 2003; Philip, 2007; Sontag 2009). Progressive societies are moving away from the traditional educational model, where an education is completed at a young age and graduates focus solely on earning a living, never to set foot in a classroom again (Distance Learning Programs Revolutionizing Education, 2003).
Today’s adult learner is functioning in a high stress environment which may include balancing time between raising families and demanding job requirements. This situation is made more complex by the constant professional and technical upgrading required to enhance professional mobility and prospects for job promotion (Marshall, 2003; Seely Brown & Adler, 2008).

As cited in Oblinger (2003), The National Centre for Education Statistics reports that three-quarters of all undergraduates are non-traditional. According to Choy (2002, pp. 2 – 3), non-traditional students are defined as possessing one or more of the following characteristics:

1. Delays enrollment (does not enter postsecondary education in the same calendar year that he or she finished high school);
2. Attends part time for at least part of the academic year;
3. Works full time (35 hours or more per week) while enrolled; is considered financially independent for purposes of determining eligibility for financial aid;
4. Has dependents other than a spouse (usually children, but sometimes others);
5. Is a single parent (either not married or married but separated and has dependents); or
6. Does not have a high school diploma (completed high school with a GED or other high school completion certificate or did not finish high school).


Student Demographics at Athabasca University 2006-2007 include:

1. The average undergraduate is 29; the average graduate student, 37;
2. Over 90% of AU students study year round, balancing their studies with work, family or community commitments;
3. 63% of program students work full-time while they study;
4. 67% of AU students are women;
5. 63% of AU graduates support dependents;
6. 74% of AU graduates are the first in their family to earn a university degree;
7. 37% of undergraduates reside in Alberta, 36% in Ontario and the rest throughout Canada and the world. AU students live in every Canadian province and territory and in 87 foreign countries; and
8. 34% of undergraduates are visiting students from other institutions.

Oblinger (2003) concludes that many of the above characteristics were not researched in earlier studies, because they were rare. The implication is that today’s college student population differs significantly, in terms of learning expectations, from those when present day college faculty members and senior administrators attended postsecondary institutions (Oblinger, 2003).

Therefore, some researchers conclude that in order for college programming to remain relevant to the learning styles and needs of the 21st century student, including those learning expectations of the growing non-traditional student cohort, it is imperative that the college leadership design curriculum to meet the expectations of the ever-changing student demographic.

**The Net Generation and Online Learning**

Much has been written concerning the student characteristics of the Net Generation. Books such as *Growing up Digital: The Rise of the Net Generation* by Don Tapscott (1998) and *Millennials Rising: The Next Great Generation* by Neil Howe and William Strauss (2000) influenced discussion and debate concerning the student characteristic of the Net Generation.

The Net Generation is commonly defined as having grown up with computers, the World-Wide-Web, interactive video games and cellular phones (Oblinger & Oblinger, 2005; Roberts, 2005). Figure 2 illustrates the commonly held differences between generations.
<table>
<thead>
<tr>
<th></th>
<th>Matures</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Net Generation</th>
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<tbody>
<tr>
<td>Description</td>
<td>Greatest generation</td>
<td>Me generation</td>
<td>Latchkey generation</td>
<td>Millennials</td>
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<tr>
<td>Attributes</td>
<td>Command and control</td>
<td>Optimistic</td>
<td>Independent</td>
<td>Hopeful</td>
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<td></td>
<td>Self-sacrifice</td>
<td>Workaholic</td>
<td>Skeptical</td>
<td>Determined</td>
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<td>Likes</td>
<td>Respect for authority</td>
<td>Responsibility</td>
<td>Freedom</td>
<td>Public activism</td>
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<td>Family</td>
<td>Work ethic</td>
<td>Multitasking</td>
<td>Latest technology</td>
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<td>Community involvement</td>
<td>Can do attitude</td>
<td>Work-life balance</td>
<td>Parents</td>
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<td>Dislikes</td>
<td>Waste</td>
<td>Laziness</td>
<td>Red tape</td>
<td>Anything slow</td>
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<td></td>
<td>Technology</td>
<td>Turing 50</td>
<td>Hype</td>
<td>Negativity</td>
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Figure 2. Generational differences (Source: Oblinger & Oblinger, 2005, p. 2.9).

Although the above definition is simplistic, Annetta, Murray, Laird, Bohr, and Park (2008, p. 6) provide a more comprehensive definition of the Net Generation, which addresses the social and educational implications of student learning in the 21st century:

Today’s school children have been dubbed Generation N or the Net Generation because they have grown up in a networked world where technology is not a novelty but rather a norm in everyday life. The advances in technology in the new millennium may evoke a disquieting sense of shock and awe among administrators and teachers when it comes to understanding how to harness these new capabilities and merge them with sound pedagogy. Some who would otherwise welcome new technology advances may become restricted by lack of resources. Others possess the wherewithal, but lack the knowledge on how to use the technology.
Net Generation students have experienced their formative years in the digital age where access to digital media and the Internet is taken for granted (Barone, 2003; Brown, 2009b; McLoughlin & Lee, 2008; Philip, 2007; Tapscott, 1998). This generation of savvy computer users exploit the Internet and other digital media to play, learn, communicate and develop relationships (McLoughlin & Lee, 2008; Sontag, 2009; Tapscott, 1998). Sontag (2009) and Barone (2003) posit that students brought up in the digital age possess an “information mind-set” where they expect to use technology to organize and integrate knowledge during the learning process.

In his seminal and often cited article, *The Information-Age Mindset: Changes in Students and implications for Higher Education*, Jason Frand (2000, pp. 16 – 22) describes 10 attributes of the students’ information mindset that are driving a new paradigm for learning in postsecondary education. These attributes are:

1. Computers aren’t Technology – today’s student has been surrounded by computer related technology for most of their lives. As such, students view the computer as seamlessly interwoven into everyday activities, including education;

2. Internet better than TV – a recent study concludes that the number of hours watching television is declining. Instead, students are spending more time on the Internet socializing and interacting with peers;

3. Reality no longer real – although the Internet possesses copious amounts of information, data must be carefully analyzed to verify authenticity;

4. Doing rather than knowing – As students enter the workforce, the ability to deal with complex and often ambiguous information will be more important than simply knowing a lot of facts or having an accumulation of knowledge;

5. Nintendo over logic – Unlike previous generations, today’s student is very comfortable solving problems through trial and error;

6. Multitasking is a way of life – Many students are accustomed to watching TV, talking on the phone, doing homework, eating and interacting with their parents all at the same time. They don’t concentrate on one activity at a time (Frand, 2000, p. 18).
7. Typing is preferred to handwriting – today’s student prefers typing notes / assignments to handwriting;

8. Staying connected – Advanced technological communication is a byproduct of the digital age. Students remain connected and socialize with peers using cell phones, PDAs, chat rooms and beepers. Living in a connected and networked world allows students to participate in real time conversations and discussions from anywhere and at anytime. The Net Generation tends to work in teams or with peers and comfortably transition between physical and virtual interactions (Oblinger & Oblinger, 2005);

9. Zero tolerance for delays – Similar to Frand, Taylor (2006) states that students seek instant gratification and have little tolerance for delays. As such, they expect 24/7 access to school services and that responses to queries are received in a timely manner; and

10. Consumer and Creator are blurring – Students have little regard for intellectual property. The distinction between creator, owner and user of the information is often blurred (Frand, 2000, p. 22).

The demand and use of interactive media is the cornerstone of the Net Generation, who have grown up in an information intense, digitally based culture (Frand, 2000; Tapscott, 1998). The Net Generation do not want to be passive recipients of information – they prefer to be active participants and users (Brown, 2009b; Frand, 2000; McLoughlin & Lee, 2008; Morison & Priest, 2003; Oblinger, 2003; Philip, 2007; Ramaley, 2005; Tapscott, 1998). Marc Prensky (2001, p. 1) suggests that because the Net Generation is growing up in the digital age, they are significantly different in the manner in which they would like to be taught. “[I]t is now clear that as a result of this ubiquitous environment and the sheer volume of their interaction with it, today’s students think and process information fundamentally differently from their predecessors. These differences go far further and deeper than most educators suspect or realize”[emphasis in original]. Prensky (2007, p. 41) concludes “our students are clamoring for these technologies to be used as part of their education, in part
because they are things that the students have already mastered and use in their daily lives,
and in part because they realize just how useful they can be”.

Barone (2003) states that technology has encouraged the Net Generation to select
their own preferred learning style in an effort to organize their learning outcomes. Since the
Net Generation is surrounded by digital media, they have an expectation that faculty will use
the Internet and/or other forms of digital media to augment the learning process (Braun,
2008; McLoughlin & Lee, 2008; Presnky, 2001, 2007; Ramaley, 2005; Truman-Davis,
Futch, Thompson, & Yonekura, 2000).

Conversely, a number of research studies challenge the claim that Net Generation
students are demanding radical educational reform to suit and accommodate their perceived,
unique learning style. These studies counter much of the earlier literature that suggests that
Net Generation students not only learn differently from previous generations, but also expect
extensive use of educational technologies by faculty in the classroom.

A recent focus group conducted by Brown (2009b) with college students, assembled
to discuss what postsecondary educators should be thinking about when planning learning
environments, concludes that “[N]ot all students are adept with technology or new media” (p.
63). Bennett et al. (2008, p. 783) study suggests that “[P]roponents arguing that education
must change dramatically to cater for the needs of these digital natives have sparked an
academic form of moral panic using extreme arguments that have lacked empirical
evidence”. The researchers state that many of characteristics attributed to the Net Generation
are based on assumptions without the benefit of rigorous and credible research. The authors
posit that although technology is embedded in the lives of the Net Generation, digital literacy
amongst this cohort varies considerably. Their research concludes that there is no evidence to
suggest widespread dissatisfaction over the current use of educational technologies in the
classroom

Similarly, Bolstad, Gilbert, Vaughan, Darr, and Cooper (2006, p. 15) conclude that
many studies of the Net Generation tend to homogenize characteristics of young people,
“implying that they all think and act in particular ways”. Based on their research, Bolstad et
al. (2006) suggest that many studies of the Net Generation and their use of technology
erroneously extrapolate their findings based on research conducted on early adopters,
concluding that the characteristics of early adopters will eventually be representative of the perspectives and attitudes of most of their contemporaries.

Reeves and Oh (2008) concur that generational studies, including those conducted on the Net Generation, are typically based on speculation and not supported by rigorous research. According to the authors, the implications deduced from this speculation are suggestions that instructional/course designers should take generational differences into account when developing and creating learning environments for the 21st century classroom. Reeves and Oh (2008, p. 295) caution that “[M]ost of the popular literature on the subject of generational differences appears to rest on limited data, almost always conducted by survey methods characterized by a lack of reliability and validity data”. Although studies show that younger learners tend to use more technology to learn and communicate, and tend to be more technologically savvy than previous generations (Salaway & Borreson-Caruso, 2007), research by Kennedy, Judd, Churchward, Gray, and Krause (2008) does not support the view that student learning expectations differ based on generational distinction. The study by Kennedy et al. (2008, p. 117) concludes “while some students have embraced the technologies and tools of the “Net Generation”, this is by no means the universal student experience…the patterns of access to, use of and preference for a range of other technologies show considerable variation”. Lorenzo, Oblinger, and Dzuiban (2007, p. 7) concur that not all college students, including those belonging to the Net Generation, actually fit the Net Generation profile: “Today’s students are not just traditional-age Net Generation, nor have they all had the benefit of state-of-the-art, ubiquitous technology. Higher education comprises a highly diverse and growing student body with a wide variety of information literacy capabilities”.

In the same way, Nichols (2009b, p. 10) concludes that objective research about generational characteristics tends to conclude that “there is no uniform sense of frustration with formal education being expressed by young students” and that “particular generations are marked more by heterogeneous complexities than homogenous generalities”.

Implications of Online Learning in Postsecondary Education

Introduction

Some researchers suggest that postsecondary institutions are too cautious in integrating online learning into curriculum. Others, such as Abraham Flexner, advocate a careful and vigilant approach before implementing a disruptive technology within postsecondary institutions. Flexner (1930, p. 5) writes “a university should not be a weather vane, responsive to every variation of popular whim. Universities must at times give society, not what society wants, but what it needs”. Regardless of one’s opinion on the rate of adoption of online learning by postsecondary institutions, there are, nonetheless a number of implications and challenges confronting Ontario colleges as they attempt to balance the perceived learning desires of Net Generation students and the obligation to implement credible pedagogies to support online learning delivery. Two of these challenges include student information technology literacy skills and the digital divide.

Digital Literacy

It is critical that the 21st century student be computer literate (Mason, 2006; Prensky, 2009; Siemens & Tittenberger, 2009). As cited in the E-Learning Report 2005: A Foundation for Transformation, the Presidential Committee on Information Literacy (1989) concludes that students must “recognize when information is needed and to have the ability to locate, evaluate, and use effectively the needed information (E-Learning Report 2005, p. 45). The E-Learning Report (2005, p. 45) continues: “Although these abilities have always been important, they have now become essential because of the proliferation of information available from a host of sources”. Oblinger (2003) asserts that having grown up in the digital age, with access to various types of technology, the Net Generation student is intuitively able to manipulate information technology devices and navigate the Internet. However, the studies reviewed below propose that not all students may be as proficient on the use and manipulation of digital technologies as some of the literature suggests.

A study by Lane and Yamashiro (2008, p. 26), which includes student focus groups to determine student IT use at one American postsecondary institute concludes “that although students use a wide range of technologies in their personal lives, mostly for communication
and entertainment, they tend to learn how to use technologies for learning such as discussion boards, electronic homework submission, or database searching tools primarily in their courses”.

A research study by Katz and Macklin (2007) similarly identified a lack of digital literacy skills exhibited by 4048 undergraduate college students attending a postsecondary institute in the western United States. The researchers posit that

Despite coming to age with the Internet and other technology, many college students lack the information and communication technology (ICT) literacy skills – locating, evaluating, and communicating information – necessary to navigate and use the overabundance of information available today. (p. 50)

Kvavik (2005) recommends that the 21st century student needs to develop two types of literacy skills: (1) information literacy or fluency skills; and (2) and the technical skills to successfully use educational technologies.

Fass-McEuen (2001, p. 9) concludes that information fluency is a balance between and a comprehensive understanding of the following three components:

1. Foundational Elements: the basic principles and ideas of computers, networks, and information, which underpin technology. Concepts explain the how and why of information technology, and they give insight into opportunities and limitations;

2. Contemporary Skills: the ability to use today’s computer applications, enabling people to apply information technology immediately; and

3. Intellectual capabilities: the ability to apply information technology in complex, sustained situations, encapsulating higher-level thinking in the context of IT. Capabilities empower people to manipulate the medium to their advantage and to handle unintended and unexpected problems as they arise.

In Fass-McEuen’s study of student literacy skills at Southwestern University, research revealed that skill levels were highest in the uses of word processing and use of the Internet. Conversely, skills were weakest for specialized applications such as spreadsheets and presentation software.
In his review of Fass-McEuen’s study, Kvavik (2005, p. 7.6) proposes that “student technology skills can be likened to writing skills: Students come to college knowing how to write, but they are not developed writers. The analogy holds true for information technology, and McEuen suggests that colleges and universities approach information technology in the same way they approach writing”. The study by Kerr et al. (2006) supports the concept that not all online students are technologically proficient. Their study concludes that “first-time online students often report that they have low technology skills and/or have anxiety associated with the use of technology (Kerr et al., 2006, p. 102). Similarly, Kvavik’s research (2005, p. 7.17) states that such findings are significant. He concludes that

1. “Some complacency may have occurred because of the belief that Net Gen students require less training with technology;

2. Students appear to be slower developing adequate skills in using information technology in support of their academic activities, which limits technology’s current value to the organization; and

3. Higher education’s investment in learning technology may be paying less than optimal returns because students and faculty often lack the appropriate skills or motivation to use it effectively. Colleges and universities appear not to be reaching enough students and faculty with technology education and training”.

As such, based on these findings, college faculty and senior administrators should not assume that their Net Generation students arrive at college possessing sophisticated technical skills to manipulate advanced software. In fact, many students lack the necessary IT skills to accomplish academic assignments at the postsecondary level (Brown, 2009a; Katz & Macklin, 2007). There is the requirement, to offer classes and tutorials for those students, who may not be as computer literate as the literature may suggest.

The Digital Divide in Canada

A recent Statistics Canada (2008) Canadian Internet Use Survey study concludes that Canadians are making greater and more sophisticated use of the Internet, but a digital divide continues to exist among certain groups based on income, education and age (Statistics Canada 2008). This study made the following conclusions (pp. 1–2):

1. The vast majority (91%) of people in the top quintile (earning more than $95,000) used the Internet. This was almost twice the proportion of 47% for the lowest
quintile (earning less than $24,000). This gap in use has narrowed slightly since 2005;

2. In terms of education, 84% of individuals with at least some post-secondary education used the Internet in 2007, compared with 58% of those who had less education;

3. Age remained an important factor. In 2007, 96% of persons aged 16 to 24 went online, more than three times the 29% among seniors aged 65 and older.

An interesting finding from this study concludes that the proportion of men and women using the Internet in 2007 was just under three-quarters for both genders. A 2005 study by Veenhof, Clermont, and Sciados similarly concludes that no gap exists in Canada or the United States between genders on the use of information communications technologies. The gaps within the digital divide, as highlighted in the Statistics Canada (2008) *Canadian Internet Use Survey*, pose challenges for the leaders of Ontario’s colleges.

**Postsecondary Education and the Digital Divide**

The integration of educational technologies into curriculum in the form of online learning is potentially creating a permanent underclass. This underclass is mainly excluded from participating in the wealth creation of the digital age, in large part because they have neither the economic, social nor education opportunities to become meaningful contributors in the 21st century economy.

In most of the literature, the digital divide is usually defined as a dichotomy between those who have access to information technology and those who do not (Carvin, 2000; Light, 2001; Pearson, 2001). This definition of the digital divide is an over simplification and neglects to mention the socio-economic dimensions which are key components of the digital divide. Wilhelm (2000) makes reference to the socioeconomic components of the digital divide describing the digital divide as

the unequal access to computers and the Internet that breaks along familiar socioeconomic fault lines, such as income education, race and age. Those groups on the wrong side of the divide often are called the technology haves-nots and include a disproportionate share of people living in poverty,
functional illiterates, American Indians, blacks living in the South, people in small rural towns and people older than 60 (p. 40).

Similar to Wilhelm (2000), Munoz (2002, p. 19) also shares a holistic and more encompassing view on the complexities of the digital divide:

The digital divide is a significant difference in the access to and equity of technological experiences based on categories of incomes, race, gender, locations or education…The divide speaks to the concrete and symbolic distance between those who enjoy access to, familiarity with, the immense potential of technology, and those who do not. The divide exists in many forms and in many sections of our society, but it is rarely if ever dispatched with the intent of aggravating asymmetrical material relations. Yet, in schools, in form of technology - assumes new forms and breaches new frontiers of inequity despite its best intentions.

As discussed, the digital divide is a complex issue consisting of a number of interrelated and multifarious determinants, which adversely affect women, minorities and those from low income and single parent families.

Selwyn (2003) also concludes that the debate surrounding the digital divide is “conceptually over-simplified and theoretically under-developed (p. 4). Selwyn recommends that the digital divide debate must move beyond the simplistic and dichotomous view of the digital divide (haves vs. have nots) and toward a more comprehensive and realistic appreciation of the inequalities within the digital divide. Selwyn (p. 7) suggests that the following four areas of the digital divide need to be reconsidered:

1. Reconsidering what is meant by Information and Communication Technology (ICT):
   ICT is a broad term encompassing a number of technologies. The current debate on the digital divide typically lumps all technologies within one construct, failing or ignoring that ICT is “an umbrella term for a range of technological applications such as computer hardware and software; digital broadcast technologies; telecommunications technologies such as mobile phones as well as electronic information resources such as the world-wide web and CD-ROMs” (p. 7). Selwyn also recommends that future studies of the digital divide should account for and
make separate conclusions concerning the use or lack thereof of the various forms of ICT.

2. Reconsidering what is meant by ‘access’:
   In most research studies, Selwyn observes that the term ‘access’ is poorly defined. “Issues of time, cost quality of technology and the environment in which it is used” are concerns that are typically glossed over in most research studies (p. 8). Access is more than physical proximity to ICT hardware. Access to ICT at the local library or community center places time and geographical challenges on users as compared to those who own ICT equipment at home.

3. Reconsidering the relationship between access to ICT and use of ICT:
   According to Selwyn, an individual’s proximity to ICT does not necessarily imply meaningful use of ICT. Selwyn believes that an individual’s access and use of ICT is based on a number of factors that go beyond the dichotomous view as user versus non-user: “Instead, as a range of studies have shown, individuals’ engagement with ICTs is based around a complex mixture of social, psychological, economic, and above all, pragmatic reasons” (p. 10).

4. Reconsidering the consequences of engagement with ICT:
   Selwyn argues that most research studies do not analyze the consequences or benefits to those who actively use ICT. Selwyn recommends that future research examine the impact of ICT use and discuss “the extent to which technology use enables individuals to participate and be part of society” (p. 11). Haddon (2000, p. 389) shares a similar sentiment:

   it would be legitimate to ask what role ICTs, both current and future, might play in relation to social inclusion. To what extent may ICTs enhance our abilities to fulfill an active role in society, or might being without them constitute a barrier to that end?"

   Building upon the above redefinitions, Selwyn (2003) argues that it is critical to understand the underlying reasons and forces that shape and influence individuals’ or groups of individuals’ interaction with ICT. Relying on Bourdieu’s framework on different forms of capital, Selwyn proposes that economic, cultural and social capital all factor in determining
how predisposed an individual or a minority group is in engaging ICT. Based on his research, Selwyn (p. 15) developed a table outlining three types of capital (economic, cultural and social) that shape engagement with ICT (see Figure 3).

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<tr>
<th>Types of capital</th>
<th>Key features</th>
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<tbody>
<tr>
<td>Economic capital</td>
<td>Material exchanges, material resourcing, usable space for ICT use (in domestic, community and work settings);</td>
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<td></td>
<td>Free time for ICT use;</td>
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<td>Economic Capacity to purchase ICT hardware and software</td>
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<td>Cultural capital</td>
<td>Investing time into self improvement of ICT skills, knowledge and competencies in the form of informal learning;</td>
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<td>Participation in ICT education and training both formal credentialized and informal non-credentialized;</td>
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<td>Socialization into technology use;</td>
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<tr>
<td></td>
<td>Exposure to ICT via magazines, books, family, peers and other agents of socialization;</td>
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<td>Development of social identity and self-image as ICT user;</td>
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<tr>
<td></td>
<td>Formal credentialized ICT training</td>
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</tbody>
</table>
### Types of capital

<table>
<thead>
<tr>
<th>Social capital</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Networks of technological contacts and support both immediate and distributed;</td>
</tr>
<tr>
<td></td>
<td>Face to face: family, friends, neighbours, tutors, other significant others, membership of groups / organizations;</td>
</tr>
<tr>
<td></td>
<td>Remote: online help facilities</td>
</tr>
</tbody>
</table>

**Figure 3. Different forms of technological capital (Source: Selwyn, 2003, p. 15).**

As Selwyn (2003) advocates, the digital divide is more than a dichotomous argument concerning ownership of information technology and access to the Internet between the “haves and have-nots” (p. 5). The underlying inequities of the digital divide are a mixture of social, psychological and environmental factors that influence the extent of ICT engagement. Cook, Holley, and Andrew (2007, p. 789) expand on the complex nature of the digital divide explaining that “there are, however, practical and social issues of accessibility for students who may not have Internet access at home, may not be allowed by their family to use it, or may not be able to compete for use”.

College faculty and senior administrators must recognize the reality of the digital divide within their student population and develop solutions to address the inequity of student access to ICT. Solutions in bridging the digital divide will need to include these factors, if meaningful progress is to be made in creating an inclusive and participatory learning environment, offering all students the opportunity to succeed. Based on this information, the requirement to develop introductory computer skills programming at Ontario colleges may be more acute than originally perceived.

**Realizing the Benefits and Challenges of Online Learning**

**Online Learning: Magic Bullet or Broken Promises?**

The viability and adaptation of online learning as a credible form of teaching and learning is a contested issue amongst academics, administrators, and information technology
representatives. The literature revealed online learning as a polarizing issue dividing the viewpoints into three distinct camps (Greenberg 2004; Milliron & Miles, 2000):

1. those who aggressively claim that online learning is the cure of all that ails the education system;
2. those who pessimistically present the downside of online learning and eagerly forecast the demise of educational technologies; and
3. those who are part of the “reasoned center – the thoughtful critics and careful advocates” (Milliron & Miles, 2000, p. 52). Greenberg (2004) describes this group as believing that technology neither harms nor enhances the teaching and learning process.

The Advantages of Online Learning

The literature is consistent in outlining the numerous advantages of online learning. According to Wyatt (2005) these advantages include the ability to deliver courses and degree programs to students who cannot attend a traditional campus because of geographical, time and family constraints. In essence, online programming transcends time, location and distance providing learning opportunities to those individuals who do not fit the traditional mold of the campus student. In addition some faculty report increased levels in the quality of online interaction between student and faculty and among students.

An often cited reason for this reported increase in student interaction is that online learning affords students the opportunity to think about their answers and / or viewpoints before posting their comments on the discussion board (Song et al., 2004). Thomas L. Russell cited and researched hundreds of studies and papers debating the effectiveness of e-learning (Greenberg, 2004). Russell’s comparative research concludes that for every study that demonstrated a measurable benefit to learning, he found a counter study that challenged that finding (as cited in Greenberg, 2004, and Alanis, 2004). Russell believes that researchers are asking the wrong questions (as cited in Greenberg, 2004). He believes researchers and academics should embrace “the good news” in that online learning does not necessarily negatively impact the quality of instruction (Greenberg, 2004). Instead, “when we accept that in the final analysis, technology suitably and properly deployed yield no significant
difference for learning outcomes, we can stop expecting it to be the be-all, end-all to education...we can begin to look more rigorously at the ways in which technology does provide an edge” (Greenberg, 2004, p. 5). Greenberg (2004) suggests that with the advent of the digital age, the integration of education technologies into postsecondary should be celebrated and not shunned.

However, this positive outlook for online learning is not shared by all researchers and senior administrators. There exists a constituent that professes, from a pedagogical perspective, that online learning is not very suitable as a teaching and learning tool within the classroom.

**The Challenges of Online Learning**

The literature is replete with studies and commentary analyzing the reasons why online learning has yet to alter meaningfully the teaching and learning processes of higher education. Some argue online learning as a passing fad, that within time, will fade from our collective memories. Donald Bunis (2002, p. 30) provides an account on why he believes online learning failed to live up to the initial hype:

A review of the first wave of the e-learning revolution is not pretty. The landscape is littered with poor products and a lot of disillusioned learners. As the history of revolutions teaches us, however, typically there are extreme swings of the pendulum, first one way and then the other, before a proper balance is achieved...It was one of those “learning experiences” – unfortunately not as advertised for the intended audience of learners – but for decision makers who mainly bought the wrong things for the wrong reasons...At either end of the spectrum, most of the products that failed to live up to their promise did so because they were not based on sound educational principles – they simply didn’t account for how people actually learn. To add insult to injury, many of them also rode on software platforms that did not perform well for users.

A study published by Robert Zemsky and William Massy in 2004 provides a controversial viewpoint on why online learning has had little impact in the classroom. In their study and subsequent report, Zemsky and Massy attempt to answer “Why did the boom in e-learning go bust?” (p. ii). Their research counters three basic assumptions that developed as a result of Michael Moe’s optimism on the growth of e-learning (as discussed in Alanis, 2004). Zemsky and Massy’s (2004) conclusions are as follows:
Assumption 1:
“If we build it they will come – not so” (Zemsky & Massy, 2004, p. 44). This assumption was largely devised on the optimistic belief that e-learning technologies would be eagerly accepted and implemented as a component part of the teaching and learning process. The authors profess that notwithstanding the sizable financial investments in hardware and software, the emerging e-learning market did not materialize (Alanis, 2004);

Assumption 2:
“The kids will take to e-learning like ducks to water – not quite” (Zemsky & Massy, 2004, p. 48). This assumption assumed that students of the Net Generation (Tapscott, 1998), who spent their formative years surrounded by digital technologies, would embrace e-learning. One of the conclusions drawn by the research of Zemsky and Massy (2004) implied that student dissatisfaction with e-learning rested largely on the faculty’s inability to functionally integrate technology as an effective teaching tool. Some learners complained that e-learning lessened interaction “among students and between student and faculty” (Isensee, as cited in Zemsky & Massy 2004, p 50); and

Assumption 3:
“E-learning will force a change in how we teach – not by a long shot” (Zemsky & Massy, 2004, p. 52). The literature search revealed that current uses of technology, such as PowerPoint, Blackboard and WebCT, simply automate the traditional teaching and learning process (Doucette, 1994). In order for e-learning to alter the traditional teaching methods, educational technologies must be used in such a manner that transforms the teaching and learning process and subsequently alters the relationship between student and faculty (Doucette, 1994; Frand, 2000).

Although the effectiveness of e-learning in the classroom creates three distinct polarities, the literature consistently demonstrates that these three camps do, for the most part, agree that educational technologies continue to influence and shape the delivery of postsecondary education. A review of the reasons why online learning has yet to take meaningful root in the classroom is instructive to this study.
The Drawbacks of Online Learning

The key question to examine in this section is to review the literature and analyze the reasons why online learning has not transformed the teaching and learning process within postsecondary education as some expected. The following paragraphs highlight some of the more cited reasons concerning the challenges of integrating online learning within the postsecondary milieu.

Faculty and quality control concerns.

Although many postsecondary institutions have moved forward and implemented online courses and programs, some administrators find it difficult to get faculty to participate willingly in online learning initiatives (Bruner, 2007; Haymes, 2008; Zhou & Xu, 2007; Birch & Burnett, 2009). According to Siemens and Tittenberger (2009, p. 20) “[T]eaching in online environments increases the workload and responsibilities for many educators as new conceptual views and technical skills are required”.

Bruner’s (2007) study focused on those factors which motivate and inhibit faculty in offering courses online. His study concluded that the “hassle factor” (related to increased faculty workload, time and effort required to implement distance education (D.E.), and the potential for frequent frustrations with technology) was the single biggest inhibitor for faculty” (Bruner, 2007, p. 4). This study also concludes that faculty perceive a diminished loss of control over their course offering as the role of technology increases. Research by Allen and Seaman (2006) concludes that online teaching places greater demands on faculty as compared to traditional courses. As such, some faculty are reluctant to participate and teach in online environment (Haymes, 2008).

A recent study conducted by Zhou and Xu (2007), that analyzed technology adoption by faculty at the University of Alberta, concluded that to encourage faculty to increase their use of educational technologies in classrooms, university administrators must provide substantiated rationales on how educational technologies improve learning. This study also suggested that faculty expect “evidence and examples that support and demonstrate the effective use of technology should be successfully delivered to instructors” (p. 525).
Compounding faculty’s concerns about online learning, is that some view the sudden growth and popularity of online programming as being driven by senior administrators, looking for economical ways of increasing enrollments, and by software vendors, looking to increase the private sector’s footprint in postsecondary education for financial gain (Wyatt, 2005). Some faculty have expressed numerous concerns regarding the efficacy of online learning as a credible instructional tool. Some faculty “worry that quality control policies are often not in place for online courses and consequently, an inferior product may be delivered: that online instruction may amount to little more than selling credits” (Wyatt, 2005, p. 461). There is a large constituent of faculty that believes online instruction is second rate, and as such, not a credible education (Moore, 2001).

A study by Mior (2003, p. 205) concludes that Ontario college faculty are highly predisposed “to the adoption of educational technology to promote learning in the Ontario Community College system, depending on how it is used”. As such, college faculty are prepared to integrate educational technology into their curriculum provided that learning quality is not compromised.

**Lack of interaction between students and faculty.**

In a comprehensive study of Internet use in the classroom, Levin and Arafah (2002) conclude that students are generally dissatisfied with the instructional uses of the Internet as a teaching aid. Their research identified that students found their Internet based assignments poorly designed not intellectually stimulating. Furthermore, “The primary reasons for this digital disconnect between how students use the Internet for school and how schools have them use the Internet are tied to the ways that schools and teachers are oriented towards the Internet and their inability in many instances to integrate online tools into schooling” (Levin & Arafah, 2002)

Interactivity between students is critical to enable successful and meaningful e-learning (Chou, 2003; Lightfoot, 2005; Nichols, 2009; Nielsen, 2007; Siemens & Tittenberger, 2009). Conversely, the study by Bruner (2007, p. 2) concluded “there is substantial evidence that the amount of interaction, at least with computer-based distance education, actually increases”.
The dynamics of innovation.

The introduction of computers into the classroom brought with it the expectation that educational technologies would spawn an online learning revolution that would fundamentally alter the process of teaching and learning in higher education (Geoghegan, 1994). The convergence of personal computers, ubiquitous connectivity and continuous improvement in micro chip design fueled an investment frenzy in educational technologies and ignited visions of an educational environment where faculty would become designers of the learning process (Geoghegan, 1994; Spence, 2001; Zemsky & Massy, 2004).

However, all this investment of financial and human capital has not resulted in the anticipated integration of information technology in the teaching and learning process (Geoghegan, 1994). Rogers’ (1995) diffusion of innovations, in part, explains why online failed to take significant root in higher education. Rogers’ (p. 5) defines diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system”. He defines innovation as “an idea, practice, or object that is perceived as new by the individual or other unit of adoption” (Rogers, 1995, p. 11). Zemsky and Massy (2004) use the diffusions of innovation model as a means of explaining why online learning failed to significantly alter traditional teaching and learning methods. For the purposes of this research, the innovation is the integration of educational technologies into traditional methods of teaching resulting in online programming (Geoghegan, 1994).

Norman (1998, p. 32) utilizes “The needs-satisfaction curve of technology” (see Figure 4) to explain how a disruptive technology, such as educational technologies, are eventually adopted by the majority of consumers. In the early stages, the leading edge adopters are prepared to suffer inconvenience and higher unit costs to use the new technology (Norman, 1998). The more conservative consumer begins to purchase / accept the new technology once it is proven to be cost effective and reliable. When the new technology begins to deliver the basic needs of the consumer, a major shift in consumer behaviour occurs. This transition point occurs when the new technology satisfies the basic need of the consumer.
Rogers (1995, pp 263 - 266) describes five adopter categories that are typically present in most diffusion of innovation models. These categories, in relation to the technology adoption cycle, are as follows (McLean, 2005):

- **Innovators** – represent a small minority referred to as “techies” of the local system and are risk takers prepared to invest time and money in unproven technology hardware/software;

- **Early adopters** – typically respected leaders in the social system who quickly recognize “the potential of an innovation” (McLean, 2005, p. 3)

- **Early Majority** – pragmatists who are comfortable using technology often exhibiting a wait and see approach to innovation (Geoghegan, 1994).

- **Late Majority** – less comfortable with technology and tend to be skeptical of technology innovations; and

- **Laggard** – this group tends to be digitally challenged and are unlikely to utilize any type of educational technology to advance e-learning.

As the technology matures, and satisfies more clients/students, there is a greater rate of adoption of technology as highlighted in Figure 5:
Figure 5. The Revised Technology Adoption Life Cycle (Adapted from Moore, 1991, p. 17).

Moore (1991) explains that the technological innovation cycle failed to gain wide acceptance with faculty and students because of a chasm that exists between the early adopters and the early majority. The gap that separates the early adopters from the early majority is vast and all efforts to bridge the gap failed and as such, this explains why the technological adoption, and by extension online learning, has so far, not moved beyond the early market. The following section will provide an explanation on how the technological gap is being bridged.

What is the Dominant Design for Online Learning?

Zemsky and Massy (2004, p. iii) summarize the less than promising start of online learning as follows:

In retrospect, the rush to e-learning produced more capacity than any rational analysis would have said was needed. In a fundamental way, the boom-bust cycle in e-learning stemmed from an attempt to compress the process of innovation itself. The entrepreneurs’ enthusiasm produced too many new ventures pushing too many untested products – products that, in initial form, turned out not to deliver as much value as promised...The hard fact is that e-learning took off before people really knew how to use it.

The authors conclude that main reason why online learning was slow to develop was due to a lack of a dominant design. James Utterback (1996, p. 24) of the Massachusetts Institute of Technology, who is a leading authority on technology based innovation, defines a dominant
design as “one that wins the allegiance of the marketplace, the one that competitors and innovators must adhere to if they hope to command significant market following. The dominant design usually takes the form of new product (or set of features) synthesized from individual technological innovations introduced independently in prior variant products”.

In the early years of online learning, researchers believed that the Internet or learning management systems, such as Blackboard and WebCT, would become the dominant design for online learning. Hedberg’s (2006) research makes a compelling and intriguing argument that the dominant design for online learning is not a physical product at all, such as a learning management system or type of educational technology, but rather, the dominant design for online learning is the amount of interaction generated among students and between students and faculty. He suggests that the use of digital resources that encourage and facilitate interactive activities may become “disruptive” to existing learning practices (McConnell, 2006, p. 81). Hedberg (2006, p. 181) explains that

“for any e-learning experience to be disruptive and integral to future learning it is necessary to create a learning space that facilitates the movement of the learner from being a passive participant toward an active engaged constructor of their own experience. Thus:

- there needs to be a rethinking of learning activities;
- an exploration of how interactions are managed and facilitated; and
- a choice of the right pedagogical task.

If disruptions of this kind can be absorbed by educators, then I would speculate that e-learning of the future will realize the promise and potential so many have recognized but so few have translated into improvements in learning”.

Based on this research, college faculty and senior administrators, before spending large sums of time and money on implementing online learning strategies, should consider that the amount of interaction generated amongst students and between faculty and students, is a critical factor in ensuring student satisfaction with online learning.
Interaction and Online Learning: The Student Perspective

Interaction is critical to effective learning (Neilsen, 2007; Nichols, 2009; Thorpe, 2008; Wang, Gould, & Fulton, 2007). Thorpe and Godwin (2006) discuss two types of interaction during online learning. These are (a) interpersonal interaction; and (b) content interaction. In support of interpersonal interaction communications with other students and faculty, without the barriers of time and place, led to expanded learning relationships. These networked learners valued the sense of their learning process, which included teamwork and team problem solving, as being part of a shared experience (see Figure 6).

2. Know you’re not alone…I’m the only student from Jersey so online stuff is very relevant.
3. Reduced the feeling of isolation. Friendly place to get guidance/help/advice from fellow students. Don’t feel so stupid asking questions in a mainly student forum.
4. Gives me an idea how other students are finding the course and didn’t make feel so bad, when I realized others were struggling.
5. It’s helpful to communicate with other students at the same level as you under the same pressures.
6. Feeling of being in a group.
7. Helpful to read other students’ comments about assignments and to know that they felt the same way I did.
8. The facility makes the course accessible at any time and reduces the feeling of being alone.

Figure 6. Benefits of more contact with other students: Interpersonal Interaction
[Source: Thorpe & Godwin, 2006, p. 211].

In the same study, the benefits of content interaction included a better understanding of course content through the aid of interactive software, the ability to conduct searches on the DVD/Internet, and the students enjoyed the experiential learning experience online courses offered. Some of the student comments, concerning the benefits of online learning, are listed in Figure 7.
1. I have understood difficult concepts which on paper look impossible to understand but through CD ROMs things are more clear. It is like having a teacher present.

2. Visual aids and opportunity to compile spreadsheets – excellent.

3. The practical work is truly excellent. They are possibly better than having face-to-face tutorial.

4. Concept mapping CDROMs improved my understanding of different concepts and the links between them.

5. Software gave me confidence when tackling a problem manually and being able to check the result.

6. It made research options more interesting and interactive. Navigating around sites broadens horizons and knowledge base expanded.

Figure 7. Learning more effectively: Content Interaction [Source: Thorpe & Godwin, 2006, p. 212].

A study by Song et al. (2004) also highlighted the importance of student interaction during online learning. This study revealed that:

1. Online students tended to think more deeply about questions when responding during online discussions as opposed to giving verbal answers;

2. Due to the permanent and public display of discussion postings on the learning management system, students could reflect on other students’ reflections and ideas; and

3. Online learning allowed for more reflection than what might otherwise occur during discussions in face-to-face classrooms.

As mentioned in the introduction of this chapter, the next section will review recent research studies concerning the student experience and perspective of online learning.
Theoretical Research Framework Upon Which This Study Is Based:

Review of the Recent Research Concerning the Postsecondary Student Experience, Attitude and Perspective of Online Learning

Introduction

To establish the theoretical research framework upon which this study is based, a number of recent research studies, concerning student perceptions of online learning, were reviewed. As earlier discussed, much of the current information regarding student experiences and perceptions of online learning is largely based on anecdotal observations and personal teaching experiences (Bennett et al., 2008; Kerr et. al., 2006; Nichols, 2009b; Lane & Yamashiro, 2008; Menchik, 2004; Song et al., 2004; Siemens & Tittenberger, 2009). The purpose of reviewing recent studies concerning student experiences and perceptions of online learning was for the researcher to develop a comprehensive knowledge base of the contemporary studies, which examined the student experience of online learning in the postsecondary milieu. Based on this review, the researcher examined the emerging questions and trends. These questions, along with those identified in the literature review, were integrated in the development of both the quantitative and qualitative surveys, the results of which will be subsequently contrasted to the literature review in Chapter Five.

Assessing the Quality of Online Courses from the Students’ Perspective: Young and Norgard (2006)

This US study was of particular interest because many of the topic areas paralleled many of the themes concerning student perceptions of online learning found in the literature review. The purpose of this study was to build a survey, based on a review of the existing literature, concerning students’ perceptions and preferences related to online course delivery. Young and Norgard administered a four-point Likert scale survey to 913 online students at their own college with a response rate of 25%. The researchers found that the following five areas are important for student satisfaction with online learning:

1. Online course design – approximately 92% of the respondents agreed that a common structure across all online courses would be helpful to them (p. 111).
The majority of students agreed that online courses should be structured with predetermined assignment dates similar to face-to-face courses.

2. **Online Course interaction** – 87% of the respondents found that online learning was conducive for interaction with their classmates. Females perceived interaction with classmates more positively than did males (p. 112). Over 90% of the respondents agreed that interaction between student and faculty is essential for online learning success. Females felt stronger about the need for interaction with faculty than did males. Over 75% of the respondents agreed that the quality of discussions in their online courses was high. Student comments stated that the quality of discussions was dependant on faculty participation.

3. **Online course content** – When queried about their satisfaction concerning lecture material, approximately 94% of the respondents agreed that the posted lecture material was valuable to course discussions.

4. **Online course support** – Those students with more experience were dissatisfied with the hours of technical support, whereas those students taking their first online courses seemed satisfied with online technical support hours.

5. **Online courses versus face-to-face courses** – Students were asked for their perceptions of online versus face-to-face courses in the areas of quality of learning, overall preference, comfort with discussions, study time, and level of difficulty (p. 113). Fifty-eight percent of the respondents felt they learned more in face-to-face courses than in online courses. Those students with more experience taking online courses were more apt to agree that they learned more in online courses than those with fewer courses (p. 113). Approximately 59% of the respondents agreed that they preferred online courses to face-to-face. Student comments indicated that preference for online programming may be related to convenience. Those under 25 indicated they felt more comfortable in online discussions than face-to-face. The 46-55 age group indicated the opposite. This difference may be attributable to older students may just be learning how to use a computer and various software programs (p. 113). Sixty-eight percent of the respondents agreed that online courses require more study time than face-to-face.
This study concluded that “the most common reason students take online courses is convenience. Students reported that their family and work obligations as well as their distance from campus made online learning a convenient option and one that would allow them the flexibility to continue with their education in the midst of their hectic lives” (p. 113). Another key finding indicated that strong student-to-student interaction is critical for online learning success.

*Satisfaction, Academic Rigor and Interaction: Perceptions of Online Instruction: Wyatt (2005)*

Wyatt (2006) asked a random sampling of postsecondary students, who had completed both online and traditional courses at a Midwestern US university, to complete a questionnaire that measured their opinions of online learning. “The students provided information about their motives for enrolling in online courses, their evaluation of the educational quality of online coursework, how satisfied they have been with online courses they have completed, how rigour of online courses compares with traditional classroom courses, how the amount of interaction that takes place in online courses compared with traditional face-to-face courses, and finally, their gender, age and academic level (Wyatt, p. 461). One-hundred and twenty students, who recently completed at least one online course offered by the university, answered the questionnaire.

1. Motives for enrolling in online course(s) – Forty-six percent of the respondents reported that online instruction permitted the flexibility to conduct coursework at home while caring for their families. The next most frequent motive for enrolling for and online course(s) was because of the distance from which they lived from the campus. For many, enrolling in online programming negated a substantial daily commute. The third most frequent response was scheduling. Many of the respondents worked full or part time making it difficult to enroll as a fulltime student.

2. Quality of online learning – Seventy-seven percent of the respondents agreed that online learning offers a good / excellent learning experience. The relationship between perception of the quality of online instruction and age is statistically
significant (p. 464). The results suggest that older students rate the quality of their learning experience higher than do younger students (p. 464).

3. Satisfaction of online learning – this study concluded that 87% of the respondents were either satisfied or very satisfied with the quality of their online courses.

4. Rigour of online courses versus traditional class room courses – Thirty-six percent of the respondents agreed that online courses are much more demanding and 32% said that online learning is slightly more demanding. Thirty-six percent agreed that online learning is as demanding as classroom delivered courses.

5. Compare the amount of interaction with online faculty with that of traditional classroom faculty – The study concluded that these online students did not interact any more with their online faculty than they do with classroom based faculty.

Wyatt (2005, p. 466) concludes that online courses are convenient for non-traditional students “and for others for whom family obligations, distance from campus and scheduling conflicts make attending time and place bound courses difficult if not impossible to attend.

He also concludes that students find online courses more academically demanding than those offered in the traditional setting, and that the respondents positively viewed the “heightened academic demands” of online learning. However, Wyatt (2006, p. 467) cautions that “[T]he results of this study support the belief that online instruction provides a quality and challenging academic experience to select students and is a viable way of delivering university-level coursework to them”.

*Making a Choice: The Perceptions and Attitudes of Online Graduate Students: Braun (2008)*

Braun (2008) used a web-based survey, totaling 26 questions, using a Likert scale, to examine the results of 90 graduate students studying education at a small private US institution about their attitudes and perceptions towards online learning. The below salient points, drawn from this research, have a bearing on this study:
1. Reason for enrolling in online programming – Eighty-one percent of the respondents chose financial reasons as the most frequent response. This result may be skewed as many of the respondents received financial aid to defer the costs of online programming. The second most frequent response (80%) was flexibility with the third most frequent response (74%) being the ability to do coursework at home (not on campus) (p. 69). Many students reported in the open-ended questions that this flexibility allowed them to take care of their families without feeling they were sacrificing school over loved ones (p. 69).

2. Academic demands of online courses compared to traditional courses – Seventy-seven percent of the respondents agreed that online course were slightly more to much more demanding to traditional courses offered in the classroom.

3. Do online courses increase the amount of interaction with instructor and students? – Twenty-three percent of the respondents agreed that online programs increased the amount of individual interaction much more or slightly more with their instructors when compared to traditional classroom instructors (p. 73). Fifty-two percent of the respondents agreed that online courses offered much less interaction and slightly less interaction when compared to classroom based courses.

4. Would you recommend online to a colleague? – Seventy-seven percent of the respondents would recommend online courses to a colleague, while 9% would not, and 14% were neutral to the question.

Similar to the Wyatt (2005) study, Braun (2008, p. 85) concludes “[W]hat the results of this survey show, with all things being equal, is that a vehicle now exists that can support students who typically may not have considered continuing their education, where the outcomes are equal to or better than traditional classroom instruction”.


The following four studies were published by the Educause Centre for Applied Research (ECAR), the research arm of Educause. Educause is a “nonprofit association whose
mission it is to advance higher education by promoting the intelligent use of information technology “(Educause website, http://www.educause.edu/). Oblinger (2008, p. 1) describes the Educause mandate as follows: “we explore how IT can help make things possible for people in higher education—not only for students, researchers, faculty, and administrators but also for those in the campus community”.

Since 2004, the ECAR has conducted comprehensive and longitudinal studies to gauge postsecondary student experience and perception of educational technologies, and how students use these technologies in the course of their studies. For the 2005 study, a web-based survey was issued to 18,039 students belonging to 63 higher education institutions in the US (Caruso & Kvavik, 2005). The web-based survey was followed by qualitative interviews with 82 students from 7 institutions. The researcher noted that the majority of the participating postsecondary institutions were subscribers to Educause, and as such, these postsecondary institutions may share Educause bias in advocating the intelligent use of information technology within higher education curriculum. The key findings in this study that have a bearing on this dissertation are as follows (p. 1):

1. Students use technology primarily for convenience and connection, both for academic and social activities;
2. Engineering, business, and life science students prefer more technology in courses than do students in other disciplines;
3. More than 36% of students surveyed think they do not need additional training in order to use IT in their courses. Older students say they need additional training more often than younger students;
4. Most students prefer a moderate amount of technology in their courses; and
5. Students report that using a course management system improves their learning.

An interesting finding in this research is that 42.5% of the respondents preferred a moderate amount of technology in their courses. This figure rises to 59% in the 2007 study. This finding supports other similar studies conducted by Flynn et al. (2005), Maltby and Whittle, (2000), and Partridge and Edwards (2005).

A web-based quantitative survey was answered by 28,724 US postsecondary students, followed by a qualitative survey at 96 postsecondary institutions. The key findings, germane to this dissertation are as follows (Salaway & Borreson-Caruso, 2006, p. 1):

1. Nearly 98% of undergraduate respondents own a personal computer. Nearly two-thirds own laptops;
2. Student use of technology is strongly influenced by academic major and class status;
3. Students say convenience is the primary benefit of IT in courses;
4. Most students prefer a moderate amount of IT in their courses;
5. Sixty-four point 4 percent of respondents agree or strongly agree that IT has improved their learning; and
6. Two-fifths (40.3%) of students indicate that they are more engaged in courses that use technology.

The ECAR Study of Undergraduate Students and Information Technology, 2007: Salaway and Borreson-Caruso (2007)

In this study, 27,846 US students answered a web-based survey. Subsequent to the survey, qualitative interviews were conducted. The salient findings drawn from this study which correlate to this research are as follows:

1. Sixty-one percent of respondents agree or strongly agree that IT in courses improves learning. But a majority (56%) also indicate that convenience is the primary benefit of it in their courses;
2. Far more students express a preference for moderate use of IT in their courses (59%) than extensive use (20%);
3. Students report good IT skills overall. Only 26% say their institution needs to provide additional training in IT required for their courses;
4. The great majority of all students (92%) have high-speed Internet access – either wired or wireless; and

5. Respondents report spending an average of 18 hours per week doing online activities for school, work, and recreation.

_The ECAR Study of Undergraduate Students and Information Technology, 2008: Salaway and Borreson-Caruso (2008)_

In this study, 27,317 US students answered a web-based survey to gauge postsecondary student experience and perception of educational technologies, and how students use these technologies in the course of their studies. Subsequent to the survey, qualitative interviews were conducted to extrapolate the findings derived from the online survey. The salient findings drawn from this study which correlate to this research are as follows:

1. Laptop ownership has increased from 65.9% in 2006 to 82.2% in 2008;

2. 79.5% of respondents consider themselves Internet savvy;

3. 59.3% of the respondents prefer a moderate amount of IT in their courses; and

4. 65.6% of the respondents indicate that convenience is the most valuable benefit of IT in their course work.

_The Efficacy of a Course Management System in Learning: Perceptions of Students and Faculty at One Ontario College: Valerie Lopes (2008)_

Lopes (2008) conducted a mixed-methods case study to explore the perceptions of faculty and students concerning the impact on learning of the use of a course management system during a semester in the business programs at a large, urban Ontario college. The researcher distributed two online questionnaires to approximately 1400 business students and obtained a response rate of 25%. She interviewed 15 faculty and students to obtain their opinions on the efficacy of the course management system during their learning process. This study concluded that:
1. CMS, when used effectively, facilitates access to and organization of information, thereby helping the students keep track of what they need to do to be successful in the course (p. 323);

2. The greatest constraint to learning is the over, under, or misuse of the CMS course sites;

3. The students assessed the CMS to be an important and integral component of their education and its use had a positive effect on their learning experience;

4. Regardless of generation, today’s college student seeks to integrate technology into their learning experience;

5. The students viewed CMS supported learning as augmenting and not necessarily replacing face-to-face learning; and

6. The students view the use of CMS as a utility, and not an option, that enhances the learning process.

Lopes (2008, p. iii) concludes that “[E]ven though on the surface it appears that the systems are being used solely to augment conventional practices, the use of CMS has, in fact added useful dimensions to ways of teaching and learning”.

Related to the above research studies is the research conducted by Kerr et al. (2006) and Roper (2007). Roper (2007) and Kerr et al. (2006) studied what student characteristics and skills are necessary to succeed in online learning. Based on survey answers from students, Roper (2007) recommends the following seven steps that helped online students succeed in their courses:

1. Develop a time-management strategy – according to one study, online learning requires more study time than face-to-face courses. As such, the respondents in this study recommend that online students follow a learning and study schedule. One respondent stated “You have to discipline yourself in maintaining your schedule and not allow any distractions to disrupt your plan” (p. 63).

2. Make the most of the online discussions – respondents indicated the criticality of participating in threaded discussions. Frequent participation resulted in enhanced learning. One student wrote “Interacting with other students was the fun part of my (online) classes. As much as possible, I
would post a response, question, or comment to another student’s posting. This built up an online relationship” (p. 63).

3. Use it or lose it – retention of online study material proved challenging for some respondents. Slightly under half of the respondents stated that taking handwritten notes from the online study material assisted in retaining the major teaching points.

4. Make questions useful to your learning – Threaded discussions and e-mail encouraged the opportunity to ask questions of your fellow students and faculty. One student stated “Asking questions helped me to understand the material. I was a student who did not have experience with [online] classes…Asking questions of some of the other students helped me understand the principles and practices… (p. 64)

5. Stay motivated – Losing motivation is a common problem for online students. Some respondents suggested teaming up with an online course mate in an effort to stay connected and motivated to complete the course. Roper suggests the creation of a “self-motivating plan”.

6. Communicate the instruction techniques that work – this study concluded that students appreciated frequent participation of faculty in threaded discussions.

7. Make connections with fellow students – Being part of an effective learning community, in both face-to-face and online learning, is central to the learning experience. One student wrote “The experience was enriched greatly by the relationships and interaction with my fellow students. It amazes me how well we got to know each other even though we were often thousands of miles apart and were only virtual classmates. I learned much from other students and their experiences as I did from the instructors” (p. 64).

The study by Kerr et al. (2006) highlighted three student characteristics as indicators for understanding online student success:

1. Reading and writing proficiency – the authors concluded that successful online learners read and write well;

2. Independent learning and motivation – this study concluded that “independent learning is positively associated with self-esteem and Internet self-efficacy, and that students with high independent learning scores had significantly higher course grades than low independent learners” (p. 101); and

3. Computer literacy - the study found that many first-time online students often report having low technology skills or experience anxiety over online learning.
The researchers suggest that instructors and institutions that provided meaningful online technical support discovered that “a complete novice is likely to have gained enough skill to continue to engage with technology with some degree of confidence” (Palloff & Pratt, 1999, p. 137, as cited by Kerr et al., 2006, p. 102).

**Chickering and Gamson’s Seven Principles of Effective Teaching and Learning**

With the ever-increasing popularity of online learning in the college sector, one consequence of the rapid development of online programming is the potential for online instructional techniques progressing ahead of the implementation of sound online pedagogical research (Repka-Brake, 2006). Before explaining how Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education* apply to online learning and this study, an examination of the theoretical framework underlying the seven principles is discussed. The quantitative online questionnaire in this study is based on Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education*

**Articulating the seven principles.**

The *Seven Principles for Good Practice in Undergraduate Education* (Chickering & Gamson, 1987) distils research results from decades of research on the postsecondary experience into seven basic principles (Gamson, 1991). The seven principles emerged from a panel of postsecondary scholars who were asked to develop a set of teaching and learning principles that could be applied to enhance and improve learning (Bangert, 2004, Gamson 1991; Chickering & Gamson, 1999). These principles assert that good practice in postsecondary education:

1. encourages student-faculty contact,
2. encourages cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations, and
7. respects diverse talents and ways of learning. (Gamson, 1991, p. 5)

Chickering and Gamson (1991, p. 64) elaborate:

These principles seem like good common sense, and they are – because many teachers and students have experienced them and because research supports them. They rest on 50 years of research on the way teachers teach and students learn, how students work and play with one another, and how students and faculty talk to each other.

The implication of the seven principles is that the more time students and faculty spend on tasks relating to the seven principles, students are more likely to take responsibility for their own education and learn more (Chickering & Gamson, 1991). Although each principle can stand on its own merits, when all are collectively integrated, their effects multiply (Chickering & Gamson, 1991). A comprehensive and detailed study by Sorcinelli (1991) highlighted recent research studies that validated each of the seven principles. She concludes (p. 22): “The research reported in this chapter indicates that the Seven Principles for Good Practice in Undergraduate Education provide substantive research based advice that can enrich our understanding and practice of teaching and learning at the college level”.

A study by Kuh and Vesper (1997), which examined three of the seven principles at a baccalaureate granting university, concluded that effective use of the seven principles maximizes student learning.

Since the publication of the seven principles in 1987, a number of new and interactive technologies have been integrated into the teaching and learning processes within postsecondary education. Although the principles were initially developed to be applied in face-to-face instruction, they were designed to be “…accessible, understandable, practical, and widely applicable” (Gamson, 1991, p. 7; Batts, Colaric, & McFadden, 2006). As such, these design characteristics permit the seven principles to be applied to formats other than face-to-face instruction (Bangert, 2004; Batts et al., 2006; Nichols, 2007; Siemens & Tittenberger, 2009). After extensive research on the applicability of the seven principles in online learning, Bangert (2008) concludes that the seven principles framework is a solid, research based guidance in the design, delivery and assessment of postsecondary Internet-based courses.
Similarly, Chickering and Ehrmann (1996, p. 3) posit that “[I]f the power of the new technologies is to be fully realized, they should be employed in ways consistent with the Seven Principles”. Chickering and Ehrmann (1996), in their seminal article *Implementing the Seven Principles: Technology as Lever*, describe ways in which educational technologies may be utilized to advance the Seven Principles in the 21st century postsecondary classroom (pp. 3 – 5):

1. **Good Practice Encourages Contacts Between Students and Faculty.**
   Communication technologies that increase access to faculty members, help them share useful resources, and provide for joint problem solving and shared learning can usefully augment face-to-face contact in and outside of class meetings. By putting in place a more “distant” source of information and guidance for students, such technologies can strengthen faculty interactions with all students especially with shy students who are reluctant to ask questions or challenge the teacher directly. It is often easier to discuss values and personal concerns in writing than orally, since inadvertent or ambiguous nonverbal signals are not so dominant.

2. **Good Practice Develops reciprocity and Cooperation among Students.**
   The increased opportunities for interaction with faculty noted above apply equally to communication with fellow students. Study groups, collaborative learning, group problem solving, and discussion of assignments can all be dramatically strengthened through communication tools that facilitate such activity.

3. **Good Practice Uses Active Learning Techniques.**
   The range of technologies that encourage active learning is staggering. Many fall into one of three categories: tools and resources for learning by doing, time-delayed exchange, and real-time conversation. Today, all three can usually be supported with “worldware” originally developed for other purposes but now used for instruction, too.

4. **Good Practice Gives Prompt Feedback.**
   The ways in which new technologies can provide feedback are many – sometimes obvious, sometimes more subtle. We already have talked about the use of email for supporting person-to-person feedback, for example, and the feedback inherent
in simulations. Computers also have a growing role in recording and analyzing personal and professional performances. Teachers can use technology to provide critical observations for an apprentice…As we move toward portfolio evaluation strategies, computers can keep track of early efforts, so instructors and students can see the extent to which later efforts demonstrate gains in knowledge, competence, or other valued outcomes.

5. Good Practice Emphasizes Time on Task.
New technologies can dramatically improve time on task for students and faculty members…Technology also can increase time on task by making studying more efficient. Teaching strategies that help students learn at home or work can save hours otherwise spent commuting to and from campus…Time efficiency also increases when interactions between teacher and students, and among students, fit busy work and home schedules.

6. Good Practice Communicates High Expectations.
New technologies can communicate high expectations explicitly and efficiently. Significant real-life problems, conflicting perspectives, or paradoxical data sets can set powerful learning challenges that drive students to not only acquire information but sharpen their cognitive skills of analysis, synthesis, application, and evaluation.

7. Good Practice Respects Diverse Talents and Ways of Learning.
Technological resources can ask for different methods of learning through powerful visuals and well-organized print; through direct, vicarious, and virtual experiences; and through tasks requiring analysis, synthesis, and evaluation, with applications to real-life situations. They can encourage self-reflection and self-evaluation. They can drive collaboration and group problem solving. Technologies can help students learn in ways they find most effective and broaden their repertoires for learning. They can supply structure for students who need it and leave assignments more open-ended for students who don’t…Aided by technologies, students with similar motives and talents can work in cohort study groups without constraints of time and place.
Applying the seven principles to online learning.

Many faculty members and educational leaders agree that the *Seven Principles of Good Practice in Undergraduate Education* are valid and supported by extensive and robust research (Lightfoot, 2005; Repka-Brake, 2006; Siemens & Tittenberger, 2009). The publication of the seven principles continues to inspire numerous lines of research and study (Chickering & Gamson, 1999), including the application of the seven principles to online learning (Nichols, 2007; Robertson, Grant, & Jackson, 2005; Robbins-Bell, 2008).

Several researchers have applied the seven principles to online learning formats (Bangert, 2004; Hutchins, 2003; Lightfoot, 2005). A study by Koeckeritz, Malkiewicz, and Henderson (2002, p. 287) concludes “[T]he Seven principles of Good Practice for Undergraduate Education provide a framework for ensuring success of online instruction”. Chizmar, Walbert, Hurd, and Moore (1999) applied the seven principles to three online courses. They refer to numerous examples of how faculty used educational technologies to support the seven principles including (a) the use of threaded discussions to encourage contact between student and faculty and between students; (b) providing the students with prompt feedback on the results of quizzes and assignments; and (c) expecting students to use a web based publishing program to submit assignments.

Bangert (2005) administered the Student Evaluation of Online Teaching Effectiveness (SEOTE) to online nursing educators to assess the perceived quality of online learning. The SEOTE was developed based on Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education*.

Research conducted by Graham, Cagiltay, Lim, Craner and Duffy (2001), at a large US university, implemented the seven principles as a general framework for the evaluation of four online courses. The seven principles were used to highlight areas of strength, weakness and provided recommendations on to improve the quality of online learning. The researchers posit that although their findings could not be extrapolated to other postsecondary institutions, the *Seven Principles for Good Practice in Undergraduate Education* is a useful framework in assessing online teaching and learning (Hutchins, 2003).

In 2002, the Ohio Learning Network Task Force studied the quality of online learning in Ohio (The Ohio Learning Network Task Force on Quality in Education, 2002). A key
finding of this task force was that “Chickering and Gamson’s (1987) Seven Principles of Good Practice in Undergraduate Education remain valid for e-learning” (The Ohio Learning Network Task force on Quality in Education, 2002, p. 3). As such, this report supported the implementation of Chickering and Gamson’s seven principles as a credible framework to assess student perceptions, and attitudes concerning the design and quality of their online learning experience.

**Section Summary**

Online courses and programming are becoming commonplace in postsecondary institutions (Havelka, 2003) as technology is integrated into education (Smart & Cappel, 2006). As such, postsecondary institutions offering online programming should assess the quality of their online programming by asking students what they find helpful and what they find a hindrance to their online learning experience (Young & Norgard, 2006). However, few robust and scholarly studies exist on the student perceptions and perspectives of their online learning experience.

The literature review chapter was divided into three sections:

1. the first section reviewed the literature, as it relates to the social, economic, and political drivers that influence the use, and non-use of online learning in postsecondary education;
2. the second section, reviews and focuses on the common themes that emerged from the few studies which exist, that researched the student experience of online learning within the postsecondary milieu; and
3. the third section reviewed the framework that grounds this study.

Section one of the literature review chapter discussed the various issues and factors that contribute, influence and drive the direction of online learning implementation in institutions of postsecondary education. Factors such as increased computing power, the emerging knowledge society, globalization, and changes in student demographic and expectations, all exert a confluence of challenging forces on all postsecondary institutions,
including Ontario colleges, as faculty and college administrators attempt to meet the eclectic and constantly changing expectations of the 21st century student.

The concept of “borderless education” is providing college students unprecedented choice in schools and program selection. A “borderless education” not only empowers students as consumers, but also compels college faculty and senior staff to view and treat potential students as customers, who have a choice in the education marketplace.

As college decision makers attempt to balance the expectations of the 21st century student with their obligation to implement credible pedagogies in support of online learning, they must also consider the quality and depth of the college students’ digital literacy skills. Research highlighted in this chapter concludes that not all postsecondary students are digitally literate and may not possess the sophisticated technical skills to manipulate advanced software and discern the veracity of information/sources found on the Internet.

Although the key benefit of online learning is the reduction of time and space, some researchers and faculty suggest that online learning is second rate and, therefore, not a credible education. Another challenge confronting proponents of online learning is explaining why online learning has failed to alter significantly traditional teaching and learning methods. Hedberg’s (2006) research provides a compelling reason explaining why online learning has been slow to develop, despite the hype and massive investments of human and financial capital.

Hedberg (2006) concludes that the dominant design for online learning is neither the learning management system nor an educational technology, but rather, the dominant design for online learning is the amount of quality interaction generated amongst students and between student and faculty. The emergence of Web 2.0, with its focus on user interaction, collaborative interface and suite of social software (McLoughlin & Lee, 2008), seems to support Hedberg’s analysis.

Part two of the literature review examined eight studies that used both quantitative and qualitative surveys to examine the student experience and perceptions of their online learning experience. Part two also examined the theoretical framework behind Chickering and Gamson’s seven principles of effective teaching and learning and how and why this framework was selected for this study. This section highlighted numerous studies that
validated the seven principles as a credible and research based framework in assessing the student perceptions of their online learning experiences.

Based on the literature review, and an examination of the eight studies discussed, five questions emerged. These questions all impact and influence the manner in which students perceive their online learning experiences. These questions are as follows:

1. How do students perceive their online learning experience within a college program?
2. What factors / characteristics of online learning enhance the learning experience as perceived by these students?
3. What factors / characteristics of online learning discourage or impede the learning experience as perceived by these students?
4. What student qualities are important in successfully completing an online course?
5. Do Students feel that online learning offers a challenging academic experience when compared with traditional instruction?

Synthesizing these questions, in a mixed-methods research design, the researcher developed a web-based quantitative questionnaire, premised on Chickering and Gamson’s (1987) seven principles, complemented with semi-structured interviews, to collect data concerning college students’ experience and perception of online learning during the course of their studies.
Chapter Three: 
Methodology

Introduction

This chapter outlines the methodology used in this research, including the rationale in selecting a mixed-methods study, the development of both the web-based quantitative questionnaire and the questions of the semi-structured interview, data collection, and data analysis. A secondary, but related purpose of this chapter is to outline the procedural aspects of this dissertation. This study focused on student responses from one Ontario college.

Overall Contribution to the Field

This research contributes to a thin, yet developing body of research, examining the postsecondary student experience and perception of online learning. The results of this study provide a unique perspective on how college students perceive online learning during the course of their studies. The information gleaned from the literature review and the results of this research study contribute to a growing body of knowledge that could be used to better understand college student expectations and attitudes about the use of online learning in course curriculum.

It is hoped that the results and findings of this study will add to the ongoing debate among faculty and other stakeholders surrounding the best practices of online course delivery in an effort to ensure a quality e-learning educational experience for college students. It is anticipated that the results and findings of this study will provide Ontario college leaders and faculty a framework from which to begin the challenging process of determining how best to integrate online learning strategies within course delivery in the community college system.

Site Selection

This research study was conducted at a large, urban and ethnically diverse college in Ontario. This Ontario college has been using the same course management system (Blackboard) since 2000. The researcher spoke to a number of college faculty/staff from various Ontario colleges concerning the use of online learning in Ontario college
programming. All faculty/staff persons spoken to by the researcher had very positive reviews of the online learning program at this one Ontario college. Based on the recommendations provided by these faculty/staff personnel, the researcher conducted in depth research on the student experiences, perceptions, and attitudes of online programming offered at this Ontario college.

Although all Ontario colleges use some form of online learning to support curriculum, all full-time graduates at the recommended Ontario college are given the opportunity to experience all of the following learning methodologies by graduation:

1. traditional classroom delivery;

2. online courses delivered via Blackboard;

3. hybrid courses and

4. experiential learning which includes labs, clinical placements and co-op work placements (retrieved from college web-site, 2007).

The researcher did not find another Ontario college with a similar learning philosophy. Based on the breadth of learning methodologies at this Ontario college, and considering that all full and part-time students are given the opportunities to experience both online and hybrid learning, the researcher invited all full and part-time students to participate in this study.

**Participant Selection**

Initially, this College agreed to email the link to the web-based questionnaire to a selected sample within 2nd- and 3rd-year full-time students. In the end, for safety and security reasons, college administrators decided not to allow the distribution of the web-based questionnaire to be emailed to the proposed sample, and instead, placed a link to the questionnaire on the college’s course management system (Blackboard) giving all students the opportunity and option to complete the questionnaire. As such, the researcher has no way of determining how many students actually observed the link to the web-based questionnaire when logging into Blackboard. The questionnaire was posted on the College’s course management system from 19 March 2009 until 30 April 2009. A total of 279 students
responded to the questionnaire. The researcher discussed the scope, breadth and size of sample of this research with Dr. Creswell, an expert in mixed-methods research. He suggested that interviewing between 8 – 10 students would fulfill the methodological expectations of mixed-methods research in relation to the 279 respondents who completed the online survey. However, the results and conclusions derived from this study should not be extrapolated beyond those students who participated in this research.

**Research Design**

The goal of this research is to gain insights and examine how college students engage with and perceive their experience with online learning in the course of their studies. In the early stages of the research design, the researcher initially decided to conduct descriptive research using a quantitative study, in the form of a web-based, Likert based survey, on the student perspective of online learning at one Ontario college. Upon further reflection, the researcher concluded that a purely quantitative study would neither adequately address nor meaningfully answer the purpose statement and research questions. In keeping with this thought process, Krathwohl (1998, p. 319) writes:

> Research, however, is a creative act; don’t confine your thinking about it to specific approaches. Researchers creatively combine the elements of methods in any way that makes sense for the study they want to do. Their only limits are their own imagination and the necessity of presenting their findings convincingly. The research question to be answered really determines the method.

As such, in order to answer the research questions of this study effectively, the researcher decided to conduct mixed-methods research.

**Mixed-Methods Research**

Over the last 30 years, a passionate debate concerning the superiority of qualitative and quantitative research paradigms in the social sciences has been waged (Onwuegbuzie, 2002; Tashakkori & Teddlie, 1998). A by-product of this debate is the emergence of a “third wave” or “third research movement” or paradigm defined as mixed-methods research (Johnson & Onwuegbuzie, 2004).
Creswell and Plano-Clark (2007, p. 5) define mixed-methods research as a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases of the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone.

Morgan (1998, p. 366) describes the mixed-method design as follows:

The core of this approach is an effort to integrate the complementary strengths of different methods through a division of labour. This amounts to using a qualitative and a quantitative method for different but well coordinated purposes within the same overall research project.

Gay and Airasian (2003, p. 20) also believe in the merits of a mixed-methods design: “Quantitative and qualitative approaches should be thought of as complementary methods that, when taken together, provide broader options for investigating a range of educational topics”.

As discussed by Greene, Caracelli, and Graham (1989), Morgan (1998), Onwuegbuzie (2002), Gay and Airasian (2003), Onwuegbuzie and Teddlie (2003), Creswell and Plano-Clark (2007) and Teddlie and Tashakkori (2003) the advantage of a mixed-methods research design is that it combines the strengths of both the quantitative and qualitative research paradigms in one research study. Teddlie and Tashakkori (2003) conclude:

Mixed-methods designs incorporate techniques from both the quantitative qualitative research traditions yet combine them in unique ways to answer research questions that could not be answered in any other way (p. x).

Similarly, Denzin (1989, p. 244) also supports the advantages of the integrating the quantitative and qualitative research philosophies in a mixed-method research design. He writes:

The rationale for this strategy is that the flaw of one method are often the strengths of another; and by combining methods, observers can achieve the
best of each while overcoming their unique deficiencies. Between method triangulation can take many forms, but its basic feature will be the combination of two or more different research strategies in the study of the same empirical units.

Greene et al. (1989, p. 258) posit that in a mixed-methods study, with a complementarity intent, “qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon”. Greene et al. (1989, p. 259) also conclude that complementarity within a mixed-methods design “seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method”. In this study, the researcher used the semi-structured interviews to enhance and elaborate on the themes that emerged from the literature review and the web-based questionnaire.

**Purpose of Mixed-Methods Research**

Greene et al. (1989) highlight five research purposes of mixed-methods research as indicated in Figure 8. All mixed-method studies exhibit one or more of the below mentioned purposes.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Triangulation</strong></td>
<td><em>seeks convergence, corroboration, correspondence of results from the different methods.</em> To increase the validity of constructs and inquiry results by counteracting or maximizing the heterogeneity of irrelevant sources of variance attributable especially to inherent method bias but also to inquirer bias, bias of substantive theory, biases of inquiry context.</td>
</tr>
<tr>
<td><strong>Complementarity</strong></td>
<td><em>seeks elaboration, enhancement, illustration, clarification of results from one method with the results from the other method.</em> To increase the interpretability, meaningfulness, and validity of constructs and inquiry results by capitalizing on inherent method strengths and counteracting inherent biases in methods and other sources.</td>
</tr>
</tbody>
</table>
Table 1: Purposes for Mixed-Methods Evaluation Designs

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>To increase validity of constructs and inquiry results by capitalizing on inherent method strengths.</td>
</tr>
<tr>
<td>Initiation</td>
<td>To increase the breadth and depth of inquiry results and interpretations by analyzing them from the different perspectives of different methods and paradigms.</td>
</tr>
<tr>
<td>Expansion</td>
<td>To increase the scope of inquiry by selecting the methods most appropriate for multiple inquiry components.</td>
</tr>
</tbody>
</table>

*Figure 8. Purposes for mixed-methods evaluation designs (Source: Greene et al., 1989, p. 259).*

Tashakkori and Teddlie (1998) discuss approximately 40 mixed-methods designs found in the literature. Of these 40 mixed-method designs, Creswell and Plano-Clark (2007), Morgan (1989) and Gay and Airasian (2003) describe the four most often used mix-method designs in social science research. The four most commonly used mixed-methods designs are described in Figure 9.
1. Qualitative Preliminary
   qual QUANT

   **Purposes:** Smaller qualitative study helps guide the data collection in a principally quantitative study.
   - Can generate hypotheses, develop content for questionnaires and interventions, etc.

2. Quantitative Preliminary
   Quant QUAL

   **Purposes:** Smaller quantitative study helps guide the data collection in a principally qualitative study.
   - Can guide purposive sampling, establish preliminary results to pursue in depth, etc.

3. Qualitative Follow-up
   QUANT qual

   **Purposes:** Smaller qualitative study helps evaluate and interpret results from principally quantitative study.
   - Can provide interpretations for poorly understood results, helps explain outliers, etc.

4. Quantitative Follow-up
   QUAL quant

   **Purposes:** Smaller quantitative study helps evaluate and interpret results from a principally qualitative study.
   - Can generalize results to different samples, test elements of emergent theories, etc.

*Figure 9. Complementary combinations of qualitative and quantitative research*  

**Choosing a Mixed-Methods Design**

This section will explain the decision making process the researcher followed in choosing a mixed-methods design. As earlier discussed, the researcher initially contemplated answering the research questions using a web-based quantitative survey. Upon further reflection, the researcher concluded that a purely quantitative survey would neither fully nor completely answer the research questions. As such, the researcher decided that a mixed-methods design would be a more suitable match in answering the research questions (Creswell & Plano-Clark, 2007).

As in all mixed-methods designs, the researcher had to consider the issues of priority, implementation and integration of the quantitative and qualitative approaches in developing a mixed-methods research design (Ivankova et al., 2006). The researcher relied on the

*The priority or weighting decision:* The first design decision concerns the “extent to which either the quantitative or the qualitative method will be the principal tool..” in gathering data (Morgan, 1998, p. 366). Priority or weighting refers to the decision on which approach, either quantitative or qualitative is given priority throughout the data collection. Morgan (1998, p. 366) suggests that the “first step in the research design process is to select a principal data collection method that has the strengths that are most important to the project’s goals”. Creswell and Plano-Clark (2007, p. 81) describe the relative weighting of the qualitative and quantitative in the research as follows: “Weighting refers to the relative importance or priority of the quantitative and qualitative methods to answering the study’s questions”. Since the goal of this research is to examine broadly the college student perceptions concerning their online learning experiences, the researcher selected quantitative analysis, in the form of a web-based survey, to be the dominant data collection method. As such, the aim of the qualitative research phase of this study is to offer “a contrasting complementary method that provides a set of strengths that can add to the research design’s overall ability to meet the project’s goals” (Morgan, 1998, p. 366).

*The sequence or implementation decision:* The second design decision concerns the order in which the quantitative and qualitative data are used (Morgan, 1998). Morgan (p 367) believes concurrent gathering of quantitative and qualitative data is impractical and recommends that “a more practical strategy is to use the two methods in sequence so that what is learned from one adds to what is learned from the other”. He adds that the principal method of data collection should come first, followed by the complementary method which expands and improves upon the main data collection strategy. For the purposes of this study, the researcher selected a mixed-methods sequential design, in which the quantitative research method is the principal method of data collection that occurs first, followed by a complementary, qualitative research method, consisting of semi-structured interviews.
The integration or mixing decision: The third decision in selecting a mixed-method study is choosing on how the quantitative and qualitative data will be mixed. Since this study is a mixed-method sequential design, the data was connected at two points. The first point, or intermediate stage, when the results of the data analysis of the quantitative web-based survey in the first phase of data collection, inform or guide the second phase of data collection, the drafting of questions in support of the semi-structured interviews. The second point of connection or integration of the quantitative and qualitative approaches occurs at the interpretation stage of the study when both data sets are merged for comparison purposes.

After following the mixed-methods design framework and making decisions concerning the priority, sequencing and mixing of quantitative and qualitative methods, the researcher emerged with a qualitative follow-up model as depicted in item three of figure 9. This model is commonly referred to as mixed-methods sequential explanatory design.

Sequential Explanatory Design

The mixed-methods explanatory design consists of two distinct data collection phases: a larger and comprehensive quantitative phase, followed by a smaller, complementary, qualitative phase. Creswell and Plano-Clark (2007, p. 87) succinctly define the nature of the mixed-methods sequential explanatory design:

In this design, a researcher first collects and analyzes the quantitative (numeric) data. The qualitative (text) data are collected and analyzed second in the sequence and help explain, or elaborate on, the quantitative results obtained in the first phase. The second, qualitative phase builds on the first, quantitative, phase, and the two phases are connected in the intermediate stage of the study. The rationale for this approach is that the quantitative data and their subsequent analysis provide a general understanding of the research problem. The qualitative data and their analysis refine and explain those statistical results by exploring the participant’s views in more depth.

Figure 10 is a visual model of the mixed-method sequential explanatory design that was used in this study:
Phase

Quantitative Data Collection

Quantitative Data Analysis

Connecting Quantitative and Qualitative Phases

QUALITATIVE Data Collection

QUALITATIVE Data Analysis

Integration of the Quantitative and Qualitative Results

Procedure

- Web-based quantitative survey
- Inferential and descriptive statistics analysis
- Review list of participants from quantitative survey;
- Develop additional semi-structured interview questions / probing themes based on results of web-based quantitative survey
- Conduct 16 individual in-depth semi-structured interviews
- coding and thematic analysis;
- cross thematic analysis
- Findings from the qualitative phase further clarify and explain results from the first quantitative phase.

Figure 10. Visual model for mixed-methods sequential explanatory design procedures (Adapted from Ivankova et al., 2006, p. 16).
Research Procedures

In developing this section, the author followed the research procedures and relied on the sources outlined in Chen (2005) and Lopes (2008), who both conducted mixed-methods research studies. The research procedures followed in this dissertation include

1. a pilot study;
2. two focus groups;
3. the distribution of the quantitative survey (web-based);
4. development of qualitative questionnaire based on the results of the quantitative questionnaire and the literature review;
5. data collection and analysis; and
6. contrasting the results of both surveys and comparing the findings discussed in the literature review.

The purpose of applying these research procedures was to gain deeper insight of the research questions and to “ensure the validity and reliability of the research” (Chen, 2005, p. 118).

Quantitative Method

Web-Based Survey Instrument Used in This Study

As outlined in Chapter Two, the web-based survey used in this study is based on a number of surveys used in previous research. In creating the web-based survey, the researcher was granted permission by Dr Arthur Bangert (2008) to use his Student Evaluation of Online Teaching Effectiveness (SEOTE) instrument around which to build the survey. Bangert’s SEOTE was developed and predicated on Chickering and Gamson’s Seven Principle for Good Practice in Undergraduate Education (Bangert, 2004, 2006, 2008). Bangert (2008) conducted two extensive validation studies on his survey instrument, which included the participation of 1307 postsecondary students enrolled in online courses. When analyzing the results of the validation studies, Bangert (2008, p. 44) concludes “[T]he items
comprising the SEOTE were written to reflect research-based teaching practices in the area of online instruction and can be usefully employed in its current form”.

The web-based survey used in this study was built upon Bangert’s SEOTE. Since the web-based survey used in this research was a modified and expanded version of Bangert’s original SEOTE survey, the researcher concluded that it was necessary to administer validity and reliability testing of the survey instrument used in this study.

**Validity and Reliability**

Gay and Airasian (2003, p. 135) define validity as “the appropriateness of the interpretations made from test scores”. The validity of the web-based questionnaire will be verified using (a) face validity and (b) content validity (Litwin, 1995). Face validity was obtained by having an elearning research specialist review and comment on the survey, and content validity was obtained by organizing a pilot study and focus group.

Gay and Airasian (2003, p. 141) define reliability as “the degree to which a test consistently measures whatever it is measuring”. Reliability of the survey will be attained using “test-retest reliability” as outlined in Creswell (2003).

**Validity**

As discussed, the validity of the questionnaire was verified using face and content validity:

**Face Validity**

An e-learning researcher / specialist at an Ontario college was contacted and asked to review the questionnaire. Based on the recommendations from the e-learning researcher / specialist, the questionnaire was revised.

**Pilot Study**

According to Fraenkel and Wallen (2006, p. 606), pilot testing a questionnaire is necessary “to detect any problems so that they can be remedied before the study proper is carried out”. Berends (2006) states two advantages of pilot testing: (a) pilot testing provides information on how long the questionnaire takes to complete; and (b)
participants in the pilot study can highlight unclear and ambiguous questions / statements. The questionnaire, which was developed and based on previous research surveys, was pilot tested in October 2008 (Chen, 2005). Litwin (1995), Berends (2006) and Krathwohl (1998) recommend reviewers in a pilot study be purposively selected and possess knowledge and/or background on the subject matter under review. Similarly, Glesne (1999, p. 38) writes: “Pilot your observations and interviews in situations and with people as close to the realities of your actual study as possible”. As such, a purposeful sample of nine students from the Canadian Forces Military Police Academy (CFMPA) was used to review the questionnaire. All CFMPA students on the Basic Patrol Officer’s Course have recently graduated with a 3-year diploma in police foundations from a recognized Canadian college. On average, participants of the pilot study completed the online questionnaire in approximately 12 minutes. When questioned on the time to complete the questionnaire, the participants related that to encourage a maximum completion rate, student questionnaires should take no longer than 15 minutes to complete. The participants also noted a discrepancy in one of the questions and the researcher amended the questionnaire as suggested.

Focus Group
The researcher convened two focus groups to test the reliability and validity of the survey instrument. The aim of a focus group “…is to examine, in detail, how the group members think and feel about a topic” (Johnson & Christensen, 2004, p. 185). Specifically to this research, the purpose of the focus group was to elicit comments and perceptions from the participants concerning the layout, question structure and length of the questionnaire. A secondary, yet equally important task of the focus group, was to extract their experiences and perceptions of online learning during the course of their postsecondary education. The nine focus group participants were volunteers from the Basic Patrol Person’s Course at the CFMPA, all of whom recently completed a 3-year Law and Security Program at a recognized Canadian college. The participants reviewed the online questionnaire which provided a basis for discussion on their online learning experiences. The discussion focused on the following four areas: the reasons behind enrolling in an online course; what factors
contributed to or discouraged online course interaction; does online learning offer a challenging academic experience when compared to traditional instruction; and, what student characteristics are important in successfully completing an online course. Feedback from the participants recommended a change in question sequence which would make the questionnaire easier to follow. Moreover, two participants suggested that three questions seemed redundant and recommended that this set of questions be consolidated into one question. In conclusion, the questionnaire was revised numerous times based on the feedback from an elearning specialist at an Ontario College, the pilot study, and the focus group. After this process, the survey was forwarded to the thesis committee for review. Based on the recommendation from the thesis committee, the survey was revised and finalized.

Reliability

The reliability of the survey was checked using the test-retest reliability process which “examines the extent to which scores from one sample are stable over time from one test administration to another. To determine this form of reliability, the researcher administers the test at two different times to the same participants at a sufficient time interval” (Creswell, 2005, p. 162). The researcher used nine volunteers from the Canadian Forces Military Police Academy, who conducted the “test-retest”, using a 2-week interval. A review of the tests revealed stable scores between tests.

Quantitative Survey Instrument

The primary survey instrument in this study was a web-based questionnaire. Although the questionnaire in this study was largely based on the Bangert’s (2008) online survey, the researcher modified the questionnaire combining the common themes and questions of the Braun (2008), Kirtley (2002), Wyatt (2005), Caruso and Kvavik (2005), Salaway and Borreson-Caruso (2006), Salaway and Borreson-Caruso (2007), Lopes (2008), Mior (2003), and Young (2005) surveys, coupled with those questions inspired by the literature review.

Relying on the above surveys as the theoretical foundation of this study, the researcher’s survey questionnaire is divided into the following sections:
1. the students’ level and use of educational technologies;

2. the students’ perception of their online learning experience within college programs based on Chickering and Gamson’s Seven Principles of Good Practices;

3. the factors of online learning that enhanced and/or interfered with the learning experience as perceived by the students;

4. the student experience between traditional face-to-face courses compared to their online learning experiences;

5. the student characteristics deemed critical in ensuring student success with online courses; and

6. student demographic information and academic background.

Use of Likert Scale

This purpose of this study was to research the college students’ experience of online learning during the course of their studies. More specifically, this study analyzed the perceptions and attitudes of these students. Attitude scales, such as the Likert Scale, determine what respondents think, believe and how they feel about an issue (Gay & Airasian, 2003; Fraenkel & Wallen 1990). Smith and Glass explain (1987, p. 249): “Scales are composite measures of attitudes, meaning that they are the result of combining responses to several items that measure the same dimension or variable”.

As the aim of this study was to measure and analyze the college students’ perceptions of their online learning experience, following consultation with a statistical expert, the researcher decided to use a five point Likert Scale format for the majority of the questions. Some scholars prefer an even numbered scale, which forces the respondent to make a decision one way or another. For this particular study, however, it was felt that a respondents might legitimately hold a neutral view, hence a five point scale was adopted.

Administration of the Questionnaire

Originally, the college administration agreed to email the web-based questionnaire to a selected population consisting of approximately 3,000 2nd- and 3rd-year full-time students.
Subsequently, the college administration decided to place a link to the web-based questionnaire on Blackboard, the institute’s course management system, giving all college students the opportunity to complete the survey. The college administration decided against sending the online survey via email citing that the college prefers to send mass emails to students only during emergency situations. As such, the researcher was unable to calculate a response rate since it was impossible to determine how many college students positively observed the questionnaire link. The link to the web-based questionnaire was posted on Blackboard from 19 March until 30 April 2009. A total of 279 students completed the web-based questionnaire. To encourage participation in completing the web-based questionnaire, respondents were eligible to win one of two IPODs.

**Population Size**

The college population utilized in this research were 1st-, 2nd-, 3rd-, and 4th-year students for academic year 2008-2009, who have taken either an online or hybrid course. For academic year 2008 – 2009, this college enrolled 11,973 full time students.

**Data Analysis: Quantitative Research**

The data generated from the web-based survey was analyzed using the Statistical Package for Social Sciences Version 15 (SPSS). The researcher used both descriptive and inferential statistics. More specifically, the following statistical tests were calculated to answer the five research questions:

1. **descriptive analysis** – mean, mode, median and standard deviation, and;
2. **inferential analysis** – *t* test for the independent groups of male and female and, ANOVA for the three age groupings.

In analyzing descriptive statistics, “[T]he researcher attempts to convey the essential characteristics of the data by arranging the data into a more interpretable form…and by calculating numerical indexes such as averages, percentile ranks, and measures of spread” (Johnson & Christensen, 2004, p. 434). In this study, the researcher calculated averages and percentages to gain an overview on background and demographic data.
The *t*-test was used “to compare the average means of two groups to determine that probability that any difference between them are real and not due to chance (Fink, 2006). The *t*-test for independent samples also determines “whether two means are significantly different at a selected probability level” (Gay & Airsian, 2003). The significance level, or alpha level, will be set at 0.05. The 0.05 level is commonly used in research as it is deemed as an acceptable risk (Creswell, 2003; Gay & Airsian, 2003; Johnson & Christensen, 2004; Lopes, 2008; Mior, 2003).

Analysis of variance (ANOVA) was used to determine if there is a significant difference between the means of three or more groups at a selected probability level (Fink, 2006; Gay & Airsian, 2003).

The two independent variables selected for this study are

1. gender; and
2. years of age categorized into three groups (16 – 19), (20 – 35), and 36 and over.

**Qualitative Method**

*Semi-Structured Interviews*

In this mixed-methods study, the purpose of the semi-structured interviews was to clarify and enhance the data analyzed from the quantitative survey and address the themes generated from the literature review. A semi-structured interview has the advantage of asking interviewees the same core questions, and the opportunity to build upon responses received in the quantitative survey (Brenner, 2006). Interviews can generate in depth data that would otherwise be difficult to glean from a quantitative questionnaire (Lopes, 2008). Patton (2002, pp. 340 – 341) explains:

We interview people to find out from them those things we cannot directly observe…We cannot observe everything. We cannot observe feelings, thoughts, and intentions…We cannot observe how people have organized the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things. The purpose of interviewing, then, is to allow us to enter into the other person’s perspective. Qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit. We interview to find out what is in and on someone else’s mind, to gather their stories.
As described by Gay and Airasian (2003, p. 163), “Qualitative, interpretive research is useful for describing and answering questions about participants and contexts. The researcher studies the perspectives of research participants toward events, beliefs, or practices”.

As discussed, the researcher decided that using only a quantitative survey would not comprehensively answer the research questions. As such, the follow up semi-structured interviews were beneficial for the following reasons cited by Cameron (2003) and Chen (2005). First, these interviews provided the researcher an opportunity to clarify and build upon data obtained during the quantitative phase of the study. Second, in depth interviews assisted the researcher in understanding the student experience, perceptions and attitudes of online learning. Third, semi-structured interviews permitted the researcher to probe deeper into areas and issues that cannot be captured in the quantitative survey. Lastly, in-depth semi-structured interviews permitted students the opportunity to provide comments and recommendations on how college leadership can improve the online learning experience for future online students.

**Question Structure**

Based on the literature review, the researcher drafted several predetermined open-ended questions. These open-ended questions were reviewed and amended based on the results and analysis of the quantitative survey. When conducting qualitative research, Creswell (2005, p. 214) suggests that you ask “open-ended questions so that the participants can best voice their experiences unconstrained by any perspectives of the researcher or past research findings”. The benefits of an open-ended interview include (Patton, 2002, p. 346):

1. The exact instrument used in the evaluation is available for inspection by those who will use the findings of the study;
2. The interview is highly focused so that interviewee time is used efficiently;
3. Analysis is facilitated by making responses easy to find and compare.
The purpose of using a semi-structured interview format was to allow for all possible answers and gain further insights into the student perspective of online learning (Chen, 2005).

**The Interviews**

Upon receipt of the completed online questionnaires, 94 students expressed interest in volunteering for a semi-structured interview. In April 2009, an invitational email was sent to all 94 students resulting in one reply. Considering that the invitation was sent toward the end of the academic year, the invitation was resent in September 2009 from which 2 students responded. After consulting an elearning specialist from an Ontario college, a personalized email to each student was sent offering a $5.00 Tim Horton’s gift certificate. This mailing resulted in 21 students expressing interest in volunteering to be interviewed.

Attached to each email invitation, was a copy of the interview protocol and consent form, which explained the nature and scope of this study. A few days in advance of the scheduled interview, I sent a reminder email confirming the date, time and location of the interview. Before commencing with the formal interview process, interviewees were asked to review the interview protocol and inform the researcher of any questions or concerns. Once the researcher was confident that the interviewee understood the nature of this study, and that the interviewee understood that their participation was optional with no further obligation, the consent form was reviewed and signed. The majority of the interviews took place in the sitting area in front of an administrative department at this Ontario college. The remaining interviews occurred in the staff-dining lounge. From the initial response pool of 21 students, 12 students participated in a semi-structured interview, while 4 students requested and submitted their answers via email. Of the remaining 5 prospective interviewees, two did not show up for their scheduled interview timing, and three did not respond to the researcher’s follow up emails.

The interviews were conducted using a semi-structured interview guideline found at Appendix B. All interviews were digitally recorded with the participant’s written consent and the researcher took notes during the dialogue. The interviewees were passionate about sharing their opinions and experiences of online learning during the course of their academic
studies. Although, the interviewees often diverged from the listed questions in the interview guide, these sidebars provided relevant information which was used in the data analysis. The researcher was careful to permit a pure version statement from the interviewees and only probed and guided when appropriate. The researcher ensured that all questions had been asked before terminating the interview. In support of the qualitative phase of this study, the researcher interviewed a total 16 students.

Patton (2002, p. 244) asserts “[T]here are no rules for sample size in qualitative inquiry”. Johnson and Christensen (2004) recommend that a phenomenology study consist of between 10 –15 interviews. Creswell and Plano-Clark (2007, p. 74), in their explanation of the purpose of the mixed-methods sequential explanatory design, suggest that the qualitative phase “…can be limited to a few participants”. After the 16th interview, no new information was forthcoming from the interviewees, and based on the fact that sending out of fourth email to the students would be counter productive, the researcher ended the interview process. As recommended by Guba and Lincoln (1985), the criterion used to stop interviewing is when a level of informational redundancy has been met.

As mentioned, the researcher discussed the scope, purpose and intent of this study with Dr Creswell, who is a leading expert and author in the design and development of mixed-methods research. Based on our conversation, he concluded that interviewing 8 - 10 students would more than fulfill the academic requirements and methodological expectations of mixed-methods research in relation to this study (J. Creswell, personal communication, September 27, 2009).

**Data Collection and Data Analysis: Qualitative Phase**

With the permission of the interviewees, the interviews were audio-recorded. As suggested by Gay and Airasian (2003) and Wiersma and Jurs (2005), audiotapes provide a verbatim account of the interview and provide the researcher access to the original data. The information obtained during the interviews was documented by hand written notes, transcribed and augmented by audiotape recordings. The researcher read and re-read all transcripts and listened and re-listened to the taped interviews coding the data and looking for emergent themes and their relationships to the themes found in the literature review.
The data gleaned from the semi-structured interviews were organized, coded and analyzed using the constant comparative method. Merriam (1998, p. 159) defines the essence of the constant comparative method:

The basic strategy of the method is to do just what its name implies – constantly compare. The researcher begins with a particular incident from an interview, field notes, or document and compares it with another incident in the same set of data or in another set. These comparisons lead to tentative categories that are then compared to each other and to other instances.

Using the constant comparative method, and, as recommended by Guba and Lincoln (1981, p. 95), the researcher followed the below guidelines for developing and constructing categories for this study:

1. the frequency an item or particular issue / concern is mentioned;
2. those categories or themes deemed important or salient to the interviewees;
3. those concerns or issues that emerge due to their uniqueness should be retained; and
4. those issues and areas of concern that “have the property of opening up areas if inquiry not otherwise recognized “should be retained.

The themes and patterns that emerged from the data were grouped, categorized and compared with those themes and questions identified during the literature review. The findings relevant to each research question were accordingly grouped and reanalyzed. All information obtained from the interviewees is documented and protected in such a manner as to protect the identity of the participants. All data gleaned from the research design is secured in a locked filing cabinet.

**Reliability and Validity (Trustworthiness): Qualitative Phase**

Since qualitative research occurs in a natural setting, it is very difficult for researchers to replicate studies (Wiersma & Jurs, 2005). Therefore, and unlike quantitative studies, “the traditional concepts of reliability and validity cause some difficulties for qualitative researchers” (Wiersma & Jurs, 2005, p. 215). Based on the fact that qualitative research
occurs in a natural setting, Creswell (2003, p. 195) concludes “overall, however, reliability and generalizability play a minor role in qualitative inquiry”.

According to Creswell (2003, p. 195) “validity, is seen as a strength of qualitative research, but it is used to suggest whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account”. To enhance internal reliability and validity in qualitative research, Creswell recommends that at least one of eight verification procedures be implemented to check the accuracy and credibility of research findings. For the purposes of this study, the researcher utilized a modified “triangulation”, as defined by Creswell (2003) and Merriam (1998) to increase internal validity. Normally triangulation involves three fully distinct sources of information. Triangulation was accomplished in this study by comparing the responses from the quantitative questionnaire to the responses provided during the semi-structured interviews, however, since the interviewees had also responded to the quantitative questionnaire, this would not meet the strict interpretation of independence. The findings of this study were also reviewed by an independent expert. The researcher had originally planned to review internal college documents pertaining to student online learning as a third source of fully independent data, however the College denied access to these documents.

**Construct Validity**

Although this research is not a case study, the researcher employed the three measures recommended by Yin (1989) to mitigate researcher bias and to increase construct validity in case study research. Yin (p. 42) recommends that case study researchers use the following three measures to mitigate researcher bias and to increase construct validity:

1. use multiple sources of evidence;
2. establish a chain of evidence which allows an “external observer to follow the derivation of any evidence from initial research questions to ultimate case study conclusions” (p. 102); and
3. having the draft case study reviewed by key informants.
Based on Yin’s (1989) research, this study employed these measures to increase construct validity in the following manner:

*Multiple sources of evidence:* since this is a mixed-methods study, both quantitative and qualitative research methods were used to gather data for subsequent analysis. Data obtained from one source was used to enhance, complement, elaborate or refute data obtained from other sources.

*Establish a Chain of Evidence:* the chain of evidence followed in this study is outlined in figure 10. Based on the purpose statement and research questions, the researcher concluded that mixed-methods research, using the sequential exploratory design, was the most suitable research design in answering the research questions in support of this study; and

*Review by a key informant:* this study was reviewed by an Ontario college e-learning researcher / specialist, who is an expert in the field of course management systems, and its impact on student learning within Ontario’s colleges. This person is a professor and the Academic eLearning Liaison Officer at an Ontario College and a Visiting Researcher at the Higher Education Quality Council of Ontario. This individual is also a peer reviewer for the International Journal for Education and Development using Information and Communication Technology. This elearning specialist concurred with the research design, analysis of the quantitative and qualitative findings, and the conclusions derived from this study. Based on the informant’s recommendations, a few amendments were made to this study.

**Study Limitations**

It is important to note that this study is a snapshot of this sampling of college students’ perceptions, experiences and attitudes of online learning. The findings of this study are tied and linked to the moment in time during which the data sets were collected (Cameron, 2003). The students, who participated in this study, will likely develop new perceptions and attitudes of their online learning experiences as they mature both as students and human beings. As such, since learning is a complex and highly personal journey, largely
influenced by the context in which it takes place, the findings in this study should not be 
extrapolated or generalized beyond those students who participated (Lopes, 2008).

The insights and new understanding that emerged from the participating college 
students’ online learning experience provides college leaders and faculty with a baseline of 
data from which to develop or assess the quality and student perceptions of online learning at 
their respective institutions.

**Ethical Issues and Consideration**

The researcher followed all ethical review guidelines and policies associated with the 
OISE / University of Toronto and those of the selected Ontario college. Every measure to 
protect the identity of the participants, and the confidentiality of their responses, was strictly 
followed. The identities of the participants and identification of the participating Ontario 
college is not revealed in documents intended for the public domain. The interviewees were 
informed that no names would be revealed in this study and that their data would be 
represented either by a pseudonym or a coded number in any written / verbal reports.

Respondents to both the online questionnaire and semi-structured interviews 
volunteered to participate in this research. The answers to the questions on both surveys are 
opinion based, and did not ask for personal information that could cause or pose any health 
or psychological risks to the respondents or interviewees. Respondents and interviewees were 
advised in the preamble of both surveys that they may terminate their participation in this 
research at anytime, and that there would be no adverse consequences, academic or 
otherwise, if they chose to withdraw from the study. The preamble also stated that no one 
from the participating college, including administrators or faculty, would have access to their 
identity.

An ethical review process was submitted and approved by the OISE / University of 
Toronto (Protocol Reference 23766) and the participating Ontario college (Research Ethics 
Board – 27 January 2009). The OISE / University of Toronto letter of approval is attached as 
Appendix F.
Relationship Between the Research Questions and the Survey Instruments

The research questions are linked to the web-based questionnaire and semi-structured interviews as depicted in Table 1.

Table 1
The Relationship Between the Research Questions and the Questions of the Survey Instruments

<table>
<thead>
<tr>
<th>Research question</th>
<th>Quantitative questionnaire</th>
<th>Qualitative questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How do students perceive their online learning experience within a college program?</td>
<td>Section B, questions 1 through 7</td>
<td>Question 5, Question 8</td>
</tr>
<tr>
<td>2. What factors / characteristics of online learning enhance the learning experience as perceived by these students?</td>
<td>Section C, question 1</td>
<td>Question 2</td>
</tr>
<tr>
<td>3. What factors / characteristics of online learning discourage interfere with the learning experience as perceived by these students?</td>
<td>Section C, question 2</td>
<td>Question 3, Question 9</td>
</tr>
<tr>
<td>4. What student qualities are important in successfully completing an online course?</td>
<td>Section C, question 8</td>
<td>Question 10</td>
</tr>
<tr>
<td>5. Do students feel online learning offers a challenging academic experience when compared with traditional instruction?</td>
<td>Section C, question 3</td>
<td>Question 6</td>
</tr>
<tr>
<td></td>
<td>Section C, question 4</td>
<td>Question 7</td>
</tr>
<tr>
<td></td>
<td>Section C, question 5</td>
<td>Question 8</td>
</tr>
<tr>
<td></td>
<td>Section C, question 6</td>
<td>Question 12</td>
</tr>
<tr>
<td></td>
<td>Section C, question 7</td>
<td>Question 13</td>
</tr>
</tbody>
</table>
Section Summary

The selection of a research design is driven and influenced by the nature of the purpose statement and research questions. With this principle in mind, the researcher concluded that a mixed-method study design would be the best method by which to address comprehensively the purpose statement and the research questions.

As described in figure 8, Purposes for Mixed-Methods Evaluation Designs, the researcher concluded that the combined purposes of “complementarity” and “triangulation” would be critical factors in addressing the purpose statement and answering the research questions. Greene et al. (1989, pp. 258 – 260) define “complementarity” and “triangulation” as follows:

Complementarity – where qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon;

Triangulation – seeks convergence, corroboration, correspondence of results from the different methods.

After following the decision-making framework to select a specific type of mixed-methods model, the researcher utilized the mixed-methods sequential explanatory design in this study.

The quantitative and qualitative methods were mixed at two points. The first point, or intermediate stage, when the results of the data analysis of the quantitative web-based survey in the first phase of data collection, informed and guided the second phase of data collection, the drafting of questions in support of the semi-structured interviews. The second point of connection or integration of the quantitative and qualitative approaches occurred at the interpretation stage of the study when both data sets were merged and analyzed.

The research procedure commenced with the development of a quantitative survey based on the emerging themes extracted from the eight questionnaires / studies found in the literature review, which formed the theoretical framework upon which this study is based. The validity and reliability of the quantitative questionnaire was verified with a pilot study, focus group and a test retest.

Based on the emerging questions from the literature review and the results of the quantitative questionnaire, the researcher developed a semi-structured interview protocol to
clarify and enhance the issues and themes that emerged from the data analysis of the quantitative questionnaire.

As such, the principal means of data collection was a quantitative web-based questionnaire. The researcher utilized descriptive and inferential statistics to analyze the results from the questionnaire. The web-based questionnaire was complemented by 16 semi-structured interviews from which the researcher analyzed student responses using the constant comparative method. In summary, and based on the combination of research steps outlined in Lopes (2008, pp. 67 – 68) and Glatthorn and Joyner (2005), the researcher implemented the following research steps:

1. A review of the literature;
2. Develop and shape the research questions which emerged from the literature review and recent studies on the postsecondary student experience, perception, and attitude of online learning;
3. Research and explain the theoretical framework upon which the study is based;
4. Select a research design which best addresses and answers the research questions;
5. Choose the population;
6. Select a mixed-methods design by determining the sequence of the quantitative and qualitative surveys;
7. Distribute survey and analyze results using descriptive and inferential statistics;
8. Use the results from the quantitative analysis (online survey) to guide the semi-structured interviews;
9. Analyze qualitative data using the constant comparative method;
10. Present the findings;
11. Relate the findings to the research questions and compare with the emerging themes and questions from the literature review; and
12. Provide conclusions, state implication on practice, and make recommendations for further research.
Chapter Four:
Presentation of Findings

Introduction

The purpose and design of this mixed-methods study was to examine and analyze the student experience, perceptions and attitudes of online learning at one Ontario college. The principal means of data collection in this study was a quantitative web-based questionnaire, complemented by 16 semi-structured interviews with volunteer students. The data are presented using tables, word descriptions and graphs to present and understand the student experience, perceptions and attitudes of online learning at one Ontario college. The aim of this chapter is to present the research findings from the web-based questionnaire and from the semi-structured interviews. The research questions are addressed and discussed in Chapter Five.

This chapter is divided into two parts. Part one provides a quantitative analysis of the data obtained from the web-based survey, while part two provides a qualitative analysis of the information gleaned from the semi-structured interviews. Chapter Five analyzes the results of this study in relation to the research questions and discusses the conclusions and implications generated by the findings.

Part One:
Quantitative Findings From the Web-Based Questionnaire

The data generated from the web-based survey were analyzed using the Statistical Package for Social Sciences (SPSS Version 15.0). As discussed in Chapter Three, the researcher used both descriptive and inferential statistics. The mean, mode and standard deviations were computed for all questions and no noteworthy standard deviations were uncovered during the statistical analysis.

The t-test was computed to determine if statistically significant differences between the means of the independent groups of male and female were observed / present, while an ANOVA was used to determine statistically significant differences between the means of the three age groups. The ages of the respondents are grouped as follows:
1. 16 – 19 years of age;
2. 20 – 35 years of age; and
3. 36 and over.

Where statistically significant, the results of the \( t \) test and ANOVA are included in Appendix H.

A statistical expert was hired to collate and import the data from the web-based questionnaire into SPSS version 15. The complete SPSS analysis generated a large number of printed pages, and as such, was impractical to include as an appendix to this study. All SPSS related data is saved in both digital and paper format for reference and future use.

**Demographic Profile**

At the conclusion of the web-based questionnaire, respondents were asked to provide their demographic information. Respondents ranged in age from 16 to over 36, 23.5% (n=51) were between 16 and 19; 65.4% (n=142) were between 20 and 35; while 11.1% were 36 and over (Figure 11).

![Figure 11. Aggregated age distribution of survey respondents (n=217).](image)
Of the 217 respondents who answered the questions about gender, 42% were male and 58% were female (see Figure 12).

![Sex distribution of respondents](image)

**Figure 12.** Sex distribution of respondents (n=217).

Respondents were asked to indicate which school / department they are affiliated. These affiliations correspond to the academic groupings typically utilized at this Ontario college as described on the college’s web site (see Table 2).

**Table 2**

<table>
<thead>
<tr>
<th>School / Department affiliation</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Technology</td>
<td>18.10</td>
</tr>
<tr>
<td>Business</td>
<td>27.00</td>
</tr>
<tr>
<td>Career and Academic Access Centre</td>
<td>0.05</td>
</tr>
<tr>
<td>Health and Community Services</td>
<td>15.30</td>
</tr>
<tr>
<td>Hospitality and Tourism</td>
<td>7.90</td>
</tr>
<tr>
<td>Languages</td>
<td>1.90</td>
</tr>
</tbody>
</table>
Respondents were asked to indicate how many online / hybrid courses they completed. Over half of the respondents (53.9%) completed at least three online / hybrid courses as a college student. The results of this question are found in Figure 13.

<table>
<thead>
<tr>
<th>School / Department affiliation</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media and Design</td>
<td>11.20</td>
</tr>
<tr>
<td>Part-time Studies / Continuing Education</td>
<td>1.40</td>
</tr>
<tr>
<td>Police and Public Safety</td>
<td>5.10</td>
</tr>
<tr>
<td>Transportation and Building Trades</td>
<td>2.30</td>
</tr>
<tr>
<td>Campus One</td>
<td>2.80</td>
</tr>
<tr>
<td>Institute</td>
<td>2.30</td>
</tr>
<tr>
<td>Other</td>
<td>4.20</td>
</tr>
</tbody>
</table>

Figure 13. Number of online / hybrid courses completed by respondents (n=215).
Characteristics of Respondents’ Internet and Educational Technology Use

Part A of the online questionnaire consists of 20 questions focusing on the respondent’s access to a computer, frequency of computer use, access to a high speed Internet connection, their confidence level in using the Internet for learning, how they rated their computer skill level in the use of educational technologies and how the Internet contributes to their learning experience. As noted previously, the decision was made to use a five point Likert scale and it will be noted in the presentation of the data if the mid point or Neutral category was used extensively.

The majority of respondents (98.9%) indicated that they had regular access to a computer while 93.1% reported that they have access to a high speed Internet connection at home / dorm room (see Table 3).

Table 3
Respondent Access to a Computer and a High Speed Internet Connection at Home / Dorm
(n= 277)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes %</th>
<th>No %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have regular access to a computer?</td>
<td>98.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Do you have access to a high speed Internet connection at home / dorm?</td>
<td>93.1</td>
<td>6.9</td>
</tr>
</tbody>
</table>

The vast majority of the respondents use the Internet on a daily basis. When asked “How often do you use the Internet?” 87% of the respondents used a computer several times a day (see Table 4).
Table 4
Student Use of Computers (n=276)

<table>
<thead>
<tr>
<th>Question</th>
<th>Several times a day</th>
<th>Every day or two</th>
<th>Once a week</th>
<th>A few times a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you use a computer?</td>
<td>87</td>
<td>9.4</td>
<td>0</td>
<td>3.6</td>
</tr>
</tbody>
</table>

When asked to indicate their level of agreement to the following statement “I am confident of my ability to use the Internet to help me learn”, 95.1% of respondents agreed or strongly agreed with this statement (see Table 5).

Table 5
Student Learning and the Internet (n=275)

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident of my ability to use the Internet to help me learn?</td>
<td>65.5</td>
<td>29.6</td>
<td>3.6</td>
<td>2.2</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Respondents were asked five questions to assess their skill level in using the Internet and Internet based educational technologies in the course of their studies. In relation to using the college’s library website, 29% of the respondents were not very skilled or not at all skilled. When asked to assess their skills in navigating the Internet to search effectively and efficiently for information, 20% of the respondents reported possessing very little skill or fairly skilled. When asked about their evaluation skills in assessing the credibility of online sources of information, 10% of the respondents reported being not at all skilled or not very skilled (see Table 6).
Table 6

Respondent Skill Level in Using Educational Technologies in Support of Learning

<table>
<thead>
<tr>
<th>Application</th>
<th>n</th>
<th>Not at all skilled %</th>
<th>Not very skilled %</th>
<th>Fairly skilled %</th>
<th>Very skilled %</th>
<th>Expert %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the college’s library website</td>
<td>275</td>
<td>12.4</td>
<td>17.1</td>
<td>40</td>
<td>21.8</td>
<td>8.7</td>
</tr>
<tr>
<td>Spreadsheets</td>
<td>272</td>
<td>7.7</td>
<td>16.2</td>
<td>41.2</td>
<td>25.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Presentation software</td>
<td>272</td>
<td>2.9</td>
<td>6.6</td>
<td>25.7</td>
<td>47.8</td>
<td>16.9</td>
</tr>
<tr>
<td>Graphics software</td>
<td>273</td>
<td>12.1</td>
<td>28.6</td>
<td>35.2</td>
<td>17.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Computer maintenance</td>
<td>274</td>
<td>8.8</td>
<td>18.6</td>
<td>33.6</td>
<td>25.5</td>
<td>13.5</td>
</tr>
<tr>
<td>Using the Internet to search for information</td>
<td>273</td>
<td>0</td>
<td>1.1</td>
<td>19</td>
<td>46.2</td>
<td>33.7</td>
</tr>
<tr>
<td>Evaluating credibility of online sources</td>
<td>273</td>
<td>2.2</td>
<td>8.1</td>
<td>3.3</td>
<td>39.2</td>
<td>17.2</td>
</tr>
</tbody>
</table>

The respondents were asked nine questions on how educational technologies impacted their learning experience. The majority of the respondents, 62.2%, strongly agreed or agreed with the statement “I get more involved in courses that use information technology (i.e. Blackboard, websites, email, PowerPoint), while 13.8% of the respondents strongly disagreed or disagreed. Almost a quarter of the respondents, 24% remained neutral. When asked if the use of educational technologies improved learning, an overwhelming majority of the respondents, 70%, strongly agreed or agreed; 84% of the respondents strongly agreed or
agreed that the Internet makes completing course activities more convenient, and 86% strongly agreed or agreed that computers make learning and research much easier. Almost all the respondents, 96.7%, strongly agreed or agreed that using the Internet to find resources is necessary to do well in a course. When asked if students would not be able to learn if they did not have access to the Internet, 41.4% strongly agreed or agreed. Conversely, 31% of the respondents strongly disagreed or disagreed, while 27.7% were neutral.

Regarding the statement “I prefer to communicate with my teachers using email rather than speaking with them before or after class” 30.6% strongly agreed or agreed while 28.2% strongly disagreed or disagreed. Complementing the previous questions, the respondents were provided the following statement “I would prefer to participate in an online discussion rather that a discussion in the classroom”. Almost a quarter of the respondents, 23.6%, strongly agreed or agreed, while 49.8% strongly disagreed or disagreed. In relation to participating in group work, 32.7% of the respondents would rather work in an online group setting, while 42.3% strongly disagreed or disagreed. A quarter of the respondents remained neutral (see Table 7).
Table 7

Use of Educational Technology and Learning / Levels of Agreement With Statements About Computers and Learning \( (n=272) \)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I get more involved in courses that use information technology</td>
<td>26.9</td>
<td>35.3</td>
<td>24</td>
<td>8</td>
<td>5.8</td>
</tr>
<tr>
<td>The use of educational technologies in my courses improved my learning</td>
<td>26</td>
<td>43.6</td>
<td>20.5</td>
<td>4.4</td>
<td>5.5</td>
</tr>
<tr>
<td>The Internet makes completing my course more convenient</td>
<td>37.5</td>
<td>45.6</td>
<td>11.4</td>
<td>2.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Computers make my job a lot easier</td>
<td>54</td>
<td>31.6</td>
<td>9.9</td>
<td>2.6</td>
<td>1.1</td>
</tr>
<tr>
<td>I would not be able to learn if I did not have access to the Internet</td>
<td>18.5</td>
<td>22.9</td>
<td>27.7</td>
<td>21.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Using the Internet to find resources is necessary for me to do well in a course</td>
<td>30.8</td>
<td>35.2</td>
<td>22.3</td>
<td>8.4</td>
<td>3.3</td>
</tr>
<tr>
<td>I prefer to communicate with my teachers using e-mail rather than speaking with them face-to-face</td>
<td>19</td>
<td>21.6</td>
<td>31.1</td>
<td>19.4</td>
<td>8.8</td>
</tr>
</tbody>
</table>
The following seven sections of Part B of the online questionnaire, which consists of 29 questions, analyzes the students’ experience, perceptions and attitudes of online learning at one Ontario college. Each of the following seven sections corresponds to one of Chickering and Gamson’s *Seven Principles for Good Practice in Undergraduate Education*, and is based on Bangert’s (2008) Student Evaluation of online Teaching Effectiveness (SEOTE), which also corresponds to the Chickering and Gamson’s *Seven Principles for Good Practice in Education*. As discussed in Chapter Two, the seven principles are as follows:

1. encourages student-faculty contact;
2. encourages cooperation among students;
3. encourages active learning;
4. gives prompt feedback;
5. emphasizes time on task;
6. communicates high expectation; and
7. respects diverse talents and ways of learning.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree %</th>
<th>Agree %</th>
<th>Neutral %</th>
<th>Disagree %</th>
<th>Strongly disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would prefer to participate in an online discussion rather than a</td>
<td>11.4</td>
<td>12.2</td>
<td>26.6</td>
<td>30.6</td>
<td>19.2</td>
</tr>
<tr>
<td>discussion in the classroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would be more likely to participate in group work if I could communicate with my group members online and we did not have to meet face-to-face</td>
<td>12.5</td>
<td>20.2</td>
<td>25</td>
<td>25</td>
<td>17.3</td>
</tr>
</tbody>
</table>
The results of the data gathered from this section will be discussed in the following seven sections.

**Section 1: Encourages Student-Faculty Contact**

The web-based questionnaire asked seven questions relating to respondents’ perceptions of the student-faculty contact during their online courses. The majority of respondents, 68%, agreed that faculty communicated effectively during online courses, while 7.6% strongly disagreed or disagreed (see Figure 14).

![Figure 14. The faculty communicated effectively (n=224).](image)

The majority of respondents, 56.2%, were in agreement that their faculty were enthusiastic about online teaching, while 11.6% disagreed (see Figure 15).
As depicted in Figure 16, 62.8% of the respondents reported that faculty were accessible to students outside of the course. Slightly over 10% of the respondents disagreed while 26.5% remained neutral.

*Figure 16. The faculty were accessible to me outside of the course (n=223).*
As illustrated in Figure 15, 69.5% of the respondents agreed that the amount of time spent with faculty was satisfactory. Almost 12% of the respondents disagreed with the statement in Figure 17.

![Figure 17. “The amount of contact with faculty was satisfactory (email, face-to-face meeting)” (n=223).](image)

Just over three-quarters of the respondents, 79.8%, agreed that interaction between faculty and student is essential to online learning. Only 2.2% disagreed while 17.9% were neutral (see Figure 18).
Figure 18. “Interaction between faculty and student is essential to online learning” (n=223).

As illustrated in Figure 19, 62.8% of the respondents agreed that “My online course(s) are configured so that I can interact with classmates”. Slightly over 15% of the respondents disagreed with 4.9% strongly disagreeing with the statement in Figure 19.

Figure 19. “My online course(s) are configured so that I can interact with my classmates” (n=223).
Summary.

Overall, the respondents at this Ontario college are satisfied with the amount of faculty to student contact during online courses. The faculty at this Ontario college are making effective use of the communication and authoring tools associated with Blackboard.

Section 2: Encourages Cooperation Among Students

This section of the questionnaire asked the respondents five questions on the quality of online interaction between students. In relation to the statement “My online course(s) are structured so that I could discuss assignments with other students”, 57.6% of the respondents agreed, while 15.8% of the respondents disagreed (see Figure 20).

![Figure 20. “My online course(s) are structured so that I could discuss assignments with other students” (n=222).](image)

The majority of respondents, 70.3%, agreed with the statement “I felt comfortable interacting with faculty and other students. Only 1.8% of respondents strongly disagreed with this statement (see Figure 21).
Figure 21. “I felt comfortable interacting with the faculty and other students” (n=219).

As depicted in Figure 22, 68.2% of the respondents agreed that online course(s) included activities and assignments that provided students with opportunities to interact with one another. A total of 12.3% of the respondents believed that their online course(s) did not provide sufficient activities and assignments which provided students with opportunities to interact.

Figure 22. “This course included activities and assignments that provided students with opportunities to interact with one another” (n=220).
Fewer than 30% of the respondents were neutral with the statement “Interaction amongst students is essential to online learning”. The majority of respondents, 56.4%, agreed with the statement, while 14.6% disagreed (see Figure 23).

Figure 23. “Interaction amongst students is essential to online learning” (n=220).

Almost an equal number of respondents strongly agreed, 10.4%, to those who strongly disagreed 10.9% with the statement “The quality of discussions in my online course(s) is high”. A total of 34.8% of respondents had no opinion. Just over a quarter of the respondents, 26.3%, were unsatisfied with the quality of online discussions (see Figure 24).
Figure 24. “The quality of discussions in my online course(s) is high” (n=221).

Summary

In general, the respondents felt comfortable interacting online with faculty and course mates. However, over a quarter of the respondents, 26.3%, were less than satisfied with the quality of their online discussion with faculty and students.

Section 3: Encourages Active Learning

This section of the questionnaire asked four questions eliciting respondents’ perceptions of the active learning experiences encountered during online courses. As illustrated in Figure 18, 65.6% of the respondents agreed with the statement “My online courses typically include interactive assignments and links to examples from the web that directly involved me in the learning process”. Conversely, 13.5% of the respondents disagreed with the statement (see Figure 25).
Figure 25. “My online courses typically include interactive assignments and links to examples from the web that directly involved me in the learning process” (n=221).

As highlighted in Figure 26, more respondents agreed, 39.1%, than disagreed 4.5%, that online courses used realistic assignments and problem solving activities that were interesting and motivated me to do my best work. In total, 58.2% agreed with the statement while 13.1% disagreed.

Figure 26. “My online courses used realistic assignments and problem-solving activities that were interesting and motivated me to do my best work” (n=220).
A significant majority of the respondents, 73.3%, agreed that “My online courses allowed me to take responsibility for my own learning”. Fewer than 10% of the respondents indicated that their online course(s) did not allow them to take responsibility for their own learning. Nineteen percent were neutral (see Figure 27).

![Bar chart showing agreement levels.]

Figure 27. “My online courses allowed me to take responsibility for my own learning” (n=221).

Just over 50% of the respondents, 51.4%, were in agreement with the statement “My online course(s) typically stimulate thoughtful discussions” while 12.3% disagreed and 7.3% strongly disagreed (see Figure 28).
Figure 28. “My online course(s) typically stimulate thoughtful discussions” (n=220).

Summary

The responses to this section indicate that the respondents are satisfied with the level of active learning generated by their online course(s). Of note, 58.2% of the respondents reported contentment with the problem-solving activities associated with their online learning and a strong majority of respondents indicated that the online courses at this Ontario college encouraged students to take responsibility for their own learning process.

Section 4: Gives Prompt Feedback

This part of the questionnaire consisted of three questions that analyzed the respondents’ perceptions about the feedback received from faculty during online courses. It is the view of 69.5% of the respondents that “My questions about Blackboard were responded to promptly”, while 9.1% disagreed. Almost a third of the respondents, 31.5%, were neutral toward this statement (see Figure 29).
Figure 29. “My questions about Blackboard were responded to promptly” (n=222).

A large majority of the respondents, 71.9%, agreed with the statement “My questions about course assignments were responded to promptly. A total of 10.4% of the respondents disagreed (see Figure 30).

Figure 30. “My questions about course assignments were responded to promptly” (n=221).
It is the perception of 67.9% of the respondents that faculty provided supportive feedback in relation to course assignments, while 8.6% disagreed (see Figure 31).

Figure 31. “I was provided with supportive feedback related to course assignments” (n=221).

Summary

In general the respondents reported satisfaction concerning faculty feedback in relation to course assignments. A majority of the respondents described faculty feedback as being supportive.

Section 5: Emphasizes Time on Task

The two questions of this section of the questionnaire elicited the respondents’ perceptions concerning the amount of time spent completing online course assignments. Three-quarters of the respondents were in agreement with the statement “My online course(s) were structured to be user friendly”. Conversely, 8.6% of the respondents disagreed (see Figure 32).
Figure 32. “My online course(s) were structured to be user friendly” (n=220).

As depicted in Figure 33, 71.5% of the respondents agreed with the statement “My online course(s) were designed to provide an efficient learning environment”. Almost 10% of the respondents disagreed, while 19.8% were neutral.

Figure 33. “My online course(s) were designed to provide an efficient learning environment” (n=217).
Summary

An overwhelming number of respondents reported being satisfied with the amount of time spent completing their online courses at this Ontario college.

Section 6: Communicates High Expectations

This part of the questionnaire consisted of four questions designed to elicit the respondents’ perceptions of the expectations placed on them by faculty. The majority of students, 71.5%, agreed that the college’s online courses were designed to provide an efficient learning environment (see Figure 34).

![Bar chart showing level of agreement with the statement: “My online course(s) used examples that clearly communicated expectations for completing course assignments” (n=221).]

Figure 34. “My online course(s) used examples that clearly communicated expectations for completing course assignments” (n=221).

Seventy-three point three percent of the respondents reported that the college’s online programming clearly communicated expectations for completing course assignments, while 9.5% disagreed (see Figure 35).
Figure 35. “My online course(s) provided good examples and links to other examples published on the web that helped explain concepts and skills” (n=220).

Slightly over 50% of the respondents, 50.5%, agreed that the college’s online courses were of appropriate difficulty level, while 20.9% strongly agreed with this statement (see Figure 36).

Figure 36. “The assignments for my courses were of appropriate difficulty level” (n=220).
Although 57.1% of the respondents agreed that the college’s online courses used realistic assignments and problem-solving activities related to future job assignments, 28.3% were neutral, while 14.6% disagreed (see Figure 37).

Figure 37. “My online courses used realistic assignments and problem-solving activities related to situations that I am likely to encounter outside of these courses or in a future job assignment” (n=220).

Summary

Overall, the students responded favourably to questions relating to the faculty’s ability to communicate high expectations through online learning. Of note, 71.4% of the respondents reported that course assignments were at the appropriate difficulty level.

Section 7: Respects Diverse Talents and Ways of Learning

This section of the questionnaire consisted of five questions which elicited the respondents’ perceptions on the learning styles used by faculty during their online courses. A majority of the respondents, 71.6%, reported that faculty were respectful of students’ ideas and views, while 22.1% did not have an opinion on this statement (see Figure 38).
Figure 38. “The faculty were respectful of students’ ideas and views” (n=222).

As depicted in Figure 39, 15.9% of the respondents strongly agreed that the college’s online courses were designed so that technology would minimally interfere with learning, 44.1% agreed, 30% did not express their opinion, and 13.1% disagreed.

Figure 39. “My online courses were designed so that technology would minimally interfere with learning” (n=220).
Just over 50% of the respondents agreed that flexibility was permitted when completing course assignments, 25.5% were neutral, 14.5% disagreed and 7.7% strongly disagreed (see Figure 40).

![Figure 40](image_url)

**Figure 40.** “Flexibility was permitted when completing course assignments” (n=220).

When assessing the variety of assignments and activities that encouraged students to demonstrate understanding of critical course concepts, 65% of the respondents agreed, while 25.5% were neutral and 9.5% disagreed (see Figure 41).
Figure 41. “My online courses used a variety of assignments and activities that allowed students to demonstrate understanding of critical course concepts” (n=220).

As illustrated in Figure 42, 57.5% of the respondents strongly agreed or agreed with the statement “I was given choices about the types of activities or assignments that I would complete to demonstrate learning of important course concepts”. Twenty-three percent of the respondents disagreed with the statement while almost 10% strongly disagreed.

Figure 42. “I was given choices about the types of activities or assignments that I would complete to demonstrate learning of important course concepts” (n=221).
Summary

In this section, respondents reported being slightly dissatisfied in not having sufficient choices in assignments to demonstrate learning of critical course teaching points.

Part C of the online questionnaire consists of 21 questions designed to elicit what factors of the online experience enhanced, or conversely, interfered with the respondents’ online learning experience. This part of the questionnaire also elicits the respondents’ perceptions of the academic demands of online learning when compared to traditional face-to-face learning.

Almost one third of the respondents, 30.8%, reported that the value in using educational technologies in the course of their studies was the convenience this medium provided. A further 27.4% reported that educational technologies saved time (see Table 8).

Table 8
Which Benefits From Using Educational Technology Were Most Valuable?

<table>
<thead>
<tr>
<th>Benefit to learning</th>
<th>n</th>
<th>Selected %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved my learning</td>
<td>94</td>
<td>20.1</td>
</tr>
<tr>
<td>Saved me time</td>
<td>128</td>
<td>27.4</td>
</tr>
<tr>
<td>Convenience</td>
<td>144</td>
<td>30.8</td>
</tr>
<tr>
<td>Helped me manage my class activities (i.e., planning)</td>
<td>86</td>
<td>18.4</td>
</tr>
<tr>
<td>No benefits</td>
<td>16</td>
<td>7.4</td>
</tr>
</tbody>
</table>

When asked which factors interfered with or impeded the learning experience, 37.5% reported technical problems and 22.7% reported reduced time with faculty and difficulty accessing / understanding course material (see Table 9).
Table 9

*Which Factors Interfered With or Impeded Your Learning Experience?*

<table>
<thead>
<tr>
<th>Interfered with learning</th>
<th>n</th>
<th>Selected %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced my time with faculty</td>
<td>72</td>
<td>22.7</td>
</tr>
<tr>
<td>Reduced my time with classmates</td>
<td>54</td>
<td>17</td>
</tr>
<tr>
<td>Technical problems</td>
<td>119</td>
<td>37.5</td>
</tr>
<tr>
<td>Difficulty accessing / understanding course material</td>
<td>72</td>
<td>22.7</td>
</tr>
</tbody>
</table>

Comparing Online Learning to Face-to-Face Learning

This series of questions from the online questionnaire revealed that if given a choice, the majority of respondents prefer face-to-face learning as opposed to online learning. Slightly over 50% (50.4%) of the respondents disagreed with the statement “I think I learn more in online courses than in face-to-face courses”. Conversely, 19.2% agreed while 30.4% were neutral. In relation to the statement “I prefer online courses to face-to-face courses” 31.3% disagreed and 18.7% strongly disagreed. Slightly under a quarter of the respondents agreed with the statement.

As depicted in Table 10, 43.7% of the respondents disagreed with the statement “I feel more comfortable participating in online discussions than in face-to-face discussions”, while 40.4% of the respondents agreed. Over a third of the respondents were neutral on this statement.

Over a quarter of the respondents, 25.8% disagreed that online courses require more study time than face-to-face courses. Conversely, 29.6% of the respondents agreed and 10.8% strongly agreed. Over a third (33.8), were neutral on this statement. When asked if online course are more difficult than face-to-face courses, 31% agreed, while 25.8% disagreed. Over 40% of the respondents (43.25) were neutral.
### Table 10

**Online Learning Compared to Face-to-Face Learning**

<table>
<thead>
<tr>
<th>Statement</th>
<th>n</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think I learn more in online courses than I do in face-to-face courses</td>
<td>214</td>
<td>7.5</td>
<td>11.7</td>
<td>30.4</td>
<td>30.8</td>
<td>19.6</td>
</tr>
<tr>
<td>I prefer online courses to face-to-face courses</td>
<td>214</td>
<td>8.4</td>
<td>14</td>
<td>27.6</td>
<td>31.3</td>
<td>18.7</td>
</tr>
<tr>
<td>I feel more comfortable participating in online discussions than in face-to-face courses</td>
<td>213</td>
<td>12.2</td>
<td>17.8</td>
<td>26.3</td>
<td>29.1</td>
<td>14.6</td>
</tr>
<tr>
<td>Online courses require more study time than face-to-face courses</td>
<td>213</td>
<td>10.8</td>
<td>29.6</td>
<td>33.8</td>
<td>20.2</td>
<td>5.6</td>
</tr>
<tr>
<td>Online courses are more difficult than face-to-face courses</td>
<td>213</td>
<td>8</td>
<td>23</td>
<td>43.2</td>
<td>19.2</td>
<td>6.6</td>
</tr>
</tbody>
</table>
When asked to “compare how academically demanding your online courses have been when compared to traditional classroom courses” 31.2% perceived that online courses were as academically demanding as face-to-face courses. Almost a quarter of the respondents (24.7%) believed online learning was slightly more demanding when compared to face-to-face learning, while 26.5% believed slightly less (see Figure 43).

![Figure 43. Compare how academically demanding online courses are versus traditional face-to-face learning (n=215).](image)

A majority of the respondents, 63.5%, were very and somewhat satisfied with their online learning experiences, while 6.5% were somewhat dissatisfied and 7.5% were very dissatisfied. Twenty-two point four percent were neutral towards this question (see Figure 44).
**Figure 44.** Respondent satisfaction with their online learning experience (n=214).

In this question, respondents were asked if given a choice, what type of course would they elect to take. The choices given were: (a) solely online; (b) hybrid; and (c) traditional face-to-face. Nearly half of the respondents, 47.9%, selected hybrid, 40.9% chose traditional face-to-face, while 11.2 selected solely online (see Figure 45).

**Figure 45.** Respondent preference between online, hybrid and traditional face-to-face learning (n=215).
In the following series of questions, respondents were asked to describe their level preference with regard to the level of technology use in their courses. A significant majority, 78.1%, preferred a moderate to extensive use of technology in support of their learning. More specifically, 2.3% preferred no information technology; 13.5% preferred limited information technology; 35.3% preferred a moderate level of information technology; 42.8% preferred extensive information technology; and, 6% preferred the exclusive use of technology (see Figure 46).

![Figure 46. Preferred level of technology use in online courses (n=215).](image)

As illustrated in Table 11, the respondents consistently agreed around or above the 80% level, that the listed student characteristics are critical for student success in online programming.
Table 11

**Characteristics of Successful Online Students**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree %</th>
<th>Agree %</th>
<th>Neutral %</th>
<th>Disagree %</th>
<th>Strongly disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to work independently</td>
<td>51.4</td>
<td>42</td>
<td>5.2</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Highly motivated</td>
<td>39.2</td>
<td>45.3</td>
<td>10.4</td>
<td>2.8</td>
<td>2.4</td>
</tr>
<tr>
<td>Self-disciplined</td>
<td>44.3</td>
<td>41.5</td>
<td>10.8</td>
<td>1.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Able to structure time and surroundings</td>
<td>44.3</td>
<td>42.9</td>
<td>10.8</td>
<td>0.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Able to prioritize workload</td>
<td>43.4</td>
<td>43.9</td>
<td>10.8</td>
<td>0.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Comfortable communicating ideas through writing</td>
<td>40.6</td>
<td>42.9</td>
<td>13.2</td>
<td>2.4</td>
<td>0.9</td>
</tr>
</tbody>
</table>

All questions of the online survey were subjected to *t* tests using gender as the independent variables and ANOVA using three separate age groupings. The tables and figures of the *t* tests and ANOVA are listed in Appendix H. In summary, the salient points from the *t* Tests are as follows:

1. in comparison with males, more females chose strongly agree and agree;
2. females were more likely to enjoy their online discussions than males (females 40.3 / males 36.7%).
3. females were more satisfied with their online learning experiences when compared to males (Very Satisfied: females 25% / males 12.2%);

4. when asked “I am confident of my ability to use the Internet to help me learn” 74.4% of males strongly agreed while 60.5% of females strongly agreed;

5. when asked to rate their skill level in relation to computer maintenance (software update, security) 39.5% of females reported not at all skilled / not very skilled when compared to 14.6% for males;

6. when asked to rate their skill level on using the Internet to effectively and efficiently search for information 21.9% of females selected not very skilled / fairly skilled when compared to 14.6% of males; and

7. when asked to rate the importance of 6 student characteristics that are critical for online learning success, females, by an overwhelming majority, strongly agreed.

An ANOVA was calculated using the following three age groupings:

1. 16 – 19;

2. 20 – 35; and

3. 36 and over.

As depicted in Appendix H, the ANOVA showed a significant difference based on age for three statements. In relation to the statement “I prefer to communicate with my teachers using email rather than speaking with them before class” those 36 and over were more likely to disagree than the other two age groupings. The ANOVA calculation revealed that for the statement “I prefer online courses to face-to-face courses” those respondents in the 20 years and over tended to disagree when compared to those aged 16 to 19. Similarly, in relation to the statement “I feel more comfortable participating in online discussions than in face-to-face discussions” those respondents between 16 – 19 years of age tended to agree more than those respondents over the age of 20.
Summary

As highlighted in Chapter 3, the purpose of the mixed-methods sequential explanatory design is to collect first quantitative data (web-based survey) followed by the collection of qualitative data (student interviews). The aim of the qualitative data collection phase is to help explain and elaborate the data collected during the quantitative phase (Creswell & Plano Clark, 2007). Creswell and Plano Clark (p. 87) posit “The qualitative data and their analysis refine and explain those statistical results by exploring the participant’s views in depth”.

In this study, after analyzing the quantitative data, the following themes emerged that the researcher used to enhance the original questions of the semi-structured student interview guide:

1. What was it about online learning that saved you time?
2. What was it about online learning that you found convenient?
3. Respondents mentioned technical problems and difficulty accessing / understanding course material as interfering with learning. Could you elaborate?
4. Only nineteen percent of the respondents thought they learned more in online courses than they did in face-to-face courses. What are your thoughts on this result?
5. When given the choice between selecting an online, hybrid or face-to-face course as a matter of preference, 11.2% chose solely online programming. How do you explain this difference in opinion?
Part Two:  

Qualitative Analysis of the Semi-Structured Interviews

This part of the thesis analyzes the information gathered during the interviews of 16 students from this Ontario college. As discussed in Chapter Three, the researcher used the constant comparative method, as described by Merriam (1998), to organize and collate emerging themes from the data.

At the end of the web-based survey, the respondents were asked to indicate if they were interested in being contacted for a short interview, permitting the researcher to explore their online learning experiences in greater depth. A total of 96 students, over a third of the number of respondents who completed the web-based survey, volunteered for an interview. A total of 12 students participated in a semi-structured interview, while 4 respondents submitted their responses via email. The demographics of the student interviewees are highlighted in Table 12.

Table 12  

Interviewee Demographics

<table>
<thead>
<tr>
<th>Student</th>
<th>Age</th>
<th>Gender</th>
<th>Program</th>
<th>Current level</th>
<th>Online courses taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>20 – 24</td>
<td>M</td>
<td>Mechanical Engineering</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>S2</td>
<td>20 – 24</td>
<td>F</td>
<td>Biotechnology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>S3</td>
<td>25 – 30</td>
<td>M</td>
<td>Computer Engineering</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>S4</td>
<td>20 – 24</td>
<td>F</td>
<td>Business Accounting</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>S5</td>
<td>20 – 24</td>
<td>F</td>
<td>General Arts and Science</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>S6</td>
<td>25 – 30</td>
<td>F</td>
<td>Nursing</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Student</td>
<td>Age</td>
<td>Gender</td>
<td>Program</td>
<td>Current level</td>
<td>Online courses taken</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>--------</td>
<td>------------------------------</td>
<td>---------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>S7</td>
<td>30 – 40</td>
<td>F</td>
<td>Business Administration</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>S8</td>
<td>25 – 30</td>
<td>M</td>
<td>Human Resource Management</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>S9</td>
<td>30 – 40</td>
<td>F</td>
<td>Television Broadcasting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>S10</td>
<td>20 – 24</td>
<td>M</td>
<td>Computer Systems Technician</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>S11</td>
<td>20 – 24</td>
<td>F</td>
<td>Business Accounting</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>S12</td>
<td>25 – 30</td>
<td>F</td>
<td>Innovation and Industrial Management</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>S13</td>
<td>25 – 30</td>
<td>F</td>
<td>Innovation and Industrial Management</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>S14</td>
<td>30 – 35</td>
<td>F</td>
<td>Business Marketing</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>S15</td>
<td>30 – 35</td>
<td>F</td>
<td>Dental Hygiene</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>S16</td>
<td>20 – 24</td>
<td>M</td>
<td>Mechanical Engineering Technology</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

The 12 interview tapes were transcribed which assisted in the organizing and collating the data into the emerging themes.

**Question 1**

Much is written about the Internet skills of college students. You are identified in the literature as a group who are tech savvy and very comfortable using computers and the Internet. Do you think this is true about yourself? Is it also true about your friends?
An overwhelming majority of the students agreed that this statement was true about them.

I have pretty much grown up with the Internet. Starting in elementary school we were using computers and taught how to use the Internet, that’s the way that I was brought up (S2).

I would say that we, especially more than even people say 5 or 7 years ago, now computers are used for everything, even more so than even 3 years ago now with I Phones and Blackberries being really commonplace items. I think that we are one of the most tech savvy people around today, our generation (S16).

I think that this generation has become very tech savvy. A lot of teens and young adults use computers everyday. As for myself, I'm pretty tech savvy. I know my way around a computer. I've taken many classes where a computer was incorporated in part of the course (S5).

Not all students believed that they are as technical savvy as the literature suggests:

Well we didn’t use the computer much until actually college because when I was in high school they didn’t use computers, we had typing class and that was like it (S6).

This statement is not true about me. I do not consider myself tech savvy, and this being my very first online course, I have to admit that I was feeling quite anxious. However, once I became familiar with the different sign on system, and how to access the assignments and discussions, etc, I was fine. Also, knowing that the professor was just a phone call away made me feel more comfortable with the online course idea (S15).

A number of students stated that the Net Generation, although for the most part tech savvy, may not possess the sophisticated technical skills often attributed to them:
We all know how to use the ones that we still have used since high school but new programs we still have to be taught the same as we had to learn the other programs. Like Microsoft Project, we don’t know how to use that so we need to be taught it, that’s all (S16).

Often I have to help my friends in online navigation as well as with things like computer navigation so when it comes to networking, the computer networks, often I have to help out my friends with online networking and college networks, that type of thing. (S14).

I was exposed to Apple and Microsoft software so I kind of understand about the basics of computers and networking, whereas some of my younger peers who are only about 5 or 10 years younger than me do not. So even though I tell them once they usually catch on very quickly as well but to get to that point it takes them a while and some direction (S14).

A mature student described her Internet technical skills as follows:

Because I use the Internet, I feel tech savvy and very comfortable using computers. I’ve been using computers for many, many years and I use the Internet constantly looking for stuff (S7).

A mature student remarked on how comfortable her younger classmates are at using educational technologies in support of their learning:

I’m much better now. I’m more adventurous because I’ve noticed that is what they do. They’ve been around computers all of their lives so where they don’t know something they’ll just dive in and start pushing buttons. So I started doing that and it actually helps not being so timid. I’m always afraid of breaking it or making it crash (S9).

No all students assessed their friends as comfortable using the Internet.

This really depends which friends you're talking about, as some are, some aren't (S3).
Everyone that I associate with is very comfortable. I know some people not so much (S8).

Two students remarked how popular BlackBerry’s are with today’s students in order to remain connected not only with course related activities / assignments, but with each other as well:

Yes, pretty much everyone is very tech savvy and I’m a little intimidated actually with looking at some of the 1st-year students and looking at some of the Blackberries. When the heck did that happen? (S8).

**Question 2**

Please describe your experiences on how you perceive that online learning proved beneficial to your learning experience? Which of the following benefits from using information technology in your classes was valuable to you? (improved my learning, saved me time, convenience, helped me manage my class activities (planning, apportioning time, noting success and failure).

The literature and some research studies concerning online learning suggest that online courses are beneficial in enhancing the learning experience. The purpose of this question is to discover from the students which benefits of online learning proved valuable to the learning experience. One student enjoyed the ease in which group work was assigned and completed in an online format:

We had to do a group work at one point and the way that it was convenient was that it was easy to see who was on my team…Like you could just go on click on team, you know who you are, to send an email to everyone in the group, you just click email, type it in, send it off. It’s easy to work in groups that way (S1).

A number of students discussed the ability to work at their own pace as beneficial to the learning experience:
I’ve done two elective courses online and I like the way that they’re laid out because everything is online ahead of time so you can work at your own pace, have it done ahead of time when you have time. It’s not that you have to go to a lecture to learn, the information you need is already there for you. I’m very organized so I like the way that the online courses were available to me, everything was already there, all the material that I needed, I could get it done at my own pace (S2).

For many courses, online learning works great. I really enjoyed the classes that I had that involved online learning. I found it was very successful. I was able to manage my time very well and work at a good speed (S4).

Well I definitely, I like the idea that everything is there. You can go back to everything and it gives you time to work on things at your own pace or faster if you want to get it done (S6).

For me it was definitely the convenience where you could manage your time the way that it worked for you. In my experience the positive was the convenience but there’s a lot more for the negative which I guess that we’ll get to later. But as far as the positive go I found the convenience was a really good factor and the freedom (S17).

Many students found the time they saved by enrolling in an online course as valuable to the learning experience.

Online (or hybrid) courses do save time required for being in a particular place at a particular time. The benefit of more online hours in courses comes from having more time to pursue other non-schooling activities, such as meeting with business friends, and working, and less time required for travel to and from the school. (S3).

Well because you’re not always trying to make notes. Like I find when you’re in class for too long everyone is at a different level of learning so if I want to learn things a lot faster and there are people asking questions, I find you’re
wasting time sitting in class sometimes… and it’s different for everybody. I mean there are people that do need to be in class and ask the questions, but for me I’m not that person. (S6).

For others, online courses proved convenient (reduced travel time) for a number of reasons:

It was basically to be online, online basically cuts down on travel costs because I live in (outskirts) so it’s a lot harder to get here. I noticed that this semester too I was either coming in all 5 days a week or I could come in three or I could come in two. So I chose to come in three and I’m taking two online right now. The good part about it is it does save time, I don’t have to travel so far (S11).

I benefited from using information technology by saving time and having convenience by not having to travel to a classroom (S15).

Some students valued the flexibility online courses provided allowing them to schedule their online coursework around the obligations associated with their face-to-face courses.

I have had a positive experience with online learning. I took (an online course) last semester and I was able to work on it when it was good for me working around my other courses was very easy. That to me was the most valuable experience because I had some class that need many hours of extra lab time I was able to be a little more flexible with the online course (S10).

Flexibility definitely, that’s a major thing (S11).

One student appreciated the manner in which online learning respected her diverse way of learning:

Online learning gives you that option to a different way of learning. It was definitely a good way to help me manage my other classes and manage my time. It was convenient, especially when I had 4 other classes to manage in school (S5).
The course management system at this college (Blackboard) was perceived by many students as an effective means for information access, retrieval and course management.

Certainly convenience, as you can go in and use, you can go and you know use the facility when it’s convenient for you to do so, any time during the day, evening, night. Yeah, all the information is on there like on Blackboard. So it’s a repository for all of the information required, all the links that we need to link to are all there, our course schedules, everything we need to do. Discussion boards are on there too and schedules (S7).

Well I definitely, I like the idea that everything is there. You can go back to everything and it gives you time to work on things at your own pace or faster if you want to get it done (S6).

Okay, well from the beneficial point of view you know I didn’t have to worry as much about things like losing documents because I knew if I lost something in print, just go back online print it again most of the time. There tends to be a lot more information on Blackboard that is helpful to understand what the course is about because there tends to be at the start of the course there are articles and a lot of material. So basically you get a one-page outline and you just have to guess what the class is actually going to be like. With Blackboard you have far fewer questions to ask to know what’s going to happen during the course. It’s a lot clearer (S8).

I’m studying (course name) so I’m right on the computer and I can just go to any links that are provided and search myself if I don’t know what something means so it’s definitely helpful that way. So yes, timeline, I’d rather be able to do it from wherever I am (S9).

Two students explained how online learning proved convenient in terms of working at your own pace, however, did not save time as online learning increased the number of research and study hours.
So it hasn’t saved me time, I think it has created more time because we have to do in class and outside of class that the teachers and student take a certain amount of time and it takes much longer. Convenience is definitely there because we can do certain things on our own time, and managing class activities (S12).

For me, I would think that it has saved me time in research… Like I previously did a history degree and I had to write a lot of essays and it saved a lot of time being able to find articles online rather than having to go to the library and sift through tons and tons of hardcover encyclopaedias and stuff. So it has been a lot more convenient for me in that sense, but sometimes it doesn’t save time (S13).

Two students related that their online courses are not as time consuming and demanding as face-to-face courses, allowing them to focus their time on both social and academic activities:

The benefit of more online hours in courses comes from having more time to pursue other non-schooling activities, such as meeting with business friends, and working, and less time required for travel to and from the school (S3).

I was able to manage my time very well and work at a good speed. This made the class convenient and saved me a lot of time. It also gave me time to focus on harder classes by getting the easier ones done quickly (S4).

Question 3

Please describe your experiences on how you perceive online learning to detract or interfere from your learning experience? Please provide comments on how online learning interfered or impeded your learning experience (reduced time with faculty, technical problems, difficulty accessing / understanding course material).
The purpose to this question is to determine those factors of online learning that detracted or impeded the learning experience. The students provided a number of factors which detracted from their learning experience. Some students lamented on the lack of competent technical support when problems arose:

Yeah, especially technical problems. I’m working in a group right now where we’re designing a way of testing (a motor), but the problem is as soon as my webmail goes down I have no connection with my group…or god forbid they change my password randomly which is what they did then I can’t tell them what I need to be done and I can’t tell them the information (S1).

Yeah, there are technical issues and once you have a technical issue you end up in new territory especially if you’ve done nothing wrong. I couldn’t upload a file so you have to submit an assignment. I submitted an assignment, no file attached, email the professor who says don’t talk to me about this, talk to tech support. They (tech support) don’t solve my problem. They give a run around, they say don’t use that computer. That’s basically their solution, don’t use that computer, use a different computer. And tech support is like talk to your professor, like what do I do now. So it ends up the technology when it goes wrong it gets in the way of the learning experience (S8).

A number of students expressed dissatisfaction on the lack of meaningful interaction and connection with faculty and fellow students leaving them feeling isolated and detached from the learning process:

Another way it detracts is there is no real connection with the professor, none, really like really just zip. With a hybrid course you know it was great in class talking to the professor, you know they gave a lecture. As soon as we had the online week there was no contact, you know it was like night and day. There was just text on the screen and you know there was like discussion for marks and we’d all just skip whatever, say whatever, you get marks and that would be it. There was no real connection with the professor or with classmates. Last week it was great you know talk with people in the class and associate with
the professor and so there’s a real divide between the experience online and in class. Yeah, so for me it was a big distraction thing (S8).

It’s very difficult to perceive somebody’s intention when they’re commenting (online). You can’t see their face and you can’t hear the tone of their voice, so some people may sound insulting but they’re not being at all and there’s also the case of the younger generation texting so they actually do their work in that language (S9).

The problem with online learning is you don’t have to see the professor; there is no one you have to directly report to. I could see how it would be easy to feel very detached from the course and find the time to do it (S10).

It’s the understanding sometimes, if you get stuck on a question there is nowhere really to go. Like you can’t just come in the next day to your classroom teacher and say well you know I didn’t understand this could you go over it, because there is nobody like that (S11).

One student stated that the lack of physical interaction between faculty and students did not adversely affect the quality of the learning experience.

To me that is not really a concern because when you consider a lecture, at the end of the day it’s kind of a one-sided communication and if you made it two way, there are too many people to make it two-way communication. So at the end of the day you’re not really going to notice that much of a difference… as long as the teacher was available for consultation by for example web chat, video chat something like that, I think that most of your concerns could be addressed in my eyes, in fact could be fully addressed. There would need to be a little more research in to how exactly you could help those who need the one on one but I think it should be manageable with the online environment (S16).

Some students experienced minimal technical problems during the course of their online studies.
I haven’t really had any trouble. I know that other people have had trouble that if you have to do a quiz online the server has gone down or they don’t realize if you just click the save button it doesn’t submit your test and you lose it that way. So I know there have been problems that way but I haven’t experienced any myself (S2).

I didn’t find that online learning detracted from my learning experience at all. If I had any questions the teachers were usually very quick to answer them via e-mail (S4).

For online learning technical problems have been very rare other than not being able to access a database that we thought we would have because passwords weren’t working (S12).

A number of students expressed concern on the length of time it took faculty to respond to their questions and the lack of detail associated with some of the responses.

When there were technical difficulties, I found it a bit frustrating because it would interfere with my learning. Also, if I had a question, I would have to email and wait for a response which took from a few hours to a day, so that part of it I didn't really like (S5).

The only negative thing is that when you have a question or something is not making sense it seems to take you so much longer to find out the answer than to ask somebody a simple question (S6).

Some teachers did, yes, I was impressed with some of them. Some of them gave much more detail than I was expecting, basically like not the answer but somewhere close to it that if you did a little bit more you’d find the answer and some of them came back and said sorry, I can’t help you with this (S11).

Some perceived faculty over and underuse of the course management system as detracting from their learning experience:
Again, I think a lot of it is in how you use it. I’m thinking about a third course that I was in and it was (name of course). A lot of it was okay but I had some technical problems at home connecting first of all. This was through Ontario Learn. We were supposed to meet up once every few weeks to have discussions before we did our assignment and hardly anybody showed up and this person has been teaching this course for quite a few years. The textbook hadn’t changed in a long time so a lot of the materials that we were using were materials from the past (S7).

I know the one class I did last year was (name of course) and we had to watch video and the only size you could get it would be like a two inch screen size and it was very poor quality so it was a little bit difficult that way (S9).

I was going to say information, too much information, too many sources. Sometimes you can reach the same information in about 10 different ways and that kind of creates inconsistencies especially when you’re working within groups and with other people. When you’re communicating with other people, terminology isn’t always the same when you can access information from different sources (S14).

This student suggested that faculty resistance and lack of technical skill in using the college’s course management system detracted from the learning experience. However, the student is optimistic that with the adequate support systems complemented with professional development programs, this deficiency will be addressed:

Some of the teachers they just discovered that they had different functionalities that they never knew were available to them. Like the online posting of grades, things like that, so definitely you’re right in that the teaching is going to be, educating the faculty is going to be a really big one and as long as they know how to do it, how to actually use the technology available to them. We’ve dealt with some of the older faculty members, the faculty who are resistant to using technology. That will probably be a very large issue, but I think that as long as you have the support structure in place
to reassure them that you know it’s not the hardest thing in the world to use, as long as they feel well supported (S16).

A number of students expressed concern over the inconsistent use of the college’s course management system among faculty.

And so another teacher was supposed to administer the online portion of that but they didn’t really speak together about what was going into it. So one of the teachers, the online teacher, got busy and that kind of took a back burner. So whatever was delivered wasn’t all that great quality. So again, it needs to be done right…the opinions from the students even, they were saying you know when I signed up to come to (the college) I signed up because I was going to be getting hands on practical work. I didn’t sign up to sit behind a computer and learn about (name of program). If I had known that this is the amount of course deliver that this is the amount of course deliver that would be online, for example say 20%, that would have affected my opinion on coming to the school and participating in this program. They were like I came to (city) especially for this. So again, I think most people have probably had that negative experience to start out with and it’s that one negative experience which has coloured all the rest (S16).

One student mentioned that faculty should make better use of emails to transmit course related information:

I wrote to him (faculty member) and I suggested that we let people know via email because you have to go to Blackboard to find out when this was supposed to happen and he would come in like a week earlier and say okay I’m going to have this on this Monday evening at 7:00. Given it’s not a convenient time for everyone but if we all have emails and we have a distribution list why can’t you send it to all of us so that we can know instead of having to check Blackboard every day. The response I got was you’re supposed to be on Blackboard every day. Well no, I’ve signed up for this online course and I don’t need to be on Blackboard every day because I’ve got my schedule, I know what I have to do, I know what assignments I’m working
on. I need to know when you’re going to have your discussion so we can come online and be together and do what we have to do. So anyway, he didn’t do anything about it. A lot of it is in I think how you use the facility (S7).

Two university graduates currently enrolled at this college found online learning more challenging when compared to face-to-face learning:

It’s harder to learn when you’re just reading it on the screen but it’s not really any different information, and then the staff is still available to meet any time outside of class because you just book a time with them (S12).

Yeah, I’m definitely a person that learns better just in person, like having someone teaching me in person and having me do it in the class. I’ve been having a hard time with the hybrid courses where I’m expected to teach myself and I feel like I’m paying to be taught, not teach myself because I can find all that information on my own if I really wanted to. I just learn better when somebody is there directing me rather than me having to direct myself (S13).

One student expressed frustration of having to purchase course software that was rarely used and not beneficial to the learning process.

So we had to buy a special package from the textbook manufacturer who would basically provide us with the software needed to do all this online stuff. So we bought it, it was like (dollar value). We used it, I think I could count on my hands the number of times that I used it to be honest. It wasn’t that many times and the content, the way it was done it was very buggy (S17).

This same student suggested that some faculty had difficulty teaching using the college’s course management system.

So that’s when I go back to saying it needs to be done really, really well. I realize that it’s such a powerful tool it has the ability to be so powerful, especially given universities which are operating mostly online or a large part of their business is done online but there needs to be an effort from the
teachers and they need to know how to do it as well because some of the teachers didn’t know (17).

**Question 4**

What can you tell me about the student to student and student to faculty interaction during your online learning experience?

Some of the students were positive on the quality and effectiveness of their online interaction with both faculty and fellow students:

It’s working out great, the Internet has been really great just keeping us all connected for the 1st years, 2nd years and 3rd years, it’s keeping us, it’s allowing us to do this group buy (S1).

Student to student in discussion boards was helpful in cases where you didn't understand something and wanted an opinion or advice etc. Student to faculty would take a bit longer to get a response to a question, but most times the professor would offer extra help if needed (i.e., office hours, meeting) (S5).

Actually, it was quality for those who want to put the effort in (9).

I always felt that the professor was there for me, and if not by the computer, I could always pick up the phone to call him. There was some interaction between students due to our assignments, and the professor always responded to each one of us regarding our assignments (S15).

One student concurred that online interaction can lead to a quality learning experience provided discussion boards are properly organized and monitored by faculty:

We were supposed to upload, present our opinions on what it is that we had read, our case studies or whatever. One other person had to respond to it. So the way it was structured we had no choice because we were being marked on this, so we had to interact with one another and we were also asked to, if you need to talk to another go ahead and stuff. Like I said before in some other
forums it wasn’t followed through or it wasn’t a compulsory element of the course where it could have been (S7).

Two students had differing opinions on whether online discussions compelled students to be more formal when submitting posts in support of online discussions:

I found that it was more professional than when you are in a lecture with a teacher. Well in my experience we didn’t know each other in my online course so everyone was more professional, there is no slang use, it’s always dear professor or whoever instead of okay how’s it going to someone that you’re more familiar with (S2).

Student to faculty I think has become a lot more informal, like they’ll be sending them off emails without any salutation or grammar, spelling mistakes. It’s pretty pathetic, so I think that part has been pretty lowered and degraded quite a bit, that interaction (S12).

Some students suggested that the anonymity between students and faculty during online learning allowed students to more confident and assertive when expressing opinions.

Asking questions strictly through e-mail gave me time to collect my thoughts and formulate solid questions that could be answered completely and easily by the teacher. From my experience, the interaction was good (S4).

According to one respondent, students in face-to-face learning are concerned about being negatively judged if their question is perceived to be irrelevant:

I also found that in the discussion boards that people weren’t afraid to express their opinions and ideas because nobody knew each other so there was no one to say oh well you think this because you’re this way. No one could really judge you. I would much rather email my teacher the questions then ask in class and we actually have a discussion board among my class this semester that he’s opened up instead of just emailing because he says that a lot of people feel more comfortable emailing him instead of raising that point in class. I think it might be just so that you’re not judged (S2).
A few students expressed concern over the limited interaction that can be achieved during online learning. The students implied that the lack of face-to-face contact between faculty and students was detrimental to the learning process:

The student-to-student interaction can be rather limited in the online learning experience. There can be that missing social aspect to it. However, I did find the student to faculty experience good (S4).

Student to student is, well we do have a discussion board so I think the discussion boards are good, maybe not a lot of interaction but we have to respond if someone else is posting or whatever. You don’t really interact with them as much unless you have a question and you’re emailing them (S5).

During the course there was almost zero interaction with my fellow students in the course. This was because most people seemed to wait till the last minute to submit so there was little opportunity to discuss what other people had posted. My professor was very good at responding to emails and through our weekly learning journals there was actually in some ways more interaction with her than with some of my normal in class courses. That was very positive (S10).

It was nice not to have to drag myself to class. The downside I wasn’t learning as much and I wasn’t interacting, wasn’t getting as much out of it. I think it’s a kind of universal feeling from people I’ve talked to that online courses just are not the same quality (S8).

One student complained that faculty members’ lack of consistent use of and knowledge on how to effectively manage the course management system’s discussion board, compelled students to use a free, commercial and more reliable discussion board for online course discussions:

I’m just going to bring up Google groups for example we use that more than we would use Blackboard groups because not everybody, the teachers weren’t all, it wasn’t consistent how to use Blackboard, so some of the students had
some confusion how to use it so when it was just everybody using the same thing which was available online through a secure networking site it was a little bit easier for the students… a lot of it had to do with security too. There was too much security with the college network so sometimes Blackboard for example was not reliable whereas Google Groups was more reliable (S14).

One student preferred face-to-face learning because of the social contact with faculty and students while another learned as well in either format:

I am a face-to-face person but I do like asking, well especially with other classmates because the social aspects of course are huge (S6).

I guess you don’t have the live interaction that a face-to-face would have with the faculty member there as well to provide guidance and direction…I think that it could work well either way because you kind of get accustomed to who you’re talking to in the class, whether it’s online or whether it’s in class if you’re actually interacting and talking to people. So you learn about somebody through interaction whether it’s face-to-face or, I think it’s both (S7).

**Question 5**

In your view, what would a quality learning experience be? To what extent was your online learning experience a quality one?

Some students were marginally satisfied with their online learning experience. A common theme emerging from this question is that the quality of the online learning experience is dependant on the technical skill and knowledge of the faculty instructing the online course:

It really depended on the instructor who is using it. If they had applied it properly, if it’s well organized (S1).

When asked to rate the quality of their online learning experience on a scale of 1 through 10, one student responded as follows:
Probably a six or a seven, mid-range. What I’ve just noticed, the online learning experience has always been as much as the instructor has put into it. If they’ve kept it organized and they’ve kept it up to date then it has gone really well, but if they’ve relied on what others have done and not really checked it, it has always been really poor (S1).

Another student had a much higher opinion on the quality of the learning experience during online learning. This student also highlighted the criticality of receiving timely feedback from professors:

I really liked my online courses because they were so organized and I really enjoy that. The teachers were very good with their feedback and answering any questions. I found my teachers were very friendly and they were very good with feedback (S2).

The followings students shared their positive thoughts about their online learning experiences:

My learning experience was excellent. I was able to work as quickly or as slowly as I wanted. I learn better by reading and writing information down rather than listening to someone tell me about it. For that reason, the online learning worked for me. However, this wouldn’t work for someone who doesn’t take in information the same way (S4).

Satisfied - I enjoy having the option of an online course (S5).

**Question 6**

How satisfied have you been with your online learning experience and what made you satisfied (or not)?

Similar to the last question, some students were marginally satisfied with their online learning experience. Although some students positively rated the quality of learning during their online learning courses, inconsistent use by faculty, and a poor execution strategy by the college in the early years of online implementation, detracted from the learning experience:
I did not find the general education courses (which were online course electives) very useful to my program of study, nor did I really learn a lot from them (S3).

I would say just satisfied, like not very satisfied or anything like that. I think that it’s good in some ways like you’re working faster on things but at the same time it’s not as personal as face-to-face learning (S6).

So far I’m not… No, I would say online learning is a compromise situation…it was nice not to have to drag myself to class. The downside I wasn’t learning as much and I wasn’t interacting, wasn’t getting as much out of it (S8).

As of yet I would have to say on the whole I’m pretty dissatisfied with the experience. Teaching for it, I just think that in most instances it has pretty well fallen on its face kind of thing and not just by a little. That isn’t just my opinion, giving the hybrid experience a hard time or something like that but the actual honest truth that you get from most of the students that you know they’re very, very unhappy with how it went. They felt that it wasn’t a beneficial experience. They felt that they could have gotten more out of it for example through direct class time because it was so haphazardly done (S17).

This student surmised that her/her learning preference may not be suited to online instruction:

I find that because it’s online, in a way it goes in one ear and out the other. The information is there for as long as I need it and then I forget about it again. So it could be a case of that, but I guess I also like it because as opposed to being in a classroom if I’m not understanding the question I can go back and read it over, or the instructions are all right there so I can go between the document and the instruction document and go back and forth and make sure I can get all the details (S9).
On a scale of one through ten, the following university graduates students rated the quality of their online learning experience as a six. Below are their reasons for the indicated score:

I’m not sure that like some of the information that we’ve had to learn it’s not necessarily tied back into anything we’re doing in the classroom in the first place so it’s sometimes not clear about why it is that we’re learning something. So there’s too much information that we’re trying to retain and for what purpose we’re not sure (S12).

It was too new for the college. The 1st year in my experience with online programs was more hybrid. It was very difficult and nothing was consistent and we weren’t able to rely on the system. Communications were all through email instead of Blackboard for example and downloading documents was not being used. The 2nd year the college had adapted more. It had a lot to do with the fact that it was a new operating system in 2007 when I started and so in 2007 the college was not ready for the new operating system and in 2009 they were. So as it progressed because the college was more ready and prepared to deal with the programs within the new operating system (S14).

This student rated her online learning experience as a five:

I’d probably say a 5 out of 10 because I’m still pretty on the fence about whether or not I really like it or not. I think that if a teacher really knows how to make things available online for us that will really help us. Maybe just the way they organize it, I would like it better, but just definitely what I said before the way I have to go direct myself on it is not very helpful to me at all (S13).

Some students enjoyed the learning value associated with online instruction:

I am very satisfied with my online learning experience (S4).
I really liked my online courses because they were so organized and I really enjoy that. The teachers were very good with their feedback and answering any questions (S2).

I have been very satisfied with my learning experience. It has been a very positive opportunity. The reason I am satisfied with it is because of the professor and the course (10).

Overall, I was satisfied with my online learning experience. But, I also took this course very seriously, and I spent a great deal of time studying (S15).

This student mentioned that her assigned online study group met in the library to complete online assignments even though there was no direction from faculty to meet face-to-face:

So I mean you’re still in classes face-to-face with people and I find we sit down in the library and work on our online work together. Like all the postings we have to do, we get together in the library and just go and work on our posting (S6).

This student’s satisfaction level and quality of learning associated with online learning depends on the manner in which faculty instructs the course:

I’ve had some good experiences and I’ve had some not so good experiences, as I said before. A lot of it has to do with the teacher, the knowledge of the teacher, the caring of the teacher and their objectives, what they’re trying to do in the classroom to make it effective for the students (S7).

**Question 7**

Please compare how academically demanding the online courses you have taken were when compared with traditional classroom courses.

The answers to this question range between

1. online is easier;

2. online learning is more demanding; or
3. online learning is as demanding as traditional face-to-face learning.

Regardless of answer, an emerging theme from this question was that online programming did not provide similar, quality learning opportunities that are typically found in the traditional classroom environment.

It was demanding but as long as you stayed on top of it and you did your readings as he was sending the messages out it probably was a little bit easier but the only reason behind that is just because you’re in the comfort of your own home; you’re working on your own terms (S1).

I found they weren’t as demanding. They were more relaxed and they were given to you at the very beginning so you had lots of time to go ahead and prepare for them, whereas if you’re in class it’s okay this is the material you need to learn and next week you have to have your assignment done. Whereas when it’s online it’s all there for you, all the information is there, so you can go ahead or if you fall behind it’s easy to catch up (S2).

The courses provided online were definitely not as academically demanding as the ones I have taking in a classroom. There is not as much information to be taking in and the assignments and tests are much easier (S4).

So it’s okay to have all of the academic components in either scenario but I think there is a benefit there to having the teacher available when you need them so you can move on to something else and not have to wait for an answer. In either scenario, using plain text, the same materials, I think that would be the main challenge is not having the expertise, the subject matter expert there when you need them. I think that would be the main thing (S7).

The online courses tend to be a little more relaxed but they also tend to have more checkpoints and little mini assignments to do (S10).

For online courses you’re basically reading the textbook and then you do some problems at the end of textbook or an assignment based on that. You
submit it and it’s worth like 5% and that will be like the end of that chapter and you completely ignore it until you go on to the exam basically. I find in the classroom they’re forever bringing you back to stuff and you spend more time on it I guess. So I find (online learning) it’s less demanding in that way (S11).

I did not find it demanding at all. It was easier to filter through I guess when you’re going through information online that was provided by Blackboard whereas when you go through books in traditional learning there is much more information that is not necessary (S14).

This student suggested that a lack of faculty preparedness might have contributed to the limited learning value during his/her online learning studies:

But in my experience, I guess maybe the intention for the hybrid component or the online component was just to supplement but I found them much easier and since I guess the teachers were newer at it, they didn’t have as much experience in the area; they didn’t want to really put something completely over the top difficult in (S16).

This student suggested that online students tend to apply less effort during online courses:

If they can get away with it. I guess it would also depend on the teacher too. I don’t know what the other students marks were in the end, if they were got get A plus I would be wondering about the credibility there (S9).

People that are older and are more mature and I don’t know they have perhaps certain goals in mind, they’re a lot of times shooting for A’s and they want to do their homework, they want to make sure things are done on time and they want to you know give their piece so that it all falls in place. When we have quite a few of the younger generation don’t really want to ace we’ve observed, they kind of just want to pass and so that kind of drags us down. The commitment level is different I find (S7).
This student suggested that online learning provides tempting distractions, particularly for the younger generations:

> Mind you, in their off time they’re not going to study it, they’re socializing on the computer so maybe that was why person would say they would learn more in the classroom because it’s too distracting to be online with all the other temptations like Facebook and everything else (S9).

These students found online more academically demanding than traditional face-to-face learning. The respondents are members of the Net Generation and university graduates:

> I think they’re more academically demanding because they want basically prove that you’re learning this stuff as opposed to just sitting in the class and testing us. I find there are more assignments and more to do. Well usually you sit in a class and you have maybe two midterms and a final and that’s pretty much it. With the online classes you have all these little assignments and like they want to know that you’re really you know in the class and doing things for the class as opposed to just being things for the class. Sometimes it’s more effort to work on all the assignments than just sit in the class (S6).

There seems to be at least twice as much work. I feel like I’m actually a lot more stressed than I’ve ever been and I’ve already done 4 years of university I have to teach myself and it’s so much more stressful when I just want to come here and learn from somebody that knows. You know all these teachers here are experts in the field and they know what they’re talking about but I feel like I’m not getting everything I could from them personally because I don’t see them. I see them once a week (S12).

> It takes more and I’m not learning anything. A lot of the assignments are just petty work to fill in some time because it’s a hybrid course but I don’t understand the purpose of the hybrid course (S13).

Well that’s a question that my answer might be controversial for it because I found that when I was in university I would have had to put way more effort
into my written work than here and I did get an A plus with my last online course and I noticed that a lot of people (college students) did not (S9).

I feel that I really needed to apply myself in order to succeed. It is different in a classroom setting when the professor is there to review with the class, and perhaps, highlight the most important information (S15).

These students preferred face-to-face learning due to the increased learning value found in this format:

- I have a really good memory for things that people say so I find just coming to class does it for me (S6).

- They (classroom faculty) bring it back, like they’ll start off on something and then if something builds on it they’ll bring you back to that material and you go over stuff, over and over and over again. Whereas the online you read it once, you do the questions and then you’re done (S9).

**Question 8**

Did your online courses meet your expectations? Why or why not?

The online courses generally met the expectations of the students.

Well, I just kind of expected okay well here’s the stuff go learn it but no, my teachers were very good with their content. They said this is what you need to know, this is why you need to know it. It wasn’t just learn this. They actually gave us a reason behind why you would need to use the information they were giving (S2).

My online course met my expectations. It was to be expected, the teacher was easy to get a hold of if you e-mailed them. And the instructions on what was to be accomplished was straightforward. I was also happy to work at my own pace (S4).
Yeah, I mean there were no surprises to them. They put everything up front; you know what you need to do (S6).

I went in thinking it was going to be a waste of time. But I came out feeling very positive and confident in my abilities. Because of the anonymity of the Internet it can be much easier to share your own ideas, without fear of being embarrassed that someone else doesn’t like them (S10).

This student suggested that some teaching material is not conducive to an online format:

There are certain courses that you know after you think for this particular one I wouldn’t do this particular course online. The (name of course) comes to mind. I wouldn’t want to do that one online. I’ve taken two (name of courses) courses. One was in the classroom and we had a really good teacher there too. That was really good. Just the type of subject matter, there are certain subject matters that you’d do better in a classroom setting. The (name of course) one in particular because the subject matter expert needs to be there. There are other ones that require like team building and those types of courses, but there are some that you can do sort of the hybrid model (7).

This student did not have high expectations of online learning and did not have a quality learning experience:

Yeah, the hybrid course I completed met my expectations but only because of the class portion. The online portion, well you know it’s hard to answer that because my expectation was really kind of in line with the result. I expected the online portion to be a lesser and I found that to be the case. Because I assumed there wouldn’t be the interaction and all that. I don’t know if that’s a self-fulfilling prophecy. I don’t think so. I think it’s a kind of universal feeling from people I’ve talked to that online courses just are not the same quality (S8).
Question 9

What are the major obstacles you see to more effective use of computer and information technology in your courses?

Well there’s always the problem that if your Internet goes down you can’t access or if you’re waiting for a response from the teacher, you can’t really go ahead with your information whereas in class you can just raise your hand and get your answer right away (S2).

Some students stated that the unreliability of the college’s course management system and non-user friendly nature of the discussion board impeded the learning process:

I think Blackboard was a hurdle and can be a hurdle if you rely on it. It’s technology and like any other kind of technology and things can go wrong. I’ve been fortunate, I haven’t had any major type things happen to me but I’ve heard of other faculty that have had things disappear on them and stuff like that and find it frustrating. There are some faculty that don’t even want to use Blackboard. I had one that refused to use it and was giving out his personal email to students and just totally didn’t want to have anything to do with it (S7).

The biggest obstacle I see to the use of computer and information technology in my courses is the tool the college uses (Blackboard), in particular, the “Discussion Board” feature on Blackboard. This feature is not very user-friendly (S3).

One student related how the lack of information technology literacy skills amongst her fellow students was problematic while another suggested the cost of IT equipment is a detriment to the learning process:

Well I know a lot of people in my class are very not computer literate (S6).

Many students cannot afford to buy laptops or tower computers (S10).

Some students do not perceive any obstacles in the use of IT in support of their learning:
For me personally, I don’t see any major obstacles (S4).

I never had that kind of tech problems when I’m online, never and if I did everybody else was having the same problem and by the time I actually got around to doing the assignment it was fixed (S11).

Question 10

In every class, some students tend to excel academically. Please identify those student qualities, which you believe are necessary for students to possess in order to be successful online learners.

The answers to this question were consistent between all students. The majority of students relayed that managing your time, self-motivation and self-discipline are student qualities necessary to be a successful online learner. Below is a sampling of thoughts from the students:

For successful online definitely they’ve got to manage their time. They’ve got to actually do the reading so when they say do this, do this, do that, write this quiz, you’ve got to do exactly that, read this news article, read these chapters of the text then do the quiz. You’ll get some people will try to fire up the quiz and in those 20 minutes they try to skip through the readings to get the answers. It doesn’t work. Because you’re working at home and you don’t have someone there or don’t be here at this time or this or that, unless they’re self motivated they’re not going to get it (S1).

Well online you definitely have to be organized because there is nobody there to remind you every week to remind you every week that there’s something due, it just it needs to be done. You also need time management skills (S2).

If you’re not disciplined then you’re not going to be on time and to be on top of what you’re supposed to be doing to be successful (S7).

I wonder if maybe some people don’t put as much into effort into it because they don’t have to go face-to-face with anybody (S9).
Some students mentioned that working online could detract from the learning process:

Hard workers that have good time management skills. Also, they need self control. It is easy to get distracted on a computer (S4).

I don’t like to complicate my life you know like why do I need to be on Twitter and on Face book when one does, they both do the same thing. So I try to look at efficiency when I look at technology and I try not to worry myself with all those bells and whistles that the younger do (7).

A number of students stated that in order to be completely connected to their fellow students, the purchase of hand held devices, such as BlackBerrys, is becoming an integral communication tool for online learners:

I think you need to be really organized since you’re not having someone telling you to do your work or whatever. It’s just you have to do it, also that you need to be checking online a lot. Like I went and got a BlackBerry last year because I just found that people were emailing me so often that to keep on top of things you need to be connected to the Internet all the time (S6).

One student believed that not all Net Generation students possess the online study skills to be successful online students:

I think that a large number of the younger generation don’t have study habits and they’re just trying to be successful but they don’t know how, how to be successful. So you know just to try to say you’ve got to read something more than once to absorb it and those are the skills that you need to learn.

This student posited that if students possess a sophisticated IT skill set and are fluent in the use of digital technologies, then online success is probable:

I don’t think that academic performance really has much to do with being successful with online learning. I think that if you catch on to using technology easily which is pretty much everybody in my generation and younger, then it’s easy to perform academically online. When it comes to academic performance as a whole, that’s a different story, it’s the same old
traditional thing you know you’re going to absorb information easily or you’re not (S14).

**Question 11**

What advice would you give your faculty and college leadership on how to improve your online learning experience? What should they be doing to enhance your learning experience? What should they not be doing?

A number of students complained about the lack of consistency between faculty members on how to the college’s course management system is used to facilitate online learning:

A couple of points would be (for faculty) stay on top of things, just make sure things are organized online as per if you’re going to use it, use it. Some professors will post readings if you want to read ahead. They’ll say next topic is this just so you’re familiar with it when you’re already stepping into class. Other professors won’t even use it; it will sit as a blank page which is useless (S1).

Well each faculty member of course has their own expectation and they don’t realize that the other faculty are not doing it the same way. So a student is very, very confused within the first few months on how to use it. The first thing when I was going to a new class in a new semester, the first thing that I was trying to figure out was how do you use the Blackboard, how does that faculty member use Blackboard so that I can learn how to change my learning to use Blackboard the way that they use it (S14).

I find for some teachers the way that they organize things online, like we’re using Blackboard right, so they’ll throw things in course information that we might have expected to see in assignments or whatever, like different categories. Some teachers are really good about throwing announcements up saying I’ve added notes for the speaker, I’ve added whatever, but then some don’t so you’re just going in and searching through every little category to see
if there’s anything new. You know nothing tells you unless you go to the course and go through every single thing. So I find that a bit time consuming (S6).

It was the (course) and it was embarrassing for one. We had moved to 2007 yes, but in that semester, and I was excited because I thought I was going to be doing the 2007 but we weren’t there yet. We were using 2003 but the world had changed to 2007, so it was quite embarrassing (S7).

To be consistent and that means between faculty members, there needs to be consistency with the way the technology is used and the students should expect that everything is going to be the same when they go from one course to another, when they’re accessing one course from another online that they expect the same type of format. I don’t just mean like format with the software, I’m talking about like where to access the information, how Blackboard is being used specifically, where the information is being put (S14).

This student suggested that some students neither possess the technical skills nor the information technology fluency to function effectively in an online course:

I think there is too much expectation on the students (S14).

This student recommends that the college increase its offerings of hybrid courses, while another suggest offering all courses in both face-to-face and online formats giving students a choice:

Promote hybrid courses to save school resources, so that our tuition can go down, but don't support 100% online course deliveries (S2).

They should be providing more classes online. Especially with the option to do it either way, instead of only having certain classes that are only offered online or only offered in the classroom (S4).
Some students suggested making professional development compulsory for those faculty involved in delivering online learning:

So we need to be perhaps making professional development around online learning, they were calling it hybrid, a compulsory element of orientation. We have quite a long orientation program for our new faculty and part-time faculty so we should make it compulsory and we should be tracking I guess what we’re doing for results (S7).

I would have to say the training of faculty and integrating them into the way new technology will be run. As well, teaching them how to effectively administer the content. I don’t think students are so concerned with the interface at the end of the day as long as they have something where it’s concrete for them to spend more of a kind of thing which they can enter something into as long as it’s just work (S16).

Some students recommend increasing the frequency of virtual office hours or instituting college based faculty office hours to assist and guide those students taking online courses:

One thing I haven’t seen is like; I saw it in another program that I took here a few years ago. It was actually like a chat room type thing. I find that a lot of teachers don’t do like office hours in chat room type thing would be beneficial because then those question that you just want to ask you know you just log on and your teacher will be in that virtual chat room for such and such hours. Like have office hours but online I think would be a lot easier because everyone is always sending emails, they take time to come back and then you’re waiting for an answer. I think that would be a good thing for some teachers to do (S6).

The first thing I would say is there should be office hours for faculty. By office hours I mean at the very least be willing to call them on the phone. I think all online courses have that problem, they’re text based. The professor is not as easy to contact as they could be. But I emphasize highly the whole office hours with the phone number. I’ve never seen that and I think it would
make a huge difference for online learning. Maybe a teleconference number, something like that (S8).

As far as under use, I would say that there’s again, the online office hours, no one uses it ever. Like I don’t even know why they bother putting online office hours there if no one ever, ever uses it, the online chat. That’s something I’ve brought up with some other people too is it just baffles me that they would even have that enabled in Blackboard if nobody uses it (S8).

Many students believed that the course management system is not being utilized to its full potential:

I think we need to embrace it more; we need to make it more real, not just as a repository for information (S7).

I guarantee it goes back a couple of days so if anyone has logged in within the last couple of days you’ll see them and sure enough I’m only the person that’s logged in the last couple of days and that’s the same with any class. The virtual classroom is underutilized by professors and that means it’s unused completely by students (S8).

**Question 12**

A result from the online survey concluded that over half of the respondents reported learning more in a face-to-face setting as opposed to online learning. What are your thoughts?

None of the students were surprised that the majority of respondents to the online questionnaire had more quality learning experiences in the classroom setting when compared to online learning. As discussed in the previous questions, and as validated in this question, the reasons the students cited for the enhanced learning experience in the traditional classroom setting included the ability to seek clarification from faculty / fellow students on course content and the opportunity to network and create study groups which provided the students with a richer a more satisfying learning experience.
I agree with them. It’s easier to ask a question face to face, if you have a problem on a test or a quiz there is almost instant feedback from the professor (S10).

I agree and I think that had more to do with the fact that when you’re in a classroom setting you can actually ask for clarification on content. Whereas when you’re online and you have a question you have to send an email out and the thoughts kind of get lost within time, whereas when you’re in a face-to-face setting you can actually sit down and have group discussion. So I think that real time group discussions would be beneficial if they could happen online because not everybody can go to class, but definitely I would go to class consistently every single day so that I can have those group discussions and have the course content clarified with asking questions basically (S14).

I definitely prefer, and I feel more safe learning in a face-to-face setting, as opposed to online learning (S15).

This student cited the convenience and less academically demanding nature of online learning as a reason why students learn more in a traditional face-to-face environment:

You would learn more in a face-to-face environment, but when you get some students with 25 hours plus in the classroom a week, some of the lesser courses could be brought to online courses. It would make more open classrooms in the school so you could teach other programs and focus more on your major stuff (S1).

Some students suggested that attending face-to-face classes provided fewer distractions when compared to online learning:

Well at least in my program when we’re in class you’re not allowed to be doing anything else. You can’t be going on the Internet, listening to music, you’re focused and you’re kind of forced to be focused. I also find with online courses you don’t really take notes. It’s just kind of okay I’ll read this whereas
if you’re in class you’re writing down what the teacher is saying because there is actually a lecture being presented to you (S2).

Well I guess given what I know about us, yeah. Mind you, in their off time they’re not going to study it, they’re socializing on the computer so maybe that was why person would say they would learn more in the classroom because it’s too distracting to be online with all the other temptations like Face book and everything else (S9).

One student surmised that quality learning will occur in either format provided that faculty are well prepared:

Like I said before I think you could learn in either scenario depending on how you’re set up. If you’re set up for successful outcomes chances are it will happen, but if it’s not then (S7).

Two respondents stated that the lack of standardization on the use of the college’s course management system between faculty is a significant concern among students:

Well with Blackboard having standardized, we actually had this discussion in class three days ago so having everything, each teachers’ web layout would be the same so each tab content would be the same so we would know. Like if we had to find the course schedule there’s a tab that says course schedule, it’s not embedded somewhere else that’s hard to find. Then just standardization I think is the one thing and then if they had, if there needed to be some differences which I don’t see why that would be, there are still particular components which are part of every course (S12).

I don’t really know how they could improve it online so much as other than standardizing Blackboard. I just feel like I learn a lot more when I’m in the class with the professor more often and then doing online stuff on top of that would be fine but it wouldn’t feel like I have as much online stuff to have to retain (S13).
**Question 13**

When asked on the online survey, if given the choice between face-to-face, hybrid or online learning, 11% of the respondents selected solely online. Why is it that only 11% of the students (most of who are members of the Net Generation) would select an online course?

Similar to the responses for the last question, the students overwhelmingly stated that when compared to online learning, face-to-face instruction is the preferred method of learning. Socializing with fellow students and interacting with faculty concerning course content enhanced their learning experience, and hence, are the major reasons why students prefer face-to-face learning.

You’re not really getting out of the house or socializing with anybody. If you are in class you are meeting people, making friends. It also helps making I guess networking connections for the future (S2).

I think that the data is accurate and should be listened to. There will always be people that will go to the classes because that is what works best for the majority of people (S4).

In addition, two students suggest that the college should continue to focus on face-to-face courses that concentrate on hands on and practical training programs, and leave distance, online education to institutions like Athabasca University:

There are some universities you can do in different provinces and you can do them just online but most people aren’t considering that option because they want to be able to at least be in class a few times. I mean Athabasca is one of them you can go through it. Yes, it would be hard to do it strictly online. I think you need to be in class and be able to talk to people. Having a few online courses just strictly online is different (S6)

Like to me they might as well do Athabasca, like there is no why not. I mean I’m at college so that I can have some hands on experience from things that you can’t get at an online lecture and if you want to do Athabasca then do
Athabasca, or do distance education which they still have available here. Like why turn this into distance education that was not the point (S12).

So you got a very great balance and to be honest I learned more from that class (traditional classroom) than I could have learned anywhere else even I know that was actually one of the reasons that made me come to (name of college). I was actually going to go for engineering at (name of university) but I know there was a lot less hands on and I found the experience that I got overall from that class because they mix so many things together, the elements were, it was a really great experience. The online portion of it, not so much, but the actual class fantastic (S17).

This student went to relate how the structure of the face-to-face classroom environment enhanced the learning process:

I mean I’ve taken some courses online like I did high school courses online as well and I find it’s hard to just get motivated to learn all the stuff whereas if you have scheduled time, scheduled classes it’s different because you’re kind of forced to (S6).

One student concluded that his / her colleagues also struggle during the strategic planning process attempting to discern the students’ perception and attitudes about online learning:

I think this is a very important question because even at the management level we’re struggling with this and where like you’re saying the literature is saying that it’s all going to have to be online. We should be careful to find out what are the students actually saying so we’re not jumping the gun and doing what we shouldn’t be doing. So I share that because I have some issues with that too (S7).

These students’ viewpoint accurately summarizes the perception of the majority students who answered this question:

Well that’s because the online experience is to my knowledge, in my opinion and experience and of those I’ve talked to, I don’t think I’ve never met anyone
who truly prefers the online. They’ve all got another reason for taking the online course, whether they don’t have time or it isn’t on location or whether it’s the only way they can get that course. I’ve never seen anyone say I love online courses, this is the way of the future, this is what I want. It’s just I’m taking it because and then give a reason; you know it’s never because there are so many great online courses that they prefer (S8).

Well, in my experience hybrid courses haven’t worked out too well just because most of the semester for example have two lectures that are hybrid. They also have a complementary 3-hour lab. They hybrid portion is just kind of quizzes and it’s not really anything that’s beneficial to our learning. It’s just kind of an extra hour that they’re trying to fill basically (S2).

I don’t like hybrid courses myself. I found most of the time I never did the online work. I had too much to do for other courses (S10).

I prefer face-to-face instruction, then solely online instruction, and lastly, hybrid. The hybrid class that I am currently enrolled in is overwhelming with all the activities, and the amount of paper to print the activities is ridiculous. Why can’t we just take the final hour in class and do the activities together? (S15).

This student suggested that the stress of self-discipline and self-direction associated with online learning was something many of her fellow students did not feel prepared for, and as such, prefer face-to-face learning:

Convenience is another reason that I would prefer online learning, however, the stress of self-discipline may be another factor why some students would prefer face-to-face learning. The professor’s experience can be indicated online as well, however, the emotional component may be lacking (S15).
Chapter Summary

The overwhelming majority of students were engaged and passionate in their answers to the semi-structured interview process. The depth of their insightful and comprehensive responses indicates an enthusiasm and keen interest to discuss and improve the quality of online learning delivery at this college. As the interview process progressed, a number of interesting and compelling themes emerged, including some that were not within the original scope of this research. This section briefly summarizes the research findings and these findings are discussed and analyzed in greater depth in Chapter Five.

Overall, the students had a positive view that the use of educational technologies and course management systems are integral components of the teaching and learning process. The students repeatedly discussed that when used properly, the course management system provided a means of access to and organization of course material. According to the students, access to and organization of course information through the course management system, whether in support of an online course or traditional face-to-face learning, not only helped, but also enhanced the teaching and learning process. The ability to organize course reading material and having quick and ready access to marks was a motivating factor for most students. The students were very emphatic that the use of a course management system was no longer an option, but rather an expected practice of faculty, including those practicing in the traditional classroom. The following comment by one student accurately summarizes the thoughts of many of the other interviewees concerning the use of a course management system in support of learning: “I find that to be an essential learning tool. I wouldn’t even call that optional to be honest” (S16).

The under and inconsistent use of the college’s course management system by faculty proved to be a significant detractor from the student learning experience. Some students complained that this misuse of the course management system impeded the learning experience. Frustration was expressed at those faculty who either did not have the technical skill set to use effectively the course management system in support of course instruction, or those who simply chose not to use it.

Contrary to much of the information found in the literature, which suggest that the Net Generation student arrives at the postsecondary level with sophisticated information
technology skill set, was not corroborated by this study. In fact, the data gathered in this study suggest that many college students only possess sufficient skill sets to operate core and basic programs. The students also revealed that although technology may be embedded in many facets of their lives, including education, their use of information technology, proficiency skills in manipulating technology, and learning preferences are far from uniform.

Unlike much of the information in the literature concerning the learning preferences of the Net Generation, the students who participated in this study did not arrive at college with unique or preferred learning styles that were technology dependant or driven. If given the choice between face-to-face classroom instruction, hybrid or solely online courses, the vast majority of students would select face-to-face / hybrid instruction. The students were quick to modify this selection and add that a moderate to extensive amount of technology should be used to augment classroom instruction.

In addition to this summary, the following themes also emerged during the semi-structured interviews and will be further addressed and discussed in the Chapter Five:

1. the college’s course management system is a utility and not an option;
2. working online may be distracting to many Net Generation students which detracts from the learning experience;
3. if lecture notes were posted online, the majority of students would continue to attend class;
4. there is mixed reaction from the students on the necessity of their college increasing online course offerings; and
5. augmented learning is a form of education delivery that is appealing to many of the students interviewed.
Chapter Five:
Analysis of Research Findings,
Conclusions and Implications

This chapter is divided into four sections. Utilizing the five research questions as a framework, section 1 analyzes and discusses the research findings, comparing the findings to the information presented in the literature review; section 2 outlines the conclusions derived from the data analysis and section 3 discusses the potential implications of the conclusion on the Ontario college sector. The last section contains the researcher’s final thoughts.

The aim of this chapter is to analyze and explain the results as presented in the previous chapter. This is accomplished by analyzing the data generated by the online questionnaire and the semi-structured interviews. In this mixed-methods research study, the quantitative and qualitative findings both supported and validated each other, which was critical in that the purpose of this study was to gain a deeper understanding and appreciation of the student experience, perception and attitudes of online learning at this one Ontario college. This chapter ends with a discussion on the conclusions and implications of this study at this one Ontario college, and to a lesser extent, its potential impact on the Ontario college sector. It should be noted that the research findings are specific only to the students who participated in this study, and that the findings can not be generalized or extrapolated beyond the participants.

The main purpose of this study was to gain insights on the student perceptions, experiences and attitudes of online learning at one Ontario college. This study collected data utilizing a mixed-methods study design, consisting of a comprehensive online questionnaire, based on Chickering and Gamson’s (1987) Seven Principles for Good Practice in Undergraduate Education, complemented with semi-structured interviews of 16 college students. The research questions posed in this study are:

1. How do students perceive their online learning experience within a college program?

2. What factors / characteristics of online learning enhance the learning experience as perceived by these students?
3. What factors / characteristics of online learning discourage or interfere with the learning experience as perceived by these students?

4. What student qualities are important in successfully completing an online course? and

5. Do Students feel that online learning offers a challenging academic experience when compared with traditional instruction?

Analysis of Research Findings

The analysis of the research findings is presented using the five research questions outlined in Chapter 1.

Research Question 1

How do students’ perceive their online learning experience within a college program?

The data for this question were collected using an online questionnaire and semi-structured interviews. The researcher developed the online questionnaire based upon Bangert’s (2008) Student Evaluation of Online Teaching Effectiveness (SEOTE) instrument. This SEOTE was developed and predicated on Chickering and Gamson’s Seven Principle for Good Practice in Undergraduate Education (Bangert, 2004, 2006, 2008). In Part B of the online questionnaire, seven sections, each relating to one of the seven Chickering and Gamson’s seven principles, were posed to determine and analyze how the students perceive their online learning experience at this Ontario college. A total of 29 questions, all linked to Chickering and Gamson’s principles were presented to the students. The results for each principle will be briefly discussed, followed by a comparison of how the data contrast and compare with the information found in the literature review.

Principle 1: Encourages student – faculty contact.

Overall, the students were satisfied with the amount of faculty to student contact during online courses. The majority of the respondents, 68%,
agreed that faculty communicated effectively during online courses and 69.5% agreed that the amount of time spent with faculty was satisfactory.

Principle 2: Encourages cooperation among students.
The results related to this principle suggest that the respondents were slightly more than satisfied with the quality of interaction between students.

Principle 3: Encourages active learning
The responses to this section indicate that the respondents were satisfied with the level of active learning generated by their online course(s). Of note, 58.2% of the respondents reported contentment with the problem-solving activities associated with their online learning and a strong majority of respondents indicated that the online courses at this Ontario college encouraged students to take responsibility for their own learning process.

Principle 4: Faculty gives prompt feedback
In general the respondents reported satisfaction concerning faculty feedback in relation to course assignments. A majority of the respondents described faculty feedback as supportive.

Principle 5: Emphasizes time on task
An overwhelming number of respondents reported being very satisfied with the amount of time spent completing their online courses at this Ontario college.

Principle 6: Communicates high expectations
The students responded favourably to questions relating to the faculty’s ability to communicate high expectations through online learning. Of note, 71.4% of the respondents reported that course assignments were at the appropriate difficulty level.
Principle 7: Respects diverse talents and ways of learning

The students reported being slightly dissatisfied in not having sufficient choices in assignments to demonstrate learning of critical course teaching points.

Based on these results from the online survey, which focused on soliciting students’ perception of online learning through Chickering and Gamson’s framework, the students were generally satisfied with their online learning experience. Later on in the survey, as highlighted in Figure 44 (p. 138), when asked how satisfied they were with their online learning experience, 63.5% reported being satisfied. Although the percentage of students expressing satisfaction with their online courses is lower in this study than in the studies discussed at the conclusion of Chapter 2, in general, the results of this section of the online survey are consistent with the findings of Young and Norgard (2006), and O’Malley and McCraw (1999), Wyatt (2005), Bangert (2004) which conclude that students are satisfied with their online learning experience. The factors which increased and decreased student satisfaction while taking online courses will be discussed in greater detail later in this chapter.

During the semi-structured interviews, when asked how satisfied they have been with their online learning experience, the students’ responses were not as consistent. Based on the findings from the semi-structured interviews, the students were marginally satisfied with online learning. The prominent complaint that detracted from their learning experience focused on the inconsistent use of the course management system by faculty. Many students expressed frustration in having to “relearn” the college’s course management system for each online / face-to-face course since faculty did follow a predictable method in managing and organizing course material. In addition, the lack of technical skill and knowledge exhibited by some faculty made learning a challenging experience which hindered the learning process. The following comments from two students summarize what was repeatedly revealed during the semi-structured interviews:

It really depended on the instructor who is using it. If they had applied it properly, if it’s well organized (S1).
When asked to rate the quality of his online learning experience on a scale of 1 through 10 this student responded as follows:

Probably a six or a seven, mid-range. What I’ve just noticed, the online learning experience has always been as much as the instructor has put into it. If they’ve kept it organized and they’ve kept it up to date then it has gone really well, but if they’ve relied on what others have done and not really checked it, it has always been really poor (S1).

**Summary**

The results of the online survey, as they relate to student satisfaction with online learning, are similar to the data discussed in the Braun (2008), Wyatt, (2005); Young and Norgard (2006) and Salaway and Borreson-Caruso (2008) studies. These studies also conducted online surveys on student populations soliciting postsecondary student satisfaction of their online learning experience. All these studies conclude that students were generally content and satisfied with their online courses citing convenience of and control over their learning process as a contributing factor.

However, as discussed, in terms of satisfaction with their online learning experience, there was an inconsistency between the responses received from the online questionnaire and the responses obtained during the semi-structured interviews. The reason for this inconsistency appears based in the *context* in which the questions on online satisfaction were solicited.

When the questions about online course satisfaction are asked in a strictly online context, the students are content with their online learning experience not only in this study, but also in those listed above. A theme often mentioned during the online questionnaire and semi-structured interviews was that some Net Generation students perceived online learning not to be as academically challenging as face-to-face learning, and that they appreciated the convenience, control and flexibility of their learning that online learning provided, and the connectedness it offered between students. As will be discussed in greater detail later in this chapter, the reasons why some Net Generation students find online learning less academically challenging may have little to do with quality of instruction or the course
management system, but rather, may be dependent on whether the Net Generation student possesses the maturity and necessary study skills needed for online student academic success.

However, when students are asked to compare their levels of satisfaction and perceived learning quality between online learning and face-to-face learning during the semi-structured interviews, the majority consensus is that face-to-face learning offers the opportunity for a richer, more vibrant learning environment, where students have the potential to learn more, when compared to online learning. During the semi-structured interviews, the vast majority of the students stated that if given the choice between taking a face-to-face, hybrid, or solely online course, they would select the face-to-face format. The main reason in selecting the face-to-face course over the other two options was that the physical contact and interaction between faculty and students in face-to-face courses provides the potential for deeper and better understanding of the course material. This result is consistent with the data gleaned from the online questionnaire where the students similarly answered a variant of this question. The students were adamant that face-to-face instruction, unlike online learning, allows the student ready and immediate physical contact and access to faculty and fellow students, which are perceived to be critical factors in a quality learning experience.

Based on the results of this study, it appears that the students’ desire for flexibility and convenience outweigh the apparent need to engage and interact with both faculty and fellow students. During the semi-structured interviews, a number of students mentioned that they like the option of online learning since this learning format is easier to integrate into their busy academic / social schedules, and is more convenient than a face-to-face course, which is more structured and requires class attendance.

The next two research questions address the benefits and challenges, as perceived by the students, of online learning and its impact on the quality of their learning experience.

**Research Question 2**

What factors / characteristics of online learning enhance the learning experience as perceived by these students?
When asked in the online survey “Which benefit from using educational technology was most valuable”? 30.8% responded “convenience” as most valuable factor, followed by “saved me time” (27.4%), 20.1% of the students reported that “improved my learning” enhanced their learning experience and 18.4% of the students stated that technology “helped me manage my class activities”. When asked if the Internet makes completing my course activities more convenient, 83.1% concurred with this statement.

During the semi-structured interviews, a number of students reported enjoying the connectedness online group work had to offer. The ability to correspond, research and send assignments and course related information via the Internet, proved beneficial to the online learning experience.

During the interviews, the students added much about the convenience that information technology offers. A number of students discussed their ability to work at their own pace as beneficial to the learning experience. One student believed that her/his time was better spent completing online courses, rather than “wasting your time sitting class” (S6) where students ask a lot of questions. Others appreciated the option of conducting their studies anytime during the day.

Similar to Lopes’ findings (2008), an emergent theme from the student interviews suggested that a valuable benefit of a course management system was unfettered access to information anywhere and anytime, and improved organization of course related documents and material. As a follow up question, and inspired by Lopes’ (2008) study, students were asked if course management systems were a utility or an option. Most students stated that the use of a course management system was an integral part of the teaching and learning process, not only for online learning, but also to complement face-to-face instruction.

Students describe the course management system as a “scheduler” which clearly outlined not only the subject matter to be discussed, but also listed and provided ready access to the articles and learning material to be discussed. One student commented “[W]ith Blackboard you have fewer questions to ask to know what’s going to happen during the course. It’s a lot clearer” (S8). As one student describes, the course management system is now an essential and integral component of education delivery for the 21st century student.
The flexibility online courses offered was another benefit perceived by students. The ability to organize and schedule online coursework/assignments, around face-to-face courses, was popular amongst most respondents, although not always for the right academic reasons. Some Net Generation students suggested that the less demanding nature of online courses allowed them to dedicate more time to those core courses that were typically offered in the face-to-face format. For some Net Generation students, online courses were less important than their core courses and many Net Generation students gave the researcher the distinct impression that the quality of online learning was rated and assessed as second tier learning. The students tended to give their core courses higher priority, dedicating their strongest efforts in completing those courses, and whenever time permitted, the online course work was then addressed. As will be discussed later in this chapter, the reasons why Net Generation interviewees perceive online learning to be less academically demanding than classroom based courses may have little do with the quality of online instruction or mode of delivery, but rather, some Net Generation students may not have the maturity, motivation and self-direction to be able to function as effective online learners.

Virtually all the comments made by students relating to the conveniences of online mirror those found in the literature review and those studies reviewed in the theoretical section of this study. The reasons the students cited in this study as to the benefits of taking online courses are consistent with the studies reviewed in this study. The O’Malley and McCraw (1999) study concludes that online courses offered students an advantage, in that online courses fit better with students’ schedules and saved time, which allowed students to take more courses. A study by Chen, Gonyea, and Kuh (2007) concluded that 96% of their respondents cited the convenient schedule of course offerings as the major factor in enrolling into online courses.

The Young and Norgard (2006) study similarly concluded that the primary reason students select online learning courses is for the convenience factor. The students in this study often referred to the flexibility offered by online programming as a benefit of online learning. Young and Norgard conclude that “the most common reason students take online courses is convenience. Students reported that their family and work obligations as well as their distance from campus made online learning a convenient option and one that would allow them the flexibility to continue with their education in the midst of their hectic lives”
(p. 113). The convenience factor is consistent with and corroborated by the Braun (2008) and Wyatt (2005) studies which are both reviewed in the theoretical section of this study. Similar to the data analysis in this study, Braun (2008) and Wyatt’s (2005) research concludes that the desire for flexibility outweighed any need for peer and faculty interaction as one of the main driving forces behind enrollment in an online course.

**Research Question 3**

What factors / characteristics of online learning discourage or interfere with the learning experience as perceived by these students.

When asked in the online survey “Which factors / characteristics of online learning discouraged or interfered with the learning experience?” the students responded as follows: 37.5% selected technical problems, 22.7% stated that reduced time with faculty discouraged the learning process, 22.7% had difficulty accessing / understanding course material, and 17% reported that reduced time with students interfered with the learning experience.

A common complaint reported during the interviews was the lack of competent and timely technical support when information technology issues arose. Students were frustrated when the course management system’s web mail was disrupted. This caused communication challenges for some students, especially those students who were working as an online group and those students wishing to send assignments.

Feeling isolated and detached from both faculty and fellow students was a repetitive concern raised by students during the interviews. Many of the students expressed concern that this lack of physical contact between faculty and students negatively impacted the teaching and learning experience. A majority of the students participating in the semi-structured interviews reported that face-to-face contact improved learning and motivated many of the students to attend class. Some of the students view the classroom setting within a learning environment as a means of socialization, which positively impacted on the quality of their learning experience. The students were emphatic in stressing this form of socialization contributed to students feeling connected and integrated into their learning process which positively contributes to their academic retention and success.
Numerous studies, particularly those concerned with student development theories, conclude that increased frequency of faculty to student and student to student interaction, both inside and external to the campus, the greater the amount of student learning and personal development (Astin, 1999). Astin postulates that frequent interaction and contact with faculty “is more strongly related to satisfaction with college than any other type of involvement or, indeed, any other student or institutional characteristics. Students who interact frequently with faculty members are more likely than other students to express satisfaction with all aspects of their institutional experience…including the intellectual environment” (p. 525). Tinto (1997, p. 600) concurs with Astin’s assessment “We know that involvement matters. As numerous researchers have pointed out the greater the students’ involvement or integration in the life of the college the greater the likelihood that they will persist. We also know that involvement influences learning. Generally speaking, the greater the students’ involvement in the life of the college, especially its academic life, the greater the acquisition of knowledge…students who report higher levels of contact with peers and faculty also demonstrate higher levels of learning gain over the course of their college stay”.

The criticality of student engagement, with both faculty and students in the face-to-face context, as discussed by Astin (1999) and Tinto (1997) were themes often mentioned by students during the semi-structured interviews. The students commented on how face-to-face interaction with faculty and students not only improved the quality of their learning experience, but also increased academic achievement. Findings from the National Survey of Student Engagement (NSSE) suggest that “[I]nvolve[ment] in educationally purposeful activities, such as interacting with faculty members and working with peers on projects inside and outside of class, has positive effects on grades and increases the odds that students will return to college for a second year” (NSSE, 2006).

Faculty over and under use of the college’s course management system was reported as detracting from the learning experience. Although also experienced during face-to-face courses, some students were frustrated that some course sites contained dated material, and when questioned on this oversight by one student, the faculty member ignored the question. Others expressed concern that some faculty members either resisted and / or were technically challenged when instructing an online course which prevented the establishment of a meaningful and productive learning environment. Some students felt that only faculty who
are conversant and confident in the use of educational technologies should be instructing online courses. A student also suggested that the college should ensure that adequate support systems and professional development programs are in place for those faculty members who are unsure of how to use effectively the college’s course management system and its associated educational technology tools.

Inconsistent use of the college’s course management system between faculty members did not add value to the student’s learning experience. Some students expressed frustration of having to figure out how each faculty member intended to use the course management system in support of the online course. The students reiterated that more consistent use of the course management system between courses would significantly improve the quality of learning and contribute to student academic success.

The findings in this study mirror research by Swan et al. (2000) which concludes that students were most satisfied with online programming when the structure and design of the course material was consistent from course to course and when the course material was easy to navigate within the course management system.

**Research Question 4**

What student qualities are important in successfully completing an online course?

The results of the online survey indicated that successful online students should be: able to work independently 93.4%, highly motivated 84.5%, self-disciplined 85.8%, able to structure time and surroundings 87.2%, able to prioritize workload 87.3%, and comfortable communicating ideas through writing 83.5%.

The data obtained from semi-structured interviews supported the findings of the online questionnaire. The majority of students stated that managing your time, self-motivation and self-discipline is essential for successful online learning. One student claimed, “Well online you definitely have to be organized because there is nobody there to remind you every week that there’s something due, it just needs to be done. You also need time management skills”. Another student stated, “If you’re not disciplined, then you’re not going to be on time and to be on top of what you’re supposed to be doing to be successful”.
Research Question 5

Do students feel that online learning offers a challenging academic experience when compared with traditional instruction?

Before analyzing the data gathered for this question from the online questionnaire and semi-structured interviews, the researcher will briefly review the prevailing views and related research regarding the learning style(s) and preferences of the Net Generation. This summary will be used as a frame of reference when interpreting the data obtained in this study.

The early literature describing and explaining the characteristics of the Net Generation is replete with comments and statements suggesting that this generation of students learn differently from previous generations. Prensky (2001, 2007), Frand (2000) and Tapscott (1998) posit that because the Net Generation grew up in era surrounded by digital technologies, they have a unique learning style and expect faculty to use educational technologies extensively in the delivery of postsecondary education. Prensky (2007) concludes that the Net Generation student “clamors” for the use of educational technologies in support of the learning process. Bennett et al. (2008, p. 776) claim that writers such as Prensky, Frand and Tapscott believe that “[I]mmersion in this technology-rich culture is said to influence the skills and interests of the digital natives in ways significant for education. It is asserted, for example, that digital natives learn differently compared with past generations of students…Commentators claim these characteristics raise fundamental questions about whether education is equipped to meet the needs of this new cohort of students”.

When asked to “compare how academically demanding your online courses have been when compared to traditional classroom courses” 31.2% perceived that online courses were as academically demanding as face-to-face courses. Almost a quarter of the respondents (24.7%) believed online learning was slightly more demanding when compared to face-to-face learning, while 26.5% believed slightly less.

Unlike the results obtained from the online questionnaire, where almost 50% of the students assessed online learning to be as demanding or more challenging than face-to-face instruction, the majority of the students participating in the interviews stated that traditional face-to-face instruction is more demanding. An emerging theme from reviews of the
interview transcripts suggests that the students believe that online learning courses do not provide the same quality learning opportunities that are typically generated, fostered and supported in the face-to-face classroom environment. The students emphatically stated that a quality learning experience is one in which there is significant and meaningful interaction between faculty and student and between students. Many of the students noted that while taking online courses, they miss the socialization that typically occurs within and external to the classroom setting. The students were unequivocal in suggesting that not only does the social aspect of face-to-face classroom instruction improve learning, it also encourages and motivates them to become more engaged in their learning process, which ultimately leads to quality teaching and learning opportunities. The following paragraphs will compare and contrast the results of the data analysis from this study to those discussed in the literature review.

Young and Norgard’s study concludes that 58% of the respondents stated that they learned more in face-to-face courses than in online courses. In contrast, the study by Braun (2008) concludes that the majority of respondents believed that the quality of online instruction was similar to that of face-to-face instruction. The Braun study also concludes that almost three-quarters of the respondents felt that online courses were much more or slightly more demanding than traditional instruction. Braun’s data analysis also reveals that the students’ desire for convenience and flexibility outweighs the apparent needs for face-to-face interaction between faculty and student.

Wyatt (2006) asked a random sampling of postsecondary students, who had completed both online and traditional courses at a mid-western university, to complete a questionnaire that measured their opinions of online learning. Unlike the findings in my research, Wyatt concludes that students find online courses more academically demanding than those offered in the traditional setting, and that the respondents positively viewed the “heightened academic demands” of online learning. However, Wyatt (2005, p. 467) qualified his findings cautioning that “[T]he results of this study support the belief that online instruction provides a quality and challenging academic experience to select students and is a viable way of delivering university-level coursework to them”.

Summary

As discussed in the previous section, the data analysis of the quantitative and qualitative data generated by this study both confirmed and, some cases, opposed the results of some of the studies and commentary presented in the literature review. The data obtained during this mixed-methods study provided intriguing and unexpected answers to the research questions. The findings of this study clearly suggest that the results of the data must be viewed in context. When discussing student satisfaction with online learning, this study concluded that the students were satisfied with the online programming offered at this college. However, it is critical to note that the satisfaction of online learning at this college must be viewed through the context of the convenience and flexibility offered by taking online courses.

This desire for flexibility and convenience that online learning offers appears to outweigh the apparent need and preference for face-to-face interaction between student and faculty and between students. This conclusion is similar to the research results discussed in Braun’s (2008), Maltby and Whittle’s (2000) and Smith, Salaway, & Borreson-Caruso’s (2009) studies. When viewed through the context of quality learning experiences and engaged learning, the students preferred face-to-face learning. As such, if given the choice, and all factors being equal, the vast majority of the students would choose a face-to-face learning over solely online courses.

When online learning is compared to traditional face-to-face learning, the students clearly illustrated that traditional classroom learning offers the potential for a richer, more meaningful learning experience, and if given the choice, an overwhelmingly majority of students, would prefer to select either hybrid or traditional face-to-face instruction. The primary reason for this preference is the ability to interact with both faculty and students, which creates opportunities for a potentially more vibrant and engaging learning environment.

The following sections discuss the conclusions as developed from data analysis, and the implications and impact these conclusions may have on the Ontario community college sector.
Conclusions

The purpose of this study was to research, document and understand the convenience sample of student experience, perceptions and attitudes of online learning at one Ontario college and how this interaction contributes to their learning. This study aimed to determine, from the college student perspective, how and why online learning might enhance or interfere with the learning process.

This study collected data utilizing a mixed-methods study design, consisting of a comprehensive online questionnaire, based on Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education*, complemented with semi-structured interviews of 16 college students. As with all mixed-methods studies, triangulating, corroborating and contrasting the data sets from the quantitative and qualitative methods proved insightful and valuable when developing conclusions and implications from this research. Creswell and Plano-Clark (2007, p. 87) explains, “The rationale for this approach is that the quantitative data and their subsequent analysis provide a general understanding of the research problem. The qualitative data and their analysis refine and explain those statistical results by exploring the participant’s views in more depth”.

Since learning is an individualized, complex and interconnected process, influenced by numerous variables, including the context and environmental setting in which the learning occurs, the researcher made no attempts to control the intricate variables associated with the learning process. The conclusions derived from this study apply only to those students who participated in the online survey and semi-structured interviews and the findings should not be extrapolated or extend beyond the participants. The following conclusions are derived from the data analysis of this mixed-methods study:

**Student Information Technology Literacy Skills**

A review of the literature suggests that the Net Generation is fluent and very comfortable using digital technologies in all facets of their lives, including education. The Net Generation is described as growing up in digital world inundated with technology all interconnected in a networked world where technology is not a novelty, but rather, a staple in everyday life (Annetta et al., 2008). Some of the literature posits that Net Generation students
possess highly developed information technology skills and are at ease in manipulating numerous digital technologies for personal, social and educational purposes. Net Generation students are often characterized as information technology fluent, ably navigating the Internet for information. Barnes, Marateo, and Pixy-Ferris concur with this characterization (2007, p. 1) “This generation is unique in that it is the first to grow up with digital and cyber technologies. Not only are Net Geners acculturated to the use of technology, they are saturated with it”.

This generation of tech savvy students is described as having certain values and behaviors that reflect an “information-age mindset” (Frands, 2000). A unique skill set that accompanies this mindset is the ability to operate various types of computer applications, without much fear or trepidation (Prensky, 2001, 2009). Prensky (2001) refers to the Net Generation as “digital natives” since they are “native speakers” of the digital language that includes social websites, computers, video games and the Internet. Conversely, Prensky refers to those born before the Net Generation, which includes most faculty, as “digital immigrants”. According to Prensky (2001), “digital immigrants” lack fluency in using digital technologies in support or education and frequently do not poses the necessary information technology skill sets effectively use 21st century technology.

The results of this study do not support the notion that all Net Generation students has a sophisticated grasp on how to use complex computer applications, or that this generation of students are uniformly fluent in the use of information technology in support of their learning.

In the online questionnaire, 29.5% of the respondents were not very skilled or not at all skilled using the college’s library website in support of their learning. When asked to assess their skills in navigating the Internet to search effectively and efficiently for information, 20% of the respondents reported possessing very little skill or being only fairly skilled. When asked about their evaluation skills in assessing the credibility of online sources of information, 10.3% of the respondents reported being not at all skilled or not very skilled. Some 40% of the students assessed their skill in using graphics software as not at all skilled or not very skilled. When asked to rate their skill level in using spreadsheets in support of their learning, 23.9% reported not at all skilled or not very skilled.
The data obtained during the semi-structured interviews similarly does not support the prevailing view in the literature that the Net Generation uniformly possesses a sophisticated information technology skill set. Indeed, the lack of a uniform sophisticated skill set was a common theme that emerged from the data analysis. One student reports that not all her/his Net Generation classmates are as fluent in the use of information technology applications: “For the most, like for familiar programs, everything I think is fine. We all know how to use the ones that we still have used since high school but new programs we still have to be taught same as we had to learn the other programs (S16)”.

Another adds “Often I have to help my friends in online navigation as well as with things like computer navigation so when it comes to networking, the computer networks, often I have to help out my friends with online networking and college networks, that type of thing (S14)”.

Similar to the results of this study, the research by Kennedy et al. (2008, p. 110) conclude that “students are comfortable with a core set of technologies, but less comfortable with specialized technologies”.

Although the college in this study offers students information technology support, the perceived digital literacy of their incoming students may not be as fluent and comfortable in the use digital technologies to support their learning as portrayed by the literature. As such, Ontario colleges may consider, as part of their long range planning, increasing both financial and human resources to augment current programs designed to assist students on how to use more effectively educational technologies and associated programs.

### The learning preferences of the Net Generation

Much of the literature describing the learning characteristics and learning preferences of the Net Generation are based on two assumptions:

1. Young people of the digital native generation possess sophisticated knowledge of and skills with information technology;

2. As a result of their upbringing and experiences with technology, digital natives have particular learning preferences or styles that differ from earlier generations of students (Bennett et al., 2008, p. 777).
Many authors and commentators share this viewpoint, suggesting that the Net Generation has distinctive ways of thinking and communicating, and a preferred learning style (Barnes et al., 2007; Oblinger, 2003; Oblinger & Oblinger, 2005; Tapscott, 1998). The implication is that faculty and postsecondary institutions must adapt and radically transform their teaching and learning pedagogies to support the new learning preferences of the Net Generation. Frand (2000) posits that the learning preferences of the Net Generation are driving a new paradigm for teaching and learning at the post-secondary level. Some argue that without such transformation, the postsecondary institution, as currently configured, runs the risk of failing the current and future generations of students, and also, may become obsolete and irrelevant (Barone, 2005; Drucker, 1994). Bennett et al., (2008), however, conclude that these assumptions are based on weak empirical and theoretical foundations and posit that the Net Generation neither have a preferred, homogenous learning style nor do they desire increased information technology use in the classroom. According to these authors, there is little evidence to suggest the Net Generation are dissatisfied with, or alienated from, traditional classroom teaching practices. The authors note that their analysis of the literature surrounding digital natives demonstrates a mismatch between the confidence by which some commentators make their claims and the research / evidence of such claims.

A recent longitudinal study by the Centre for Information Behaviour and the Evaluation of Research (2008) at University College London concludes that the Net or “Google Generation” student is not the most web-literate. This study goes on to posit that although this generation of student demonstrates apparent ease and familiarity with digital technologies, they rely heavily on search engines, view rather than read and do not have the analytical and critical skills to assess the veracity or credibility of the information they locate on the web. Siemens and Tittenberger (2009) and Kennedy et al. (2008) similarly conclude that although the younger learners tend to use more technology in their day-to-day lives, there is no empirical evidence to suggest that the Net Generation learn differently based on generational distinctions.

The data analyzed in this study support the notion that Net Generation students do not have a uniform, homogenous learning style that prefers extensive use of educational technology in support of their learning. In fact, this study revealed that the overwhelming majority of students, if given the choice, prefer the learning quality that can be achieved in
face-to-face learning when compared to online learning. The researcher did not uncover any
data or trends, from either the online questionnaire or the semi-structured interviews, that Net
Generation students had a uniform, homogenous learning preference as suggested by some
the literature. This study did not uncover any data that would suggest disappointment with
how information is transmitted and discussed in the traditional classroom environment. The
study by Nichols (2009, p. 10), that examined objective research on the Net Generation,
similarly concluded that:

1. there is no uniform sense of “frustration” with formal education being expressed
   by young students; and
2. particular generations are marked more by heterogeneous complexities than
   homogenous generalities.

When asked on the online questionnaire, if given a choice between selecting face-to-
face, hybrid or a solely online course, 11% of the students chose solely online. Since these
data significantly differed from the information the researcher gleaned from the literature
review, this anomaly was a predominant line of enquiry during the semi-structured
interviews to determine the reasons and rationale behind the apparent overwhelming
preference of face-to-face learning and hybrid learning when compared to solely online
courses.

*The preference for face-to-face learning*

As discussed, the results of this study are best understood when analyzed in context.
The context being that the convenience, flexibility, and self-paced style of online learning
counterbalance the apparent preference for faculty and peer-to-peer interaction offered by
face-to-face learning. The students in this study enjoyed having the option of selecting online
courses, as they believed this choice gave them some control their learning process,
something they do not typically have with face-to-face instruction. During the semi-
structured interviews, the majority of students were very emphatic on the primacy of face-to-
face learning and how the physical interaction and contact between faculty and students
enhanced the learning experience of classroom instruction. Regardless of whether the student
assessed online learning as more or less demanding than face-to-face learning, the majority
of the students were in agreement that online courses did not provide similar, quality learning opportunities that are typically found in face-to-face instruction. Some students lamented that online courses tend not to link and integrate the various teaching points within a course, something they usually find in campus-based courses. Instead, assignments and course readings are perceived to be isolated and unconnected pieces of unrelated information.

Some Net Generation students in this study stated that online courses were less academically demanding than face-to-face instruction. These students stated that the less demanding expectations of their online courses, which were mostly elective courses, allowed them to dedicate more study time to their campus based core courses. The mature students, and those with a university background, generalized that their younger Net Generation classmates tend not to place as much effort into, and tend not to be committed, to their online courses.

The mature students in this study tended to view online learning as a credible form of education delivery citing that they possessed the self-discipline and motivation to manage the less structured nature of online learning. As such, an emerging theme from a review of the interview transcripts suggests that Net Generation students may find online courses not as challenging as students from previous generations because they likely do not have the maturity, self-direction and self-discipline to take advantage of the learning opportunities presented in the less structured environment of online learning. The following studies discuss and amplify this point.

The studies by Hardy and Boaz (1997) and Dibiase (2000) posit that mature students typically have the competencies and characteristics that are associated with online student success. Dibiase (2000, p. 133) explains that mature online learners are different from today’s generation of online student “They have already come of age. Most are immersed in professions. They have well-defined goals and are highly motivated. They need a different kind of education from that which is provided to undergraduates and a different kind of relationship with educators”. Similarly, the fifth annual McGraw-Hill Ryerson report Technology and Student Success in Higher Education (2006) notes that some students lack the academic self-discipline to excel as online learning students. A faculty member, interviewed in the McGraw-Hill Ryerson report, states “Most students lack the discipline to
complete courses without having a classroom to report to…I know that technology will blossom within the next five years but I doubt that students will be able to be self-directed enough to do totally online learning at their own pace” (p. 31).

The overarching and dominant theme that emerged from the interviews undertaken for this thesis was that face-to-face learning provided the potential for a more enriching and rewarding learning experience. As one Net Generation student from this study explains:

I don’t think I’ve never met anyone who truly prefers the online. They’ve all got another reason for taking the online course, whether they don’t have time or it isn’t on location or whether it’s the only way they can get that course. I’ve never seen anyone say I love online courses, this is the way of the future, and this is what I want. It’s just I’m taking it because and then give a reason; you know it’s never because there are so many great online courses that they prefer (S8).

The face-to-face learning preference, as found in this study, complements research by Tinto (1997) and Astin (1999). Both researchers conclude that increased physical contact between faculty and student and between students is critical to enhance academic success. Tinto (1997, p. 600) explains why the criticality of the social interaction within the classroom and the resulting engagement improves learning:

the greater the students’ involvement in the life of the college, especially its academic life, the greater the acquisition of knowledge…this is particularly true of student contact with faculty…students who report higher levels of contact with peers and faculty also demonstrate higher levels of learning gain over the course of their stay in college.

Tinto concludes that within the classroom structure, where the confluence of the academic demands and social needs of the students intersect, and when these two forces are effectively harnessed, the potential for increased student persistence and academic success are exponentially increased. Astin (1999, p. 525) postulates that “frequent interaction with faculty is more strongly related to student satisfaction than any other type of involvement”.

In the researcher’s study, this strong preference for face-to-face learning is linked to students’ desire to be social and interact with both faculty and peers within an academic
setting, which is perceived to contribute and encourage student learning and student academic success.

**The importance of faculty**

Some students mentioned that some faculty were either uninterested and/or unprepared to deliver online courses. Faculty members’ inability to use effectively educational technologies and the college’s course management system to support online learning proved to detract from the learning experience. Strictly looking through the prism of online learning, faculty buy in and acceptance of the technology is essential in building effective online learning into curriculum. As highlighted by Lopes (2008), faculty skepticism in the use of educational technologies to promote learning proved to be a barrier to its effective use since some faculty remain unconvinced that technology integration into course curriculum actually improves the teaching and learning process. The McGraw-Hill (2006, p.8) study also concludes that some faculty believe that the increased use of educational technologies in postsecondary curriculum will force them to abandon their traditional role as lecturer, restrict their freedom to teach as they deem appropriate, and assume a passive role acting more as a “facilitator” or “guide on the side”

The literature also suggests that faculty are not necessarily opposed to using educational technologies in support of course delivery. Mior’s (2003) study concludes that Ontario college faculty are predisposed to the adoption of technology to promote learning in the college sector provided that its use positively impacts student learning. As such, college administrators, in addition to providing ongoing and seamless professional development opportunities in training online faculty, must also demonstrate to faculty, by way of credible and rigorous academic and scientific research, that educational technologies, when properly implemented, possess the potential to improve and enhance the teaching and learning experience.

**Online learning may be distracting for the net generation**

The literature is replete with suggestions that since the Net Generation have been, and continue to be surrounded by digital technologies, they thrive on multi-tasking because this is their preferred mode of learning and interacting (Frand, 2000; Oblinger, 2003; Oblinger &
Oblinger, 2005; Prensky, 2001; Tapscott, 1998). A review of the literature also suggests that multi-tasking may be a response by the Net Generation due to information overload and the multiple stimuli and inputs that a digitally based society creates (Oblinger, 2003). Multi-tasking is thought to lead to a loss of concentration while the brain attempts to process multiple, and often fast paced inputs (Bennett et al., 2008).

A number of students commented that working online provides tempting distractions. Easy and quick access to social websites and applications such as Facebook and Twitter, could make studying and working online an academic challenge. As discussed in previous sections, for online students to gain the most from their online learning experiences, self-discipline and being able to focus on the assignments are necessary online student qualities needed for academic success. Speaking about his/her younger, Net Generation fellow students, and in particular her/his male classmates, a mature student related that “…they’re socializing on the computer so maybe that was why a person would say they learn more in the classroom because it’s too distracting to be online with all the other temptations like Facebook and everything else” (S9). Multi-tasking may only be a response to information overload and not, like some of the literature suggests, a new learning preference of the Net Generation that faculty must accommodate to maintain student interest in academic courses.

During the semi-structured interviews, a number of unanticipated themes emerged. The first theme the students discussed was whether the college’s course management system was a utility or option. The second theme was whether students would still attend class if faculty posted the class presentation and material, including a podcast of the professor’s delivery onto the course management system, prior to the in class lecture. Since both these themes are addressed in Lopes’ (2008) study, the researcher, for comparison purposes, reviewed her study on these two themes early on in the interview process.

Is the course management system a utility or option?

An article by Lane (2008) suggests that the current configuration of course management systems limits instructional creativity and pedagogical approaches of faculty members. Lane is critical of those faculty who simply use the basic functions of the course management systems including posting grades, posting the course schedule and related articles, using the quiz function and using email to contact students. During the course of this
study, some students mentioned that the college’s course management system is an integral part of their learning process, including for students enrolled in the face-to-face format. Similar to Lopes’ study (2008), the major benefits of the course management system is the ability for students to access all course information and the convenience of having the course management system store and manage course material. This student’s quote summarizes what most other student stated during the interviews:

I find it to be an essential learning tool. I wouldn’t even call that optional to be honest. I found like the ability to have class slides posted prior to the class, you know exactly what to brush up on so you can read things before class. Then as well, to test yourself after class with quizzes and things like that…I would say that you know if there was no Blackboard that would really push us back many, many years as far as assisting students as well. (S16)

The findings of this research conclude that the course management system is an integral and expected teaching tool of the student learning process, including those courses offered in the face-to-face format. Faculty use of the simplest course management system features was of significant benefit to the students and enhanced their learning process. The students in this study perceive that effective use of the course management system not only improved pedagogy, but also contributed to their academic success. Although there is little empirical research to suggest that the use of course management system improves pedagogy, students perceive that they learn more when web-based educational technologies are used to complement other teaching methodologies (Hanson & Robson, 2004).

**The impact of the posting of lecture notes on class attendance**

During the semi-structured interviews, the researcher asked students if they would continue to attend class even if the lecture notes, and related lesson materials, including a podcast of the lecture, were posted on the course management system prior to attending the class. In Lopes’ (2008) study, faculty expressed concern that if course information was to be posted online prior to the class, class attendance would be adversely affected. Based on this study, and the results from other researchers, it appears faculty concerns that posting course material and lectures online prior to class would negatively impact student class attendance, is unfounded. The students in this study do not concur with faculty concerns on this issue.
One student provides a perceptive answer, suggesting that posted material only provides and supports one of the many, and complex elements, of the learning process:

A lot of the content delivery is in the body language, in the intonation and the words and in the way things are approached. Once at you look at the online only you lose all of the body language, you lose all that information. You lose all you know, what is that cliché about communication whatever it is, you know it’s not all text, it’s not all the words people say, there is so much more going on. So I would say having lectures online is non-sufficient. (S8)

The studies by Salaway and Borreson-Caruso (2008) and Smith et al. (2009) also conclude that the majority of the respondents would continue to attend class even if course lecture materials would be posted online. Other studies have examined if class attendance declines if lecture notes / presentations are posted online. Babb and Ross’ (2009) findings suggest that posting lecture material online prior to class, may contribute to better overall students attendance and participation. The researchers postulate that by posting the material online warns the students ahead of time on the difficulty of the teaching points, encouraging students to attend class and, that having access to the lecture material acts as a note-taking guide helping to focus student attention on key learning and teaching points.

A similar study by Hove and Corcoran (2008, pp. 91, 94) also concludes that posting course material online positively affects student class attendance. The authors posit that “[S]tudents with unlimited access to lecture presentations earned significantly higher grades than those students who did not have similar access…The availability of online lecture presentations may help to improve academic performance by providing students with a supplemental source of information and additional study aids”. The following section will discuss the implications of the conclusions, not only on the college that participated in this study, but also on how the conclusions may impact the Ontario college sector as a whole.

**Implications and Recommendations for Practice**

A secondary, yet important purpose of this study is to develop and generate a research-based set of principles and recommendations that will guide and assist college administrators, leaders, faculty and support staff in their deliberations and strategic planning,
on how best to integrate the complexities associated with online learning into the college curriculum. The aim of this study is to provide college leaders and faculty, particularly those responsible for implementing strategic IT planning, with credible and research-based data on college students’ perceptions, preferences, attitudes and overall satisfaction with educational technology in support of the learning experience. The following implications are designed to be guideposts, offering discussion points for deliberation and debate, as Ontario college’s evolve in an effort on how to integrate effectively and efficiently educational technologies into the 21st century classroom for the benefit of both faculty and students.

**Identifying student IT skills**

Contrary to the literature, which often describes the Net Generation as tech savvy, this study concludes that the Net Generation students who participated in this research do not have a sophisticated and uniform IT skill set. The results of this study challenge the notion that Net Generation students have a uniform and highly developed technical skill set. Although all colleges offer some variation of student IT learning support, it is apparent from this study that in order to improve student satisfaction and increase academic success, colleges should offer tutorials/instruction on how to use educational technologies in support of learning. The results of this study also suggests that some Net Generation students may not have the necessary maturity, confidence and life experiences to harness effectively the learning opportunities offered during online learning.

This lack of IT sophistication, coupled with what seems for some Net Generation students the difficulty in maximizing learning in the less structured environment of online courses, poses unique challenges for Ontario’s colleges. Both the quantitative and qualitative findings of this study lead to the conclusion that the perceived level of student IT literacy and fluency is likely overstated. Training students to use and become familiar with educational technologies expected for a course could also be embedded as a teaching point on the 1st day of the course and should contribute to student academic success. This will give students an appreciation of how the professor intends to use / not use technology to support the learning process.

As part of their student services, Ontario college’s may consider increasing technology training courses offering students the opportunity to learn how best to manipulate
educational technologies for maximum learning value in support of their online and face-to-face studies. Offering training programs / courses throughout the academic year will also allow students to access this service should difficulties be encountered on how to best use educational technologies in support of the learning process.

**Inconsistent use of the course management system by faculty**

A common theme generated by the students concerned faculty members inconsistent and ineffective use of the course management system and it’s associated educational technologies. Students reported over, under and ineffective use by faculty of the course management system and that this inconsistent use of the course management system detracted from their learning experience. Similar conclusions were found in Smith et al.’s (2009) study which generalized that respondents were less than satisfied with their professors’ ineffective and inconsistent use of educational technologies in support of learning. One student in this study stated “Students are often handicapped by instructors who do not understand the limitations and advantages of online teaching” (p. 71).

Some students in this research study expressed frustration over the lack of a uniform approach or consistency in course design. As one student mentioned, due to the inconsistent practices of faculty, he/she needed to relearn the college’s course management system each time she enrolled in either an online or face-to-face course. These results are corroborated by a study from Swan et al. (2000) which concludes that factors such as consistency in course design, and frequent contact with faculty have been shown to dramatically influence the success and satisfaction of online learners. Ontario colleges may consider drafting a set of strategic guidelines for faculty outlining a process on how best to use the course management system and its associated educational technologies so as to ensure a consistent use of the course management system between courses. It is anticipated that a comprehensive guideline on course management system use and design will likely increase student satisfaction of their online learning experiences and positively contribute to student success.

**Continued IT support and professional development for faculty**

The implementation of any policy or procedure within an Ontario college requires the support of faculty. This is particularly true for the integration of educational technologies into
course curriculum. This study revealed that some faculty are either unconvinced that online learning improves student learning and / or do not possess the necessary technical skill set to harness effectively educational technologies to help promote learning.

As discussed in this research, studies conclude that faculty are receptive to the use of educational technologies in support of their teaching practices. However, these studies also note that the following two conditions must be met to encourage faculty use of educational technologies in support of learning:

1. faculty require adequate professional development support on the effective use of educational technologies; and

2. faculty need to be convinced with empirical evidence and valid, scientifically based research, that educational technologies, when used properly, enhance and improve the teaching and learning process.

It is important for colleges to train faculty on both how to use educational technologies in support of their teaching practices, and why online learning adds value to student learning.

As recommended by Mior (2003, p. 199), any professional development program designed to assist faculty in accepting, adopting and integrating technology to promote learning should include

1) “a recognition that rigorous training is required to successfully implement educational technology in the learning process;

2) a recognition that adequate technical support will be required to help faculty implement educational technology strategies into their instructional practices; and

3) a recognition that faculty will need proper software at home and at college, to implement educational technology strategies”.

As such, Ontario colleges, if they desire to integrate online learning principles into course curriculum, should offer faculty numerous opportunities to improve their online teaching skill set, and simultaneously, present faculty with research findings demonstrating the value of educational technologies in support of the teaching and learning process. Another strategy to encourage faculty to embrace online learning is the creation of faculty mentoring teams. This strategy partners faculty members with little online teaching
experience with faculty expert in the development and delivery of online learning. The intent of the mentoring teams is to increase the pedagogical and technical skill of less experienced faculty in a non-threatening and supportive environment.

**Campus based faculty office hours in support of online courses**

As discussed in this research, the frequency of contact between faculty and student not only encourages greater student involvement in their educational activities, but also, increases the likelihood of academic success. Many of the students who participated in this study suggested that faculty do not often utilize online office hours. They suggested that faculty need to increase the number of online office hours thereby enabling the students to raise academic issues and receive timely responses.

A few students made the intriguing suggestion that courses offered online should also have campus based face-to-face office hours. This recommendation offers students the face-to-face contact that the literature suggests is so critical in enhancing academic success. Implementing this recommendation will likely have the effect of increasing student satisfaction with their online programming.

**The necessity of increasing online course offerings**

During the interviews, some students discussed this college’s plan to increase the number of online course offerings. The views on this proposal were mixed. Some students believe that an increase in online course offerings would be beneficial, particularly for those students who live outside the city and have difficulty traveling to and from the college. One student suggested that, where applicable, all courses should be offered in both the online and face-to-face format. Others were more reserved, concerned that this new emphasis on online courses would divert resources from traditional face-to-face programming. A number of students stated that it was the hands on applied courses and programs that are not offered at universities, that initially attracted them to enroll at this college. These students expressed concern that undue emphasis on online learning may take away from the unique vocational, applied training and career education programs for the career fields that are typically associated with Ontario colleges. Another student surmised that increasing online course offerings is simply a means of addressing the infrastructure shortage at this college. The
majority of students expressed no desire in taking any of their core courses through an online format.

Although offering online programming is essential for most postsecondary institutions, colleges should ensure a measured balance between offering online courses and traditional face-to-face programming, with an applied emphasis on teaching and learning, so as not to diminish and deviate from the original mission, essence and vision that are ascribed to Ontario’s colleges. Online learning should be seen to complement the face-to-face and applied nature of learning at Ontario’s colleges. The students were very clear in their discussions with the researcher that they are not interested in using educational technologies that will further reduce face-to-face contact with both faculty and peers since this physical interaction is perceived to improve and enhance the quality of the learning experience.

**Augmented learning**

Two anomalies discovered in this research were that when give a choice between selecting face-to-face, hybrid, or solely online courses, 11% of the students selected online programming. The reasons for students preferring face-to-face instruction over online learning have been discussed. The second interesting finding was that 35% of the students, when given the choice, desired only a moderate amount of information technology use in their courses. The combination of these two anomalies prompted the researcher to ask the students how much information technology they preferred to be used in their courses.

During the semi-structured interviews, most students preferred a moderate amount of information technology use in support of their learning. The Salaway and Borreson-Caruso studies (2007, 2008), Smith et al. (2009) and Kennedy et al. (2008) also conclude that, if given the choice, their respondents preferred a moderate amount of technology use in their courses. Salaway and Borreson-Caruso (2008, p. 11) state “There is a widespread attitude that IT resources are best suited in learning environments where technology is balanced with other learning activities, especially face-to-face interactions with faculty and students in the classroom.” Siemens and Tittenberger (2009) label the moderate use of educational technologies in support of learning as augmented learning. More specifically, they define augmented learning as the “use of technology to extend a physical classroom...augmenting
traditional classrooms and distance education courses with emerging technologies is one such approach” (p. 16).

Notwithstanding that some campus based faculty already use this approach in classroom instruction, it is interesting to note that in this study, the augmented approach to teaching and learning, that is using web-based technologies to augment and complement traditional classroom instruction, is the preferred choice of educational instruction. Not only is augmented learning the preferred learning method, the students in this research study perceive that the augmented learning approach to teaching and learning encourages student engagement with faculty and peers, enhances quality of effort in academic endeavours, and improves the likelihood of student retention and success. Since the augmented learning approach seems to be the preferred method of instruction of the Net Generation in this study, Ontario college administrators and faculty should consider this relevant piece of data when discussing strategic information technology / business plans in relation to the future of online learning initiatives.

**Future Research**

This is one of few studies that researched the experiences, perceptions and attitudes of online learning from the perspective of Ontario college students. The results of this study provide a benchmark outlining the positive and negative student experiences of online learning at this one Ontario college. Although the insights generated from this study provide a baseline of information that can guide and assist college decision makers with their information technology strategic and long-term planning, this study also provides a platform of data from which further studies could examine student perceptions of technology use in college curriculum. The following recommendations for future research are presented in an effort to assist college leaders and faculty to have a greater, scientifically based understanding on the information technology characteristics and preferences of their students:

1. a longitudinal study following a group of college students from their 1st to their 3rd / 4th year, to study how their perceptions of online learning change, if at all, as they progress and mature as college students;
2. a study exploring why mature students tend to find online courses more educationally challenging than Net Generation students. The data from this study suggests that Net Generation students, unlike their classmates from previous generations, may not possess the maturity, self-direction and self-discipline to take full advantage of the unique learning opportunities offered during online learning;

3. research analyzing those factors about online learning that prevent the Net Generation from meaningfully connecting with their faculty and online peers;

4. research analyzing what factors about augmented learning make this a preferred choice of instruction over solely online instruction and how this choice impacts the learning process;

5. a detailed study to examine the learning preferences of the Net Generation to determine how their learning preference differ, if at all, from those of previous generations. Conclusions based on scientifically based research concerning the variations and differences within the Net Generation concerning educational technologies in their learning may be of greater significance to college leaders and faculty than similarities (Bennett et al., 2008);

6. replicating this study beyond this college and extending the research to other Ontario colleges to examine how the results of the proposed study differ / or are similar to the findings in this study. Such a study would allow for the extrapolation of data results to the Ontario college sector as a whole; and

7. although not addressed in specific detail by this study, recent literature suggests that socio-economic status, and not age, is the main cause of the digital divide within all levels of education. An in depth study on this issue may reveal if the impact of socio-economic status, in relation to information technology, is a concern for educational leaders at Ontario colleges;

8. as discussed in the literature review, the Net Generation spend significant time on the Internet and using digitally based social applications / games to connect and remain in contact with friends. However, as discussed by Kennedy et al. (2008) high levels of Internet use do not necessarily translate into a desire for increased
use of technology to support their learning process. A study to examine this major dichotomy of online “life” versus online ‘learning” may discover and explain why Net Generation students are not very receptive to the extensive use of educational technologies in college programming;

9. this research study found that a significant minority of college students do not possess sophisticated information technology skills, and in some cases, only minimal skill, in manipulating technology based tools and applications. A research study which examines what technical skills college students should have to optimize their online learning value may be of significance to Ontario college educators and leaders to inform both information technology policy and practice. Appendix I to this thesis depicts a typology of online pedagogy along a continuum. This typology provides a framework for future research to identify those technical skills college students should possess to help them construct / create and evaluate the knowledge and information found while conducting Internet research in support of their academic studies.

**Final Thoughts**

This study researched the perceptions and attitudes of a group of Ontario college students concerning their views on their online learning experiences. The researcher has never been affiliated with the college sector and, as such, was not influenced by any prevailing attitudes or prejudices surrounding the use or non-use of educational technologies in support of learning. Although the researcher believes that educational technologies can play a meaningful role in college education, it came as a surprise how passionately students felt about the benefits and increased learning potential of face-to-face instruction, and their need to socialize and interact with faculty and peers to enhance the learning process and promote learning, when compared to their online learning experiences. Many of the students stated that it was the applied nature of the teaching and learning processes offered that initially attracted them to enroll at this college.

Matthew Pittinsky, co-founder of Blackboard, concurs that face-to-face contact between faculty and students is important to the learning process. When asked if online learning could replicate the engagement between faculty and student in the traditional
classroom environment, he responded as follows: “While elearning can provide a powerful supplement, I would not choose a complete distance learning experience for the totality of my post-high school education if I did not have to…So do I believe that online and face-to-face modes of learning are equal? No. Are they different? Yes. Are all these differences good (or bad)? No. It’s a trade-off” (Finkelstein, 2003, p. 2).

According to some students in this study, online learning technologies do lack in facilitating meaningful and quality interaction between faculty and student and between students. This research concludes that this lack of quality interaction between faculty and student and among students, is a major pedagogical concern that detracts and impedes from the student online learning experience.

The overwhelming support for face-to-face contact with both faculty and peers, and the preference for face-to-face learning, is consistent with recent research studies on the Net Generation. This desire by the Net Generation for face-to-face engagement to enhance their learning value reminds the researcher of a passage by Tinto (1997, pp. 599, 615)

The college classroom lies at the center of the educational activity structure of institutions of higher education; the educational encounters that occur therein are a major feature of the student educational experience...If academic and social involvement or integration is to occur, it must occur in the classroom...Student social involvement in the educational life of the college, in this instance through educational activity structure of the curriculum and classroom, provides a mechanism through which both academic and social involvement arises and student effort is engaged. The more students are involved, academically and socially, in shared learning experiences that link them as learners and with peers, the more likely they are to become more involved in their own learning and invest time and energy needed to learn.

Similarly, a student who participated in the Smith et al. (2009, p. 21) study stated “[T]here is still a big disparity among academic staff when it comes to use of IT in class. Some professors are obsessed with their technology and some don’t use it at all. There needs to be a balance between human interaction and IT-based learning” [emphasis added]. The majority of students, who participated in this study, could not agree more.
References


Robertson, J., Grant, M., & Jackson, L. (2005). Is online instruction perceived as affective as campus instruction by graduate students in education? The Internet and Higher Education, 8, 73 – 86.


Appendix A

Online Student Questionnaire

1. Purpose of Questionnaire

My name is Klaus Schneider and I am a PhD student at the University of Toronto. If you have any questions, I may be contacted at klausschneider@sympatico.ca. Thank you for your willingness to answer this questionnaire in support of my doctoral thesis. This questionnaire is designed to collect information on your experience, perceptions and attitudes toward online / e-learning at your college. Your college granted me permission to distribute this survey to you. Participants in this questionnaire must have completed at least one hybrid or fully online course. The questionnaire is divided into the following four sections:

Section A: your level and use of educational technologies in the course of your college studies;

Section B: your perception of your online learning experience within college programming;

Section C: what factors of your online learning experience enhanced or interfered with your learning experience and general comments about your online learning experience; and

Section D: your demographic information such as age and gender.

The primary goal of this study is to better understand student experiences with online / e-learning, which, in turn can assist your college’s leadership to respond to your online learning needs. This survey should take no longer than 10 minutes to complete. This is a study at the University of Toronto and is supervised by Dr. Angela Hildyard (angela.hildyard@utoronto.ca).

Your answers are confidential and no member of your college will be able to identify you. However, if you are interested in being eligible to win one of two IPods for completing this questionnaire, please include your name on the last page of the survey. If you choose to insert your name, your identity will continue to remain confidential and no one at your college will have access to your questionnaire. Only the researcher and the thesis supervisor will have access to the data. Completing this questionnaire is voluntary and you may withdraw at anytime. You may decline to answer any question. There will be no adverse consequences if you choose not to complete or withdraw from this questionnaire. Should you withdraw from this survey, your data will not be included in this study. Should the data obtained from this study be used in other reports, publications or public presentations, the data will continue to remain confidential. Your answers will neither be judged nor evaluated. You may take pride in knowing that your opinions and recommendations will provide a baseline of knowledge from which college senior leadership will consult in formulating e-learning policy. You may contact the Office of Research Ethics at ethics.review@utoronto.ca or 416-946-3273 if you have any questions about your rights as a participant. Your college will neither be named nor identified in any reports and will not be identified due to any unique characteristics.

For the purposes of this questionnaire, online learning and e-learning are used interchangeably, and are defined as the use of various digital technological tools that are either web-based, web-distributed (Blackboard) or web-capable for the purposes of education. The results of this research will be held at the Ontario Institute for Studies in Education Library, University of Toronto and with the permission of your college, be posted on the college’s website.
2. Section A - Your level and use of educational technologies

This section is intended to elicit your level and use of educational technologies.

1. Do you have access to a computer?
   - Yes
   - No

2. How often do you use a computer?
   - A few times a week
   - Once a week
   - Every day or two
   - Several times a day

3. Please indicate your level of agreement with the following statement: "I am confident of my ability to use the Internet to help me learn"
   - Strongly Agree
   - Agree
   - Neutral
   - Disagree
   - Strongly Disagree

4. Do you have access to a high speed Internet connection at home / in your dorm room?
   - Yes
   - No

5. What is your skill level for the following:

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<thead>
<tr>
<th>Task</th>
<th>Not at all skilled</th>
<th>Not very skilled</th>
<th>Fairly skilled</th>
<th>Very Skilled</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Using the college's library website</td>
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<td>b. Spreadsheets</td>
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<td>c. Presentation software (i.e., PowerPoint, etc.)</td>
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<td>d. Graphics software (Photoshop, Flash, etc.)</td>
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<td>e. Computer maintenance (software updates, security, etc.)</td>
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<td>f. Using the Internet to effectively and efficiently search for information.</td>
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<td>g. Evaluating the reliability and credibility of online sources of information</td>
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6. What is your opinion about the following statements?

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<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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</tbody>
</table>
### 3. Section B - This section will elicit your perception of your online learning...

#### 1. This part is intended to elicit your perceptions of the student faculty contact during your online learning course(s)

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<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>a. The faculty communicated effectively.</td>
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<td>b. The faculty were enthusiastic about online teaching.</td>
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<td>c. The faculty were accessible to me outside of the course.</td>
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<td>d. The amount of contact with faculty was satisfactory (i.e., e-mail, discussions, face to face meeting)</td>
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<td>e. Interaction between faculty and student is essential to online learning</td>
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<td>f. My online course(s) are configured so that I can interact with my classmates</td>
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#### 2. This part is intended to elicit your perceptions concerning the cooperation among students during your online course(s)

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<th></th>
<th>Strongly Agree</th>
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<th>Disagree</th>
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<tr>
<td>a. My online course(s) are structured so that I could discuss assignments with other students.</td>
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<td>b. I felt comfortable interacting with the faculty and other students</td>
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<td>c. This course included activities and assignments that provided students with opportunities to interact with one another.</td>
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<tr>
<td>d. Interaction amongst students is essential to online learning</td>
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<td>e. The quality of discussions in my online course(s) are high</td>
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</table>
3. This part is intended to elicit your perceptions of the active learning experiences you encountered during your online course(s).

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<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
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</thead>
<tbody>
<tr>
<td>a. My online courses</td>
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<tr>
<td>typically include</td>
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<tr>
<td>interactive assignments and links to examples from the web that directly involved me in the learning process</td>
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<td>b. My online courses</td>
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<tr>
<td>used realistic assignments and problem-solving activities that were interesting and motivated me to do my best work.</td>
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<td>c. My online course(s)</td>
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<td>allowed me to take responsibility for my own learning</td>
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<tr>
<td>d. My online course(s)</td>
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<tr>
<td>typically stimulate thoughtful discussions</td>
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4. This part is intended to elicit your perceptions about the feedback you received during your online course(s).

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<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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</thead>
<tbody>
<tr>
<td>a. My questions about Blackboard were responded to promptly.</td>
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<tr>
<td>b. My questions about course assignments were responded to promptly.</td>
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<td>c. I was provided with supportive feedback related to course assignments.</td>
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</table>

5. This part is intended to elicit your perceptions concerning the amount of time you spent completing your online course(s).

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<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. My online course(s) were structured to be user-friendly</td>
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<td>b. My online courses were designed to provide an efficient learning environment.</td>
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</table>
6. This part is intended to elicit your perceptions of the expectations placed on you by faculty.

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<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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</thead>
<tbody>
<tr>
<td>a. My online course(s) used examples that clearly communicated expectations for completing course assignments.</td>
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<td>b. My online courses provided good examples and links to other examples published on the web that helped explain concepts and skills.</td>
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<tr>
<td>c. The assignments for my courses were of appropriate difficulty level.</td>
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<td>d. My online courses used realistic assignments and problem-solving activities related to situations that I am likely to encounter outside of these courses or in a future job assignment.</td>
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</table>

7. This part is intended to elicit your perceptions on the learning styles you used during your online courses.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The faculty were respectful of students’ ideas and views.</td>
<td>○</td>
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<td>○</td>
</tr>
<tr>
<td>b. My online courses were designed so that technology would minimally interfere with learning.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. Flexibility was permitted when completing course assignments.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. My online courses used a variety of assignments and activities that allowed students to demonstrate understanding of critical course concepts.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. I was given choices about the types of activities or assignments that I would complete to demonstrate learning of important course concepts.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
4. Section C - Factors that enhanced / interfered with your online learning e...

This section seeks to elicit what factors of your online learning experience enhanced and / or impeded your learning experience and general comments about your online learning experience.

1. Which of the following benefits from using information technology in your classes was most valuable to you? Please select one or more answers.

- [ ] Improved my learning
- [ ] Saved me time
- [ ] Convenience
- [ ] Helped me manage my class activities (e.g., planning, apportioning time, noting success and failure)
- [ ] No benefits

2. Which of the following interfered or impeded your learning experience? Please select one or more answers.

- [ ] Reduced time with faculty
- [ ] Reduced time with classmates
- [ ] Technical Problems
- [ ] Difficulty Accessing / understanding course material

3. Please indicate the extent to which you agree or disagree with each statement

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I think I learn more in online courses than in face-to-face courses.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. I prefer online courses to face-to-face courses.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. I feel more comfortable participating in online discussions than in face-to-face discussions.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. Online courses require more study time than face-to-face courses.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. Online courses are more difficult than face-to-face courses.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

4. Please compare how academically demanding your online courses have been when compared to traditional classroom courses.

- [ ] Much more
- [ ] Slightly more
- [ ] As demanding
- [ ] Slightly less
- [ ] Much less
5. How satisfied have you been with the online course(s) you have taken?

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied

6. If you have a choice, in the future, what type of course would you elect to take?

- Solely online
- Hybrid
- Traditional face-to-face

7. Which of the following best describes your preference with regard to the use of technology in your courses? Please select only one answer.

- a. I prefer taking courses that use no information technology.
- b. I prefer taking courses that use limited technology features (e.g., e-mail to instructors and limited use of PowerPoint in class).
- c. I prefer taking courses that use a moderate level of technology (e.g., e-mail, several PowerPoint, some online activities or content).
- d. I prefer taking courses that use technology extensively (e.g., class lecture notes online, computer simulations, PowerPoint presentations and streaming video or audio, etc).
- e. I prefer taking courses that use technology exclusively (e.g., are entirely online with no required face-to-face interactions).

8. In my experiences with online courses, students should be:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. able to work independently.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. highly motivated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. self-disciplined.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. able to structure time and surroundings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. able to prioritize workload.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. comfortable communicating ideas through writing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Section D - Demographic Information

Demographic Information

1. What is your gender?
   - Male
   - Female

2. What is your age?
   - 16 to 19
   - 20 to 35
   - 36 and over

3. How many online / hybrid courses have you completed?
   - 1 to 2
   - 3 to 4
   - More than 5

4. What is your cumulative GPA?
   - Under 2.00
   - 2.00 - 2.50
   - 2.51 - 3.00
   - 3.01 - 3.50
   - 3.51 - 4.00
   - Don't know

5. 
6. What school / department / centre are you generally affiliated with?

- Advanced Technology
- Business
- Career and Academic Access Centre
- Health and Community Services
- Hospitality and Tourism
- Languages
- Media and Design
- Part-time Studies/Continuing Education
- Police & Public Safety
- Transportation & Building Trades
- Other
6. Follow-up Interviews / Sign up to win one of two IPODs.

I would like to interview 20 - 25 students, to explore your online learning experiences in more depth. If you are interested in being contacted for a short interview, or to discuss this topic further, please indicate by including your contact information below. If you chose to insert your name, your identity will continue to remain confidential and no one at College will have access to the contents of our interview. Otherwise, if not interested, leave this portion blank and proceed to question 4.

1. Name

2. Email address

3. Telephone Number

4. If you are interested in being eligible to win one of two IPODs for completing this questionnaire, please include your name in the below text box. If you chose to insert your name, your identity will continue to remain confidential and no one at College will have access to your questionnaire. Please click the done button upon completion of this questionnaire. Thank you for completing this questionnaire.
Appendix B
Student Letter of Informed Consent and Interview Questions

(Printed on OISE/UT and College letterhead)

Name / Address of
College

Dear Student

My name is Klaus Schneider and I am a PhD Student at the Ontario Institute for Studies in Education at the University of Toronto. This study will be conducted under the supervision of Dr. Angela Hildyard (angela.hildyard@utoronto.ca). You have indicated that you would be interested in participating in an interview in support of my doctoral thesis entitled Ontario Colleges in the Digital Age: Understanding the Student Experience, Perceptions, and Attitudes of Online Learning at One Ontario College. [Name of College] has given the researcher permission to interview twenty students in support of this study. Participants must have completed at least one hybrid or fully online course.

There are two main purposes of this study. First, to gain insights and information concerning the college students’ experience and perceptions of online learning in the course of their studies. The specific information to be determined is what factors encourage and / or inhibit student enrolment in online courses. There are no foreseeable risks, harms or inconveniences in relation to your participation in this study. With permission from [Name of College], the research results will be posted on the college’s website. A copy of the dissertation will be held at the Ontario Institute for Studies in Education, University of Toronto. Twenty interviewees consented to partake in this study as indicated on their online survey submission.

During the interview, you will be asked 14 questions concerning your perceptions and attitudes of your online learning experience. These eleven questions are derived from the following research questions: 1) How do student’s perceive their online learning experience within a college program; 2) what factors / characteristics of online learning enhance the learning experience as perceived by these students; 3)What factors / characteristics of online learning interfere with the learning experience as perceived by these students; 4) What student qualities are important in successfully completing an online course; and, 5) Do Students feel that online learning offers a challenging academic experience when compared with traditional instruction?

During the interview you will be asked questions about your perceptions of and attitudes towards online learning. As the interview proceeds, I may ask questions for clarification or further understanding, but my part will be mainly to listen to you speak about your online learning experiences. You may take pride in knowing that your opinions and
recommendations will provide a baseline of knowledge from which college senior leadership will consult in formulating elearning policy.

Should the data obtained from this study be used in other reports, publications or public presentations, the data will continue to remain confidential. You are free to ask any questions about the research and your involvement with it. [Name of College] will neither be named nor identified in any reports and will not be identified due to any unique characteristics. Should you withdraw from this interview, you may ask to have your data removed from this study.

Conditions for Voluntary Consent

1. The interview will take approximately 20 minutes. The interview will be audio recorded with your permission, for use only by the researcher. Audiotaping is primarily needed to limit the amount of note taking required during the discussion. You may refuse to have the interview audio-taped.

2. You acknowledge that only Klaus Schneider and the thesis supervisor, Dr. Angela Hildyard (Vice President Human Resources, University of Toronto), may have access to materials (audio-tapes, notes) generated during your interview. All information obtained from your interview will be documented and protected in such a manner as to conceal your identity. Results of this research will be secured under lock and key at the researcher’s place of employment and kept confidential. You understand that your name will be kept confidential and will not be used in the study or any reports, publications or presentations of the research data. All research data will be destroyed five years after the dissertation defence.

3. Your identity will not be revealed in any form, including in any written documents or verbal conversations, as a result of your participation in this semi-structured interview. You will select a pseudonym to be used in this research. Only the researcher will have access to your identity.

4. You understand that you will be asked to review a transcript of your interview to ensure the accuracy of your statement. The transcripts will be sent by email four weeks after the interview. The researcher will ask the students to return the transcripts within three weeks. You understand that you may decline to answer any question(s) during the interview. You understand that at no time will value judgments be placed on your responses and no evaluation will be made of your effectiveness as an interviewee. You may request that any information, whether in written form or audiotape, be eliminated from the project.

5. You have the opportunity to contact the Office of Research Ethics at ethics.review@utoronto.ca or 416-946-3273, if you have questions about your rights as a participant. You understand that should the data obtained from this study be used in other reports, publications or public presentations, the data will continue to remain confidential.
6. You accept that participation in this interview is voluntary and you have the right to stop the interview at anytime. There will be no adverse consequences for you, academically or otherwise, if you decide to withdraw from the study. You also have the right not to answer all questions. [Name of College] will neither have access to your identity nor to the contents of your interview. You understand that you may have a copy of this consent form.

Thank you for your participation.

Klaus Schneider                                  Dr. Angela Hildyard
PhD Candidate, Theory and Policy               Vice-President
Studies In Education OISE / University         Human Resources and Equity
Of Toronto                                     University of Toronto
252 Bloor Street W. 6th Floor                  Simcoe Hall, Rm 112
Toronto, ON, M5S 1V6                           27 King’s College Circle
Telephone: (705) 730 0440                      Toronto, ON M5S 1A1
Email: klausschneider@rogers.com                Email: angela.hildyard@utoronto.ca

By signing below, your are indicating that you are willing to participate in the study and that you are fully aware of the above conditions.

**Subject to the above conditions, I agree to be interviewed for this study:**

______________________________  ________________
Signature of Interviewee         Date

**I agree / do not agree to the interview being audio-recorded:**

______________________________  ________________
Signature of Interviewee         Date

**I have no other questions and wish to begin the semi-structured interview:**

______________________________  ________________
Signature of Interviewee         Date

Please initial if you would like a summary of the findings of the study upon completion: ___

Please keep a copy of this form for your records.
**Student Semi-Structured Interview Guide Questions**

Q.1 - Much is written about the Internet skills of college students. You are identified in the literature as a group who are tech savvy and very comfortable using computers and the Internet. Do you think this is true about yourself? Is it also true about your friends?

Q.2 - Please describe your experiences on how you perceive that online learning proved beneficial to your learning experience? Which of the following benefits from using information technology in your classes was valuable to you? (improved my learning, saved me time, convenience, helped me manage my class activities ((planning, apportioning time, noting success and failure))

Q.3 - Please describe your experiences on how you perceive online learning to detract or interfere from your learning experience? Please provide comments on how online learning interfered or impeded your learning experience (reduced time with faculty, technical problems, difficulty accessing / understanding course material)

Q.4 - What can you tell me about the student to student and student to faculty interaction during your online learning experience?

Q.5 - In your view, what would a quality learning experience be?
   a. To what extent was your online learning experience a quality one?

Q.6 - How satisfied have you been with your online learning experience and what made you satisfied (or not)?

Q.7 - Please compare how academically demanding the online courses you have taken were when compared with traditional classroom courses.

Q.8 - Did your online courses meet your expectations? Why or why not?

Q.9 - What are the major obstacles you see to more effective use of computer and information technology in your courses?

Q.10 - In every class, some students tend to excel academically. Please identify those student qualities, which you believe are necessary for students to possess in order to be successful online learners.

Q.11 - What advice would you give your faculty and college leadership on how to improve your online learning experience? What should they be doing to enhance your learning experience? What should they not be doing?

Q.12 - Over half of the respondents reported learning more in a face-to-face setting as opposed to online learning. What are your thoughts?;
Q. 13 - When given the choice between selecting an online, hybrid or face-to-face course as a matter of preference, 11.2% chose online programming. How do you explain this difference in opinion?

Supplementary Questions developed during progression of the interview process

Q. 16 - Is Blackboard a utility or option?

Q.17 – Is working online distraction?

Q.18 – What are your thoughts on the proposed virtual campus?

Q.19 – If lecture notes posted online, would you attend class?

Q. 20 – What are your thoughts on augmented learning?
Appendix C

Student Email Invitation:

Online Questionnaire

Dear College Student

My name is Klaus Schneider and I am a PhD Student at the Ontario Institute for Studies in Education at the University of Toronto. I am conducting a doctoral thesis under the supervision of Dr. Angela Hildyard (angela.hildyard@utoronto.ca), to understand the [Name of College] student experience, perceptions and attitudes of online learning during the course of their studies. A secondary, but related purpose of this study is to identify, from the student perspective, the key factors that encourage or impede [Name of College] students in embracing online learning. My study is entitled Ontario Colleges in the Digital Age: Understanding the Student Experience, Perceptions, and Attitudes of Online Learning at One Ontario College. A component part of my research is to gather information, via a web-based survey, on your perceptions and attitudes toward online learning. [Name of College] Ethics Review Board has approved the distribution of this web-based questionnaire. The survey should take approximately 15 minutes to complete. Your answers are confidential and no member of [Name of College] will be able to identify you. Those students completing the questionnaire will be eligible to win one of two IPODs. If you are interested in completing the questionnaire please, activate the below hyper-link. Please submit the questionnaire responses before 17 April 2009. Thank you.
Appendix D

Email Invitation for Semi-Structured Interview

Dear Student

Last April, in support of my PhD studies at the University of Toronto, and with approval from the administration of [Name of College], you completed an online questionnaire soliciting your opinion and thoughts about the use of online learning in support of your college academic studies. During the completion of this survey, you indicated that you would like to participate in a short face-to-face interview to discuss your views concerning online learning at [Name of College]. The data derived from the interviews will be analyzed, and based on your comments, recommendations will be made to college leadership on how to improve the delivery of online learning. Your identity will be protected and never disclosed to anyone at [Name of College]. Only the researcher (me), will know your identity.

The interviews will take place at the [Name of Campus], Building A, Conference Room [Location of Interviews] and will take no longer than 15 minutes to complete. I will be at the College for the week of 5 - 9 October inclusive from 7 AM until 8 PM. If you are interested, please email me the date / time you wish to be interviewed. If you have any questions feel free to contact me. If you would prefer to be interviewed on an earlier / later date please advise and I will accommodate. Find attached a copy of the interview protocol. I look forward to hearing from you.

[Interview Consent Form and Questions]

Klaus Schneider
klausschneider@rogers.com
613-429-3000 (h)
613-949-1182 (w)
Appendix E

Administrative Consent From Participating College

[Printed on OISE/UT and College letterhead]

February 2009

Dear

I am a doctoral student in the Department of Theory and Policy Studies in Education at OISE/University of Toronto. I am conducting a doctoral thesis, under the supervision of Dr. Angela Hildyard (angela.hildyard@utoronto.ca), to understand the [name of college] College student experience, perceptions and attitudes of online learning during the course of their studies. A secondary, but related purpose of this study is to identify, from the student perspective, the key factors that encourage and inhibit [name of college] students to embrace online learning. My study is entitled *Ontario Colleges in the Digital Age: Understanding the Student Experience, Perceptions, and Attitudes of Online Learning at one Ontario College.*

This research is a mixed-methods case study, consisting of a web-based questionnaire, followed by semi-structured interviews of twenty volunteer students. The primary data gathering instrument is a web-based questionnaire to be distributed to approximately 1000 second and third year students who have completed at least one hybrid or fully online course. At the conclusion of the questionnaire, respondents are asked if they would like to participate in a semi-structured interview. From this question, I will randomly select twenty to twenty students to partake in a semi-structured interview. To facilitate the distribution of the web-based questionnaire, I request the support of [Name of College] College’s Research Section. The identities of the web-based respondents will be unknown to me, aside from those students wishing to participate in a semi-structured interview and those wishing to be eligible to win one of two ipods. At the conclusion of the web-based questionnaire, respondents will click the submit button, and the results of the questionnaire will be e-mailed to a designated mailbox without revealing the respondent’s e-mail address. The web-based questionnaire and the questions of the semi-structured interview are enclosed to this letter. Students participating in these surveys will benefit from knowing that their opinions will be considered by the college leadership when developing elearning policy. The data obtained during this study will be secured under lock and key at my place of employment. All data will be destroyed five years after the dissertation defence.

The data obtained in this study will be secured under lock and key at my place of employment. Should the data obtained from this study be used in other reports, publications or public presentations, the data will continue to remain confidential. The participants in this study will be informed of this fact in their consent forms. The interviewees will be asked to select a pseudonym. The interviewees will be given an opportunity to review the transcript of their interview. The transcripts will be sent by email four weeks after the interview. The researcher will ask the students to return the transcripts within three weeks. The interviewees
will be provided a copy of the consent form. The online questionnaire will take approximately 15 minutes to complete, while the semi-structured interview will take between 20 – 30 minutes.

The study will have several benefits to [Name of College] and other Ontario colleges. The leadership of [Name of College], and that of the Ontario college milieu, will benefit from the identification of key factors that encourage and inhibit student learning in online programming. Such data is critical and will be useful, not only for long-term community college online learning strategic planning, but also in identifying factors college leadership should consider as they progressively move forward and endeavour to integrate digital technologies into the curriculum, in creating pedagogies suitable to the learning needs of the 21st century college student. It is anticipated that this research will contribute to a very thin, if non-existent, body of Canadian scholarship, providing a baseline or platform of research from which further studies could examine student perceptions of technology use in college curriculum. To ensure student participants have access to my research findings, it is requested that the results of my study be posted on the college’s website.

There is neither risk to the student volunteering to complete the web-based survey, nor to the students participating in the semi-structured interviews. At no time will the student responses be judged or evaluated. Students will be advised of this fact in the consent forms. All responses will be included in aggregate summaries and tabulations. Responses from the semi-structured interviews will be listed under a pseudonym selected by the interviewee. Only the researcher and the thesis supervisor will have access to the raw data, including audio-tapes, surveys and transcripts. The researcher will share the results of this study with [Name of College]. [Name of College] will neither be named nor identified in any reports and will not be identified due to any unique characteristics.

You may contact me or my thesis advisor as indicated below. Thank you.

Klaus Schneider
PhD Candidate, Theory and Policy Studies In Education OISE / University Of Toronto
252 Bloor Street W. 6th Floor
Toronto, ON, M5S 1V6
Telephone: (705) 730 0440
Email: klausschneider@sympatic.ca

Dr. Angela Hildyard
Vice-President Human Resources and Equity University of Toronto
Simcoe Hall, Rm 112
27 King’s College Circle
Toronto, ON M5S 1A1
Email: angela.hildyard@utoronto.ca

Klaus Schneider
PhD Student OISE/UT
I grant Klaus Schneider the authority to conduct this study at [Name of College] subject to the following conditions:
1.

2.

3.

[Particulars of Administrative Authority]
Appendix F

University of Toronto Protocol Reference Letter

PROTOCOL REFERENCE #23766

February 27, 2009

Dr. Angela Hildyard  
Vice-President, Human Resources  
University of Toronto  
27 King's College Circle  
Toronto, ON M5S 1A1

Mr. Klaus Schneider  
Department of Theory and Policy Studies  
OISE/University of Toronto  
252 Bloor St. West  
Toronto, ON M5S 1V6

Dear Dr. Hildyard and Mr. Schneider:

Re: Your research protocol entitled “Ontario colleges in the digital age. Understanding the student experience, perceptions, and attitudes of online learning at one Ontario college”

ETHICS APPROVAL

Original Approval Date: February 27, 2009
Expiry Date: February 26, 2010
Continuing Review Level: 1

We are writing to advise you that a member of the Social Sciences, Humanities & Education Research Ethics Board has granted approval to the above-named research study, for a period of one year, under the REB's expedited review process. Please ensure that you submit an Annual Renewal Form or a Study Completion Report at least 30 days prior to the expiry date of your study.

The following consent documents (received February 27, 2009) have been approved for use in this study. Email to students, Interview consent form and Letter of administrative consent:

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events should be reported to the Office of Research Ethics as soon as possible.

If your research has funding attached, please contact the relevant Research Funding Officer in Research Services to ensure that your funds are released.

Best wishes for the successful completion of your project.

Yours sincerely,

Debra Sharpe, Ph.D.
Research Ethics Officer: Social Sciences and Humanities

McMurtry Building, 12 Queen's Park Cres, W, 3rd Floor, Toronto, ON M5S 1A8
TEL 416-646-5783 FAX 416-646-5703 EMAIL willreview@utoronto.ca

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Appendix G
Transcriber’s Confidentiality Agreement

Confidentiality Agreement

Title of Project:
ONTARIO COLLEGES IN THE DIGITAL AGE: UNDERSTANDING THE STUDENT EXPERIENCE, PERCEPTIONS AND ATTITUDES OF ONLINE LEARNING AT ONE ONTARIO COLLEGE

Klaus Schneider
Doctoral Student

Professor Angela Hildyard, PhD
Thesis Supervisor

Security of Data and Agreement of Confidentiality

I agree to:

- Maintain the security and privacy of the digital recordings and transcripts from the above mentioned research
- Keep audio recordings and transcripts in a secure location (password protected computer folders and/or locked cabinets).
- Maintain an oath of confidentiality that entails not communicating with anyone, except a member of the research team by any means verbal, written, or electronic about the interviewees or the contents of the recordings/transcripts.

Transcriber's Signature

Name (please print): ________________________________
Signature: ______________________________________
Date: ________________________________________
Appendix H  
Tables for the Quantitative Phase of the Study

All questions of the online survey were subjected to \( t \) tests using gender as the independent variables. The calculations concluded a statistically significant difference between gender for 20 questions or statements. Sixteen of those differences are depicted in Table 20, while the remaining differences are highlighted in the summary section. As demonstrated in Table 21, a greater percentage of females tended to choose strongly agree and agree when agreeing with the statements.

Table H1  
\( t \) Test for Gender

<table>
<thead>
<tr>
<th>Question</th>
<th>( t ) Test Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident of my ability to use the Internet to help me learn</td>
<td>.014</td>
</tr>
<tr>
<td>I would prefer to participate in an online discussion rather than a discussion in the classroom</td>
<td>.017</td>
</tr>
<tr>
<td>The faculty communicated effectively</td>
<td>.022</td>
</tr>
<tr>
<td>The interaction between faculty and student is essential to online learning</td>
<td>.000</td>
</tr>
<tr>
<td>The course included activities and assignments that provided students with opportunities to interact with one another</td>
<td>.024</td>
</tr>
<tr>
<td>The quality of discussions in my online course(s) are high</td>
<td>.037</td>
</tr>
<tr>
<td>Statement</td>
<td>t Test Sig. (2-tailed)</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>My online courses used realistic assignments and problem-solving activities that were interesting and motivated me to do my best work</td>
<td>0.023</td>
</tr>
<tr>
<td>My online course(s) allowed me to take responsibility for my own learning</td>
<td>0.003</td>
</tr>
<tr>
<td>My online course(s) typically stimulate thoughtful discussions</td>
<td>0.016</td>
</tr>
<tr>
<td>My questions about Blackboard were responded to promptly</td>
<td>0.005</td>
</tr>
<tr>
<td>I was provided with supportive feedback related to course assignments</td>
<td>0.001</td>
</tr>
<tr>
<td>My online courses were structured to be user friendly</td>
<td>0.010</td>
</tr>
<tr>
<td>My assignments for my courses were of appropriate difficulty level</td>
<td>0.038</td>
</tr>
<tr>
<td>My online courses used realistic assignments and problem-solving activities Related to situations that I am likely to encounter outside of these courses Or in future job assignments</td>
<td>0.000</td>
</tr>
<tr>
<td>My online courses used a variety of assignments and activities that allowed Students to demonstrate understanding of critical course concepts</td>
<td>0.007</td>
</tr>
<tr>
<td>I feel more comfortable participating in online discussions than in Face-to-face discussions</td>
<td>0.007</td>
</tr>
</tbody>
</table>
### Table H2

**t Tests for Gender – Cross Tabulations**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree %</th>
<th>Agree %</th>
<th>Disagree %</th>
<th>Strongly Disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would prefer to participate in an</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>an online discussion rather</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>a discussion in the classroom</td>
<td>M 7.8</td>
<td>12.2</td>
<td>32.2</td>
<td>24.4</td>
</tr>
<tr>
<td></td>
<td>F 15.4</td>
<td>9.8</td>
<td>26.8</td>
<td>17.9</td>
</tr>
<tr>
<td>The faculty communicated effectively</td>
<td>M 16.5</td>
<td>41.8</td>
<td>7.7</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>F 20.2</td>
<td>54</td>
<td>3.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Interaction between Faculty and</td>
<td>M 21.1</td>
<td>44.4</td>
<td>3.3</td>
<td>2.2</td>
</tr>
<tr>
<td>student Is essential to online</td>
<td>F 35.5</td>
<td>54</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I felt comfortable interacting with</td>
<td>M 14.6</td>
<td>50.6</td>
<td>10.1</td>
<td>3.4</td>
</tr>
<tr>
<td>the faculty and other students</td>
<td>F 20.3</td>
<td>53.7</td>
<td>5.7</td>
<td>.8</td>
</tr>
<tr>
<td>The quality of online discussions in</td>
<td>M 7.8</td>
<td>28.9</td>
<td>16.7</td>
<td>17.8</td>
</tr>
<tr>
<td>my online course(s) are high</td>
<td>F 12.1</td>
<td>57.4</td>
<td>14.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>----------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>My online course(s)</td>
<td>M</td>
<td>17.8</td>
<td>30</td>
<td>31.1</td>
</tr>
<tr>
<td>used realistic assignments and problem-solving activities that were allowed me to take responsibility for my own learning</td>
<td>M</td>
<td>30</td>
<td>31.1</td>
<td>5.6</td>
</tr>
<tr>
<td>My online course(s)</td>
<td>M</td>
<td>12.2</td>
<td>32.2</td>
<td>16.7</td>
</tr>
<tr>
<td>typically stimulate thoughtful discussions</td>
<td>F</td>
<td>18.7</td>
<td>37.4</td>
<td>9.8</td>
</tr>
<tr>
<td>My questions about blackboard were responded to promptly</td>
<td>F</td>
<td>7.7</td>
<td>42.9</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>25</td>
<td>40.3</td>
<td>4</td>
</tr>
<tr>
<td>Statement</td>
<td>Gender</td>
<td>Strongly Agree %</td>
<td>Agree %</td>
<td>Disagree %</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>--------</td>
<td>------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>I was provided with supportive feedback related to course assignments</td>
<td></td>
<td>16.7</td>
<td>46.7</td>
<td>6.7</td>
</tr>
<tr>
<td>My online course(s) were structured to be user friendly</td>
<td></td>
<td>19.1</td>
<td>47.2</td>
<td>7.9</td>
</tr>
<tr>
<td>My assignments for my courses were of the appropriate difficulty level</td>
<td></td>
<td>17.8</td>
<td>47.8</td>
<td>8.9</td>
</tr>
<tr>
<td>My online course(s) used realistic assignments and problem-solving activities that I am likely to encounter outside these courses or in future job assignments</td>
<td></td>
<td>15.7</td>
<td>27</td>
<td>12.4</td>
</tr>
</tbody>
</table>

F: Female
M: Male
<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree %</th>
<th>Agree %</th>
<th>Disagree %</th>
<th>Strongly Disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>My online course(s) used a variety of assignments and activities that allowed students to demonstrate understanding of critical course concepts</td>
<td>M 15.6</td>
<td>40</td>
<td>7.8</td>
<td>6.7</td>
</tr>
<tr>
<td>I feel more comfortable participating in online discussions than in face-to-face discussions</td>
<td>M 4.5</td>
<td>20.2</td>
<td>27</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td>F 20.3</td>
<td>51.2</td>
<td>5.7</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>F 17.7</td>
<td>16.1</td>
<td>30.6</td>
<td>8.9</td>
</tr>
</tbody>
</table>
Table H3

*ANOVA for Age*

<table>
<thead>
<tr>
<th></th>
<th>ANOVA</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>I prefer to communicate with my teachers using email rather than speaking with them before class</td>
<td></td>
<td>.002</td>
</tr>
<tr>
<td>I prefer online courses to face-to-face courses</td>
<td></td>
<td>.003</td>
</tr>
<tr>
<td>I feel more comfortable participating in online discussions than in face-to-face discussions</td>
<td></td>
<td>.012</td>
</tr>
</tbody>
</table>
## Appendix I

### Model / Typology of Online Pedagogy – A Continuum

<table>
<thead>
<tr>
<th>Primary mode of interaction</th>
<th>Fully In Class Face to Face</th>
<th>Web-Supplemented</th>
<th>Web-Enhanced</th>
<th>Web-Hybrid</th>
<th>Fully Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everything provided in-class.</td>
<td>Most instruction provided through regular in-class meetings, with reference resources (e.g., syllabus and occasional materials) provided online. Occasional use of online discussion, calendar, and e-mail.</td>
<td>Regular class meetings and online interaction required. Online interaction involves assignments; regular use of online discussion, e-mail, calendar, hyperlinks, and grade-posting; and occasional use of image banks, quizzes, student presentations, and Web pages.</td>
<td>Most interactions occur online. All materials and assignments are posted, occur, or are submitted online; grades are provided online; Periodic class meetings provide connection, opportunity for experiential and interactive learning activities, interpersonal assessment, and closure.</td>
<td>All interactions, materials, and activities are provided online, although first and last class meetings may offer connection and closure.</td>
<td></td>
</tr>
</tbody>
</table>

| Types of Courses best suited to medium | Certain introductory and advanced courses within a department (for orientation, closure, and assessment); experiential and service-based courses that require human interaction and the development or demonstration of practical or interpersonal skills | Certain introductory and advanced courses within a department (for orientation, closure, and assessment); experiential and service-based courses that require human interaction and the development or demonstration of practical or interpersonal skills | Courses that benefit from a balance between in-class support and interaction, and in-depth discussions and longer-term thought | Support for field-based practicums; research-based courses; independent study. | Content-focused curricula and technology exploration courses within disciplines; support for study abroad and internship programs. |

**Web 1.0**  **Web 1.0 / Web 2.0**  **Web 1.0 / 2.0 / 3.0**

Sources: Mullinix, B. & McCurry, D (Table 1, 2003) and Whitehouse, P. (2009)