TechBC/SFU students (2002).
TechBC/SFU Surrey Archives

REFLECTIONS ON THE PRACTICE
OF BLENDED LEARNING
IN FIRST YEAR POST-SECONDARY EDUCATION

by

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ABSTRACT

Many educators in post-secondary education recognize the value of creating a learning environment that is relevant to the times we live in. As an instructor in a first year university course, Foundations of Teamwork & Communication (FTC), I have written this thesis to explore some of the specific elements in the development and delivery of the course that appear to be beneficial in creating a meaningful learning environment for students of the Net Generation. The purpose of this study is to explore the needs of Net Generation students, through evidence of their community and team building, online learning, and their use of a game-based assessment tool developed specifically for FTC. By examining the pedagogy, learning activities and the elements that have shaped the experience of students in this course, I suggest alternative teaching methods that may be used to engage and retain students beyond their first year of university studies.

Keywords: action research, blended learning, engagement, first year students, net generation, online gaming, student retention

DEDICATION

To my husband Greg, my daughter Meghan, my parents Olle and Els-Britt and my sister Marianne for their unwavering love and support in all that I do.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS AND ACRONYMS

AC	Asynchronous conferencing, online conferencing that allows students to post and read messages at any time, as opposed to synchronous conferencing that occurs in real time (i.e. MSN)
B.C.	British Columbia
CMC	Computer Mediated Communication
CMS	Course Management System
eLINC	eLearning Innovation Centre, provides technical support for courses delivered at Simon Fraser University, Surrey campus
FTC	Foundations of Teamwork and Communication
F2F	Face to face interaction, as opposed to online communication and discussion
IAT	Interactive Arts & Technology
IT	Information Technology
NetGen	Net Generation students
Perception	An online quiz software tool provided by Questionmark http://www.questionmark.com/us/home.htm
Q&A	Online asynchronous question and answer conference open to all students registered in the course
SFU	Simon Fraser University
SIAT	School of Interactive Arts and Technology
TA	Teacher Assistant
TECH100	First term of Foundations of Teamwork and Communication, delivered in the Fall.
TECH101	Second term of Foundations of Teamwork and Communication, delivered in the Spring.
TechBC	Technical University of British Columbia in operation from 1999 – 2003
TechOne	First year cohort program within the School of Interactive Arts and Technology, Simon Fraser University, Surrey campus
UBC	University of British Columbia
ViP	Virtual interactive Pet, an online quiz tool using Perception software

CHAPTER 1: INTRODUCTION

The emphasis is on new at Simon Fraser University's Surrey campus this fall: new classrooms, new programs, new students, new faculty, new offices and new labs ... A two-day orientation was held Aug. 31 and Sept. 1 to help new students become familiar with the campus and the services provided by the university. Activities included a drum café, where every student received an African drum, says student life coordinator Liesl Jurock. "The exercise was meant to demonstrate the art of teamwork and community building and to emphasize the interdisciplinary nature of the programs at SFU Surrey. We all beat to our own drum but together we make music." (Ricketts, 2004)

With more colleges and universities now having degree granting status in British Columbia (B.C.), there is more competition than ever before in attracting and retaining students. Many higher educational institutions focus their attention and resources on attracting undergraduate students entering from high school and are under pressure to keep pace with the latest trends that will appeal to students to choose their institution over another. However, the amount of research, time, money and effort that is spent in attracting students is only one side of the issue. It is one thing to be successful in having students enrol in record numbers, but what good is high enrolment if these students abandon their studies after their first year?

Retention studies have found that an average of 20 – 25% of all first year university and college students in Canada and the United States do not continue on to a second year of studies and that the causes of attrition are many (Grayson & Grayson, 2003; Martinez, 2001; Bloomer & Hodkinson, 1999; Davies, Mullaney

& Sparkes, 1998; Crossan, 1996; Martinez, 1995; Tint,o 1993). One study of Canadian higher educational institutions found that each student that leaves after first year of studies costs the university $4,230 in recruitment expenses (Grayson & Grayson, 2003). In 2004, Simon Fraser University (SFU) reported an overall attrition rate of 16% (SFU Office of Analytical Studies) which theoretically cost the university approximately $1,079,496. Researchers examining the causes of attrition have identified that the major contributing factors in academic, social and financial difficulties experienced by students are adjusting to the transition and workload from high school, not being able to manage their time and set goals for themselves, internal and external commitment restraints, and learning difficulties (Astin, 1984, 1996; Tinto, 1999; Martinez, 2001).

The experiences of students entering university for the first time vary widely among institutions and countries, but the general consensus from these attrition studies is that one of the greatest difficulties that most students face is the transition they need to make in becoming an independent learner (Waters 2005). In addition, with enrolments up by 4% since the 1992/1993 term and an increase of 15.8% in the foreign student population (Statistics Canada, 2004), Canadian post-secondary classrooms are becoming larger and more diverse, bringing additional heterogeneity that is important to take into account when developing and delivering curriculum, in particular to students who are new to post secondary education. Realistically, it is unlikely that any intervention strategy will result in 100% retention rates since many factors are involved in student attrition, including sociological, organizational, economic and

psychological considerations (Berge & Huang, 2004). Thus, it becomes crucial that we attempt to understand the nature of our current students and develop multiple and intentional strategies within the curriculum that will support learning and student retention.

As McInnis, James & Hartley (2000) suggest, the first year university experience is a two-way process, that is, the university shapes the environment and the curriculum, and in turn, the university experience is formed through the actions and choices made by students. Thus, the issue of creating a richer learning experience and ensuring a satisfactory level of retention is a shared responsibility, of the institution and student alike. To explore the factors involved in understanding and retaining our first year students, this investigation reports on the experiences of the development and delivery of one first year blended learning university course. The purpose of this study is to consider specific elements, such as community and team building, online communication and gaming, and the role that each plays in critically engaging our current generation of students.

Methodology

In the study conducted for this thesis, participatory action research appeared to be the most appropriate approach to take, considering my involvement as educator and curriculum developer for this first year course, Teamwork & Communication (FTC). Actively seeking feedback and reflecting on my own teaching practices is in line with action research methods and in

conducting research in a natural setting, one where the researcher interacts with his/her environment on a daily basis (Carr & Kemmis, 1986; Hargreaves & Fullan 1998, Smith, 1996; 2005). According to McLean, "action research has the potential to improve education as does no educational innovation of the past century" (McLean, 1995).

Rudduck (1991) explains that action research is a means to analyze and reflect on classroom experiences, with the aim of improving teaching practices. The purpose of action research is not only to analyze, discuss and reflect, but to bring about change through a "systematic inquiry by practitioners to improve teaching and learning" (Feldman & Capobianco, 2000). The idea is to envision the course as a living entity that behaves and reacts differently depending upon how the instructor delivers and teaches the material and how students receive and respond to it. This is indeed how I have thought about FTC while working to refine it over the past five years. Throughout the time spent in developing and teaching this course, I have actively sought feedback from students and the instructional team. This process of consistent enquiry, feedback, reflection and revision evolved over time, and helps to inform the pedagogy of how teaching and learning is delivered in FTC.

In the beginning, the purpose of conducting research in this course was to inform my own teaching practice and to make revisions to the activities to maximize student engagement and learning. As time progressed, the process became more involved and changed from a solitary research effort to a

collaborative research initiative that included consultations with other instructors who were teaching the course, various administration departments such as student services, the co-operative education department and the campus library. However, students became the primary source of feedback once the educational institution began to experience a transition in governance and the student demographic changed as a result. The informal support and feedback mechanisms that had been developed no longer existed, largely due to the uncertainty and change in administrative departments and personnel on campus which will be presented in Chapter 2.

Thesis Overview

A good starting point for any study investigating this issue is to define the institutional climate, who our current students are, what motivates them and what initiatives we can begin to put into place to address the needs of students in helping to facilitate this crucial transitional phase from high school to higher education. In Chapter Two, the first part of this study, I give the background context in which the curriculum for Teamwork and Communication (FTC) was developed. Beginning as a course specifically designed to support an Information Technology (IT) program, the objectives were to provide the 'soft skills' aspect of writing, teamwork and oral communication within a program of computer animation, programming, mathematics and virtual architecture theory courses. Chapter Two describes the philosophy and background of the fledgling university, Technical University of B.C. (TechBC), that housed the IT programs,

its institutional climate and culture, student and faculty expectations and issues, and subsequent amalgamation into Simon Fraser University (SFU).

In Chapters Three and Four, the curriculum development of FTC will be explored, through the transition from TechBC to SFU. The student characteristics, course design, objectives and philosophy behind the course will be examined. Developing and maintaining community within the course delivery and within student teams are a central concept that will be investigated using examples from online team conferences. Current trends in how students interact and negotiate studying and learning will be addressed in Chapter Five. As technology-enhanced learning is becoming more common in post-secondary education, a brief review of online gaming and technology-based educational gaming as a means to enhance student motivation and learning will be presented.

In Chapter Six, the development of an online gaming and assessment tool, the Virtual Interactive Pet (ViP), for the exclusive use for students enrolled in FTC will be highlighted. As there are many different ways to assess and different reasons for assessment in higher education, the role of the ViP will be explained as a potential resource for empowering and engaging students within the assessment agenda. Chapter Seven will discuss the different issues involved in adopting technology and what can be understood about the issue of retaining students past their first year of university.

What this thesis attempts to provide is a reflection on the changes that have been brought about in one course through institutional changes, student feedback and instructor reflection. The main research question guiding this study is "In what specific ways can instructors and educational institutions develop a learning environment that actively engages and retains our current Net Generation (NetGen) students?" My hope is to provide insight into ways that post-secondary institutions can respond to changing student needs, and thus, assist in attracting and retaining students beyond the first year. What this thesis does not attempt to do is to give direction as to how technology should be used in any given course as each course is unique and is shaped by the institution it resides in, the students that interact with it, and the instructors that shape it.

CHAPTER 2: COURSE HISTORY

In order to frame this investigation, a history and context needs to be provided of the forces that have shaped the current curriculum. The history of the development of this course, FTC, is a unique one in that it has transitioned from one post-secondary institution to another and that the student body itself has changed significantly since its first offering.

In 1999, students in this course were enrolled in one of three streams of study: Information Technology (IT), Interactive Arts & Technology (IAT) or Business in a Global Economy (BGE) stream of study. Many were mature students who had already attended some form of post-secondary education. By 2004, the majority of students were entering the program directly from high school, had no prior post-secondary experience and were expecting to enter into different fields of study after first year, including business, technology, natural sciences and computer sciences.

The TechBC Story

The SFU Surrey Campus was once home to TechBC, the Technical University of British Columbia, a university that was designed to serve students in the Fraser Valley region through three major streams of study: IT, IA & BGE. TechBC officially opened in 1997, with the first course offerings available in September 1999. The development of TechBC was begun in response to the

B.C. government's New Era document that called for economic renewal through the high technology sector. This document stressed the importance of developing a highly skilled workforce to meet this need (Trueman, 2003). Included in the proposal to the government by TechBC were the underlying mandates, outlined as follows:

- Our vision is a highly integrated learning culture at the forefront of technology that is the launch pad for leaders of innovation in science, arts & design, technology and industry.

- Our mission is to excel in the flexible and innovative delivery of degree, diploma and certificate programs of an applied and technological nature, and conduct applied research and development in partnership with industry.

- TechBC is not intended to be a typical university. It is a hybrid institution in which the best practices from business will combine with core academic and research goals to produce timely and cost-effective programs and knowledge development (Trueman, 2003).

The vision behind this new university was to develop a distinct and unique learning culture that incorporated technology as a primary educational focus and to offer students new directions for education and research within a technologically driven economy.

A distinctive academic culture was created. Students were promised a program that would deliver courses that were on the cutting edge of their fields in all three streams of study. Students and faculty alike were excited to be part of this pioneering institution and expected to be involved in leading both B.C.

students and business into the new millennium. All who were part of this project felt the spirit of what Trueman reported when he wrote:

> For a few short years, some of the best high-tech bent minds in Canada were crammed together in a windowless former Zellers space in the heart of darkest Surrey, trying to build the coolest University on Earth from scratch. BetaSpace (thus tagged as it was expected to be an interim location while construction proceeded on the Tower above) looked like a Buckminster Fuller acid vision. And with Faculty composed of high-powered geeks sprinkled with a collection of digitally-minded performance artists, courses streaming off a home-grown CMS, a commitment to using the most progressive pedagogy out there, and some seriously tech-savvy students... it all added up to one amazing, if somewhat unreal, kind of place. (Trueman 2003a)

As Trueman states, students and faculty were operating within windowless rooms in a mall, but the creativity and work generated far exceeded the physical space. Academic activity was spent in virtual communication and virtual worlds that took participants far beyond the physical boundaries of a shopping mall in Surrey. There was a strong commitment to the vision of TechBC, and the results from one survey conducted showed that most students supported the continuation of the university as a viable institution that would eventually have achieved greatness (Trueman, 2003b). Students particularly enjoyed the fact that they could get into the courses they wanted with ease and a remarkable 62% believed that the location of the university was excellent, despite its location in a mall (Trueman, 2003b).

During the initial conception of TechBC, three key operating statements were proposed that promised the B.C. government that the university would produce:

- A cost-effective way to increase opportunities for skilled knowledge workers for tomorrow's economy

- An effective approach to collaborative learning

- An innovative working model for introducing efficiencies and accountabilities into the post secondary education system" (Trueman, 2003)

During its time of operation, although TechBC was able to deliver a student-centered curriculum that allowed for flexibility and innovation, it failed in its objective to implement "a business plan that will ensure economical, efficient and effective management of public funds and diligent stewardship of public assets" (Trueman, 2003).

The main challenge to developing a cost effective educational delivery system was based on TechBC's hybrid curriculum. Because 40% of the course material needed to be developed for the online environment, it required high front-end costs for course developers and technology professionals (Trueman, 2003c). If these programs had been allowed to run for the long term, the front end development costs involved in creating this hybrid curriculum were expected to decrease substantially. The failure to fulfil budgetary goals, coupled with increased political struggles with government and other educational bodies ultimately led to the demise of TechBC. In February 7, 2002 the Ministry of Advanced Education announced that SFU would assume TechBC's students and programs, with the formal dissolution and transfer of assets from TechBC to SFU occurring on July 31, 2002 (Trueman, 2003d).

The Transition from TechBC to SFU

During the transition stage from TechBC to SFU, faculty who were hired through SFU contracts concentrated their efforts on revising their existing courses to conform to the SFU curriculum requirements. The benefits of becoming part of SFU were that the Surrey campus changed from the little-known TechBC, to a campus run by an established and well-known university. This altered the nature and culture of the Surrey campus in many positive ways. The innovative, experimental and visionary legacy of TechBC remained and was coupled with SFU's international reputation in education. The campus left its relative anonymity behind and amalgamated with a renowned university. Although the former TechBC could now enjoy the benefits that an established institution could provide, many students protested the change, as it had initially been the independent culture and spirit of the TechBC campus that had attracted them to the institution in the first place.

Many students and faculty felt that by identifying with a larger and more established institution, the innovativeness of the programs would dissipate into an abyss of bureaucracy. One study (Trueman, 2003b) reported the following comments made during the transition from TechBC to SFU;

> [We lost the] overall sense of community and spirit at our school. Everyone at TechBC was proud to be a TechBC learner and very proud of our school. We did things in a different, innovative way, like no other university or college. I, and I know many other people, just don't really care any more. We used to be involved in all events and everything that was going on around the school, and we lost a lot of that (3rd year IT student).

> [I miss] the culture and society. The instructors were there to create an awesome new learning facility and I got that vibe. TechBC created a feeling of being a part of something revolutionary. The TechBC environment, courses and culture were always in flux. It seems with SFU, there are more rules and policies and it is not as possible to make a voice heard (3rd year IA student).

However, one of the most important factors that were created from this merger was the establishment of a standardized administrative process that historically, TechBC lacked. This helped to change the relationship between instructors and students in positive ways from the faculty perspective, but perhaps not so positively from the students' perspective. As one second year IA student commented, "the open culture between the faculty, administration and learners of TechBC was lost" (Trueman, 2003b) and one fourth year IT student complained that;

> I would like the administration to be more open to feedback to students' input. Currently, as it stands, administration and staff members seem to get defensive when questions are asked or try to pacify the debate. Further, suggestions or input are not taken constructively. Response in many cases is that changes should not occur because certain activities have always been functioning that way.

From the second student's comments, one can see the direction that some students' attitudes were heading in regards to how they interacted with faculty and staff, most notably in the choice of words used, particularly "debate", which is in direct opposition to SFU's spirit and culture of dialogue.

Ironically, although faculty were dedicated in their focus on the learner and the open climate developed on campus, this was paralleled by the fact that some

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students took advantage of the lack of a formal system that dealt with academic dishonesty or harassment. Some instructors found themselves targeted by a few unscrupulous students who were inclined to take their frustrations out on the faculty because of their own poor progress or failure. TechBC had been operating with no senate, tenure or union structures in place (Trueman, 2003c). Now, with the SFU administration, the policies and procedures that govern faculty and student conduct are clearly articulated and there is a formal system that establishes guidelines that deal with any misconduct issues that may arise. As SFU, there is a clear mandate in what is expected from administration, faculty and students which previously did not exist with TechBC.

Managing Change

During the uncertainty between the time when the B.C. Government announced that it would close down TechBC and the time when the campus merged with SFU, additional stresses and burdens were placed on both students and faculty. Students were insecure with regard to how they would continue their education and receive the accreditation they were promised through TechBC, which were Bachelor of Science degrees for the IT, IA and BGE students. While TechBC wound down its final term, students continued their demanding workload of six courses per term while simultaneously finding themselves lobbying the government and taking part in numerous rallies to "save TechBC". A second year IA student stated (Trueman, 2003b):

> The B.C. government did not understand or even try to understand
> why TechBC was having the particular problems it was having. The
> government made its decision to shut down TechBC far too early and

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did not listen at all to any reason or logic surrounding the matter. The government misunderstood the whole situation, did not even care to understand it, and took the easy way out by auctioning TechBC off to the highest bidder, thus killing it.

Although we cannot truly know all the reasons why the B.C. government made the decision to close down TechBC, no amount of effort from faculty, staff or students was able to reverse this decision. However, the uncertainty over degree granting dissolved once TechBC was folded into SFU, as one second year IA student noted (Trueman, 2003b):

> The greatest advantage is easily the fact that SFU is a more established and well-known university, which means a much greater chance for people to learn more about the programs which TechBC had originally set up. I feel because SFU brings with it a better reputation, employers also look at the programs in a much better light.

Although many students were protesting the changes based on the fear that the innovations that made TechBC different from other universities would change, many acknowledged that with SFU's reputation, they would stand a better chance of their attainment of a degree that would be widely accepted in the professional community.

As noted earlier, the existing programs and courses needed to be revised in order to conform to the academic traditions and mandates of SFU. In the past, courses delivered by the former TechBC were structured along a modular system, in which each term was divided into three modules consisting of five weeks each. All modules were delivered using a combination of traditional classroom and innovative online and multimedia approaches, with some courses

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delivered exclusively online. These courses were designed to allow students to follow a flexible model of learning, whereby they could create their own study plan and manage the amount of time they would spend on campus (Trueman 2003). Although many courses utilized this hybrid approach to course delivery, some issues arose within the modular course design, with the largest issue being that of assessment.

During the time of TechBC, each course was in direct competition with one another to capture students' interest. The most effective way to do so was to have a weekly assessment in place. If a certain course did not have an assessment that week, chances were that students would not participate in that particular activity in order to complete the assessments needed in other courses. With students taking a load of six courses, many were experiencing six assessments per week and instructors had the burden of weekly assessments to mark, usually of over 100 students each, without teaching assistant (TA) support. The assessment experience differed from other universities as many instructors approached the development of their modules as if each module represented a semester of learning. This perception created an environment of hyper-learning with little time provided for critical and reflective thinking, crucial processes that promote learning, thereby creating a critical situation of information overload that students had to contend with.

This hyper-learning environment is different from what Perelman (1992) describes as 'hyper-learning' – the practice of incorporating the Internet and

online tools to deliver teaching and learning. In this instance, hyper-learning goes beyond the integration of technology to using technology as a conduit to deliver masses of information within a short period of time. However, with the transition from TechBC to SFU, the curriculum changed from delivering three modules per term to accommodate a standard thirteen week term for all courses on campus. The result was a cognitive shift of sorts that helped to greatly reduce the perception and practice of a hyper-learning environment. This reduced the pressure which had resulted from assessing students at the conclusion of each module, and allowed for teaching and evaluation to take place over the length of a normal term.

In this chapter, I have presented the culture and environment that existed during the initial development and delivery of FTC. In the next chapter, a course overview outlining the structure, objectives and the function of this course will be presented.

CHAPTER 3: COURSE DEVELOPMENT & DELIVERY

From the hybrid conception of curriculum development that began in TechBC, Foundations of Teamwork & Communication (FTC) developed as a core first year course that continues to evolve, balancing the spirit of experimentation in course design with the pedagogical rigour involved in teaching academic communication skills to first year students. FTC offers students writing-intensive learning and focuses on developing the skills required in information and communication literacy and proficiency within textual, oral and social settings, whether it is in face to face (F2F) or online contexts. Using collaborative and interactive classroom and online learning strategies, this course encourages students to explore and reflect upon the critical processes related to their written and oral communications. Individually and in teams, students practice organizing, researching, documenting, revising and critiquing their work.

FTC is one course within the TechOne program at the SFU Surrey campus, which offers students an interdisciplinary experience in creative arts and information technology. The TechOne program allows students to participate within a cohort structure that is designed to offer a supportive learning community throughout their first year of studies. In FTC, students are taught the necessary skills for communicative competency that they can apply in other first-year courses and in other academic and professional work. FTC is also linked with other areas of the SFU Surrey community, such as the SFU Surrey Library, the

Co-op Education Program and the Learning Literacy Workshop Series in order to provide a learning experience that is supported throughout the campus, a practice that carried over from TechBC.

The majority of students who enrol in FTC transfer directly from high school. Approximately 30% have a first language other than English. The gender mix is 34% females and 66% males and the approximate enrolment is 400 students per term. During the period of this study, three instructors and four teaching assistants formed the teaching team and the course delivery method was, and continues to be, a blended learning design that alternates weekly face to face class sessions with online asynchronous team conferences. Students work in teams of five or six and are expected to participate weekly in the assigned readings and activities with their teammates.

Course Objectives

As previously mentioned, FTC is a writing intensive course in which students learn and practice their academic writing skills in both low stakes and high stakes situations through online as well as traditional forms of writing activities. The weekly activities and learning objectives progressively build upon one another, guiding students through a weekly process of acquiring skills needed that include enhancing their writing and research proficiencies, as well as self-directed learning and critical thinking. The overall course objectives are to familiarize students with university culture and the blended learning environment, and to:

- introduce first-year students to university-level foundational studies in teamwork and communication.

- allow students—individually and in teams—to apply, practice, and enhance their face-to-face, online, and oral and written communication skills in preparation for future academic or professional situations.

- create a dialogue and communication awareness that will support teamwork and collaborative learning in other courses, as well as support and foster a sense of community within the TechOne cohort.

The teaching team collaborates in facilitating learning, and students are provided with a wide array of opportunities to develop their skills in collaborating through peer support and feedback. In order to effectively deliver this course, instructors work together as a team to determine the instructional methods and activities they will design and implement in each of their class sessions, and confer with one another regarding marking and grading strategies in order to ensure a high degree of consistency in both teaching and assessment practices.

The intention is to create a teaching team that works together well with one another and with administrative departments on campus in order to support and encourage students as fully as possible. Research supports the idea that to keep teaching practices vibrant, develop new skills, and deepen meaning, behaviors and beliefs, instructors need to work together to support one another in their exchange of ideas, resulting in positive feelings about the work they are doing (Sarason 1982; Goodlad 1984; Fullan & Stiegelbauer 1991). Such collaboration ultimately benefits students. They feel supported in their studies, knowing that although they may have different instructors for the course, the

learning objectives are relatively the same and the assessment expectations are kept as consistent as possible.

Curriculum Design

The pedagogical basis for the curriculum in are constructivist and collaborative principles (Murphy 1997; Prendergast 2004) that are most evident in the online team conferences. In the bi-weekly conferences, a task or set of questions is given that students need to research and explore first on their own, posting their responses to the team conference; they then respond to one another through feedback, brainstorming and/or critically evaluating one another's contributions. To give students a starting point in developing their collaborative learning skills, there is a clear structure in place for both classroom and online team conferencing. For example, students are given a weekly 'To Do' list that is supplied in the online syllabus page that guides them through the course activities and assignments through the use of iconography, prompting students about weekly activities. The light bulb icon gives students the learning objectives for the week, the book icon tells students what they should be reading, the face to face icon shows students that they have a class session this week, the calendar with a red circle indicates that there is an upcoming assignment and gives students information on how to prepare for it, etc. In this way, visual cues as well as textual information are given to students on a weekly basis and they can keep up with their work by simply working through the weekly 'To Do' list (Fig. 1).

Figure 1: Weekly Student To Do List

WEEK 2: UNDERSTANDING THE NATURE OF COMMUNICATION
Monday Sept. 13 – Friday Sept. 17, 2004

	Read the following TO DO LIST carefully in preparation for your TECH100 activities this week.	
	Review the following: At the end of this unit, you will be able to: • Understand the complex nature of communication. • Recognize the two principles upon which all effective professional writing is based. • Identify the three keys and nine axioms of effective communication. • Apply what you have learned to your online team conferencing activity.	
	Read the following: • Course Text: Chapter 1, *Understanding the Nature of Communication*, pp.1-16 • Troyka Writing Handbook: *Critical Thinking & Reading*, pp.1-9.	
	After you have read the course material for this week, click here to take: Course Concepts & Writing Review **The quizzes are to be completed between 9:00AM and 9:00PM on Monday of this week.** After taking the two quizzes (of 10 questions each), check your results. If you are not satisfied, you may take the quiz again up to three times within the allotted time frame.	
	Successfully completing your entire week 2 conference assignment is your first Team Challenge. This assignment is worth 5% of your total mark for the term. For complete details on how to complete this assignment, go to the Week 2 Assignment link.	
	This week you will have an online team conference session. In preparation for your online activity, make sure you have: reviewed the unit objectives read the prescribed readings taken the quizzes at least once	
	Your Reflective (Writing Diagnostic) Essay is due in 1 week: Sunday, Sept.26th, 2004. It is worth 10% of your grade. • What is a Reflective Essay? • What is my instructor looking for? • How do I submit my essay?	

Students print out a copy of the To Do list each week, which gives them

the option of managing their course workload more efficiently. From this starting

point, students are then encouraged to explore issues and ideas and to develop their critical and creative thinking skills using a variety of sources in addition to the online conferences. An important additional support to students' learning is an online Question & Answer (Q&A) forum that exists for students and which instructors, TAs and students participate in as a means of further clarification of weekly activities and assignments. Typically, instructors will offer a great deal of information and support in the Q&A during the first weeks of the term and then participate less, gradually shifting the responsibility of peer support on to the students. Integral to FTC is the idea of community building and assisting students in building their autonomous learning skills. The blended learning design of the curriculum allows for these processes to take place both in person to person situations as well as in the online environment.

FTC is delivered over two terms with TECH100 delivered in the Fall and TECH101 delivered in the Spring (Fig. 2). Throughout both terms, key concepts are taught through scaffolding whereby instructors and TAs provide intensive feedback and guidance throughout the beginning of the term and gradually lessen their participation as students learn the skills of giving and receiving feedback with their colleagues (Bransford, Brown & Cocking, 2000). In addition, each week of study builds on the preceding week of study. For example, in the first week of classes, students are introduced to their teams and determine their own communication style as well as those of their teammates. In the second week, students post to an online asynchronous team conference. Building on what they had learned in the previous week, students discuss and develop their

team groundrules which takes into consideration the unique mix of their own team's communication styles.

Figure 2: Overview of FTC, Two Terms

Teamwork & Communication   TECH 100/101

Mixed Collaborative (Blended Learning) Format:
Text, Class Sessions, Online Conferences, Online Tools, Online Resources, Workshops

	Academic Essay				

Writing, Teamwork & Communication Strategies

TIME (months)   Sept ———————————————————— Dec

Jan ———————————————————————— Apr

Writing, Teamwork & Communication Strategies

Team Presentation & Paper   ePortfolio

Extrinsic Outcomes: Increase writing proficiency (traditional & online), conduct research, discern & cite credible sources, collaboration and teamwork skills

Intrinsic Outcomes: Self-directed, reflective, critical thinking, life long learning skills

In their first term of study, students learn theories of professional and academic writing, verbal and non-verbal communication, as well as team and group process. Students apply and practice these skills in their weekly class and on-line conferencing activities. Working closely with the SFU Surrey Library staff, this course offers students a unique midterm experience that supports academic literacy. Student teams interact online with library staff to learn basic research and citation techniques and how to effectively utilize library resources. Through the midterm activity, students develop the foundational knowledge necessary to

begin an eight week research essay writing process, which is supported by writing workshops, research workshops, and peer/instructor feedback.

In the second term, students begin to build on the skills introduced in the first term by continuing to explore different kinds of academic and professional writing (online, essay, resume, cover letter, critical reflection) and work in teams to develop a cooperative presentation. Through the application of teamwork principles in building the presentation, students continue to develop their writing, teamwork and professional communication skills, including the use of effective peer and self-evaluation techniques, presentation skills and conflict resolution. This second term has two main themes. In the first portion of the term, students work within a team to develop, write and script a team presentation. In the second portion of the term, students create a professional electronic portfolio by collecting, reflecting on, synthesizing and critically writing about their work from their first year studies and work and volunteer experiences.

Both the team presentation and the e-portfolio development are supported by online writing, peer and instructor feedback and a revision process. Students are taken through both the standards and the processes of writing for academic essays, online communication, feedback, self-evaluation, critical revision and collaborative writing. By communicating through an online text medium that creates a weekly record, students can progressively build, check and improve on their writing skills. This process also supports students in their online writing applications in other courses. As mentioned earlier, these two courses utilize a

blended learning model of delivery, alternating face to face class sessions with online conferencing activities.

Blended Learning

Initially, and as part of TechBC, this course was developed to be delivered entirely as an on-line course, but after the first term, it was evident that first year students needed to have more contact time with their instructors and peers in order to fulfil the objectives of the course and to have a satisfying learning experience. Following the blended learning model, the course alternates weekly class sessions with online asynchronous team conferences, which allows students a certain amount of flexibility in their studies, as it reduces seat time and allows for different modes of participation to take place. The course design is student-centered (students are expected to be active learners), includes interaction between the student and the instructor and between students, and integrates both formative and summative assessment strategies (Dzuiban, Hartman & Moskal 2004).

The pedagogical rationale behind using a blended learning model design is to appeal to our net generation (NetGen) students, most of whom are familiar with navigating the online environment (Dzuiban, Hartman & Moskal, 2004; Prendergast, 2004; Boyle, Bradley, Chalk, Jones & Pickard, 2003; Starenko, 2004). An important point drawn from these studies is that first year students need sufficient contact time with instructors and peers in order to feel connected with the culture of the university and to better understand what the course workload expectations are. Previous research strongly suggests that student

satisfaction with their learning experiences increases with the level of interaction experienced with both peers and instructors (Swan, 2001). Another aspect that allows for contact time, particularly for shy students who do not participate fully in F2F classes, is online asynchronous conferences (AC). These students seem to find that the online AC allows them the time to think about what they will contribute to the team discussion and offers a certain amount of anonymity, thus reducing any social apprehension they may experience when in class. An example of a situation of one student who did not speak up in class, but took a leadership role in AC will be discussed later.

Throughout the five years that FTC has been offered, feedback has been encouraged from students, other instructors and TAs for the purpose of continuing to refine the activities and objectives of the course to best meet the learning needs of the students. The informal data gathered was used to inform which aspects of the course curricula worked well and which did not, resulting in new methods and tools of delivery to be engineered and notes made for continued curriculum revisions. The perpetual challenge for the FTC course developer and deliverer is that of choosing and applying the best that both online and classroom methods have to offer and that would be most appropriate for each learning and teaching situation. This tends to change each year depending upon feedback from past students and from the current student body profile.

Reflective Practice & Constructivism

The continually evolving curriculum of FTC is based in constructivist

learning theories, where the emphasis in student learning is on process

(although, not exclusively) rather than product (Von Glasersfeld, 1995; Fosnot,

1996) and endeavours to surround students with many sources to learn from

rather than the 'sage on the stage' method of teaching. Teaching is delivered in

a variety of ways during the term, ranging from one-on-one methods that involve

student-to-student, TA-to-student, and instructor-to-student learning, to many-to-

many methods such as teams of students interacting with other student teams or

with the instructor team. The learning environment ensures that constructivist

principles are consistently observed throughout the course, which includes

teaching and applying the following elements (Murphy, 1997):

- multiple perspectives
- student-directed goals
- instructors as coaches
- metacognition
- learner control
- authentic activities and contexts
- knowledge construction and collaboration
- previous knowledge constructions

- problem solving
- consideration of errors
- exploration
- apprenticeship of learning
- conceptual interrelatedness
- alternative viewpoints
- scaffolding
- authentic assessment
- primary sources of data

Many of these learning processes are supported by a technology-based

application that uses team AC to discuss, explore and reflect on issues and

scenarios presented. Participating in online conferencing allows students time

for deeper contemplation of the activity issues and challenges students to incorporate relevant research and outside resources to inform their discussion. However, attaining this potential with all students is not without its challenges, as I will discuss later in Chapter 6.

In this chapter I have given an overview of the course objectives and how FTC was developed and delivered. In the next chapter, I will look at the ways in which team and community building play a crucial role in this course and within the context of the first year university learning experience.

CHAPTER 4: TEAM & COMMUNITY BUILDING

The development of team and community, undertaken as part of an overall effort to enhance student retention, can be crucial in creating a meaningful learning place. Students become integrated and involved through developing a feeling of belonging through identification with their colleagues and the campus culture. As a required first year course, FTC provides students with their introduction and inclusion in an academic community. The course is structured in such a way as to provide as many opportunities as possible for students to learn as well as to connect and interact with one another and their instructors.

During the conferencing activities, structure and direction are provided for students in how to interact more effectively online by building on one another's ideas and to assist in the learning process. According to Mulder, Swaak & Kessels (2002), in order for learning to take place and to provide quality in computer mediated communication (CMC), students must first develop a shared understanding of their roles within that environment. Some studies in CMC have found that shared understanding can only be reached within the framework of synchronous conferencing, rather than asynchronous conferencing (Mulder et al. 2002). The assertion of these authors is that feedback mechanisms within the exchange prompt and encourage reflection, allowing conceptual learning, defined as "the exchange, reflection and refinement of facts and concepts" (Mulder et al.,

2002) to take place in an environment that simulates the pace of 'real' conversation. However, the notion of the ability to develop shared understanding in synchronous conferencing alone and not in asynchronous conferencing does not reflect the experience of this researcher. My colleagues and I have observed that within AC, students have a longer time to reflect upon their responses, allowing team members to refer back to course materials and concepts and to integrate these into their interactions with one another.

As noted earlier, some students also have difficulties communicating in English and are reluctant to participate in class activities. Many have stated that their response time is slower, and that once they have formulated their response to a F2F discussion, the subject has moved on and they tend to lose their opportunity to participate as they would wish. Within asynchronous online discussions, however, the pace of this type of communication allows for students to post and respond to their teammates at any time within the assignment time frame. In addition, the quality of experience students have with their online interactions provides an additional dimension to their relationships with their teammates that may not have been possible in F2F encounters, due to self-professed shyness.

The Role of Team Learning

In traditionally styled university classrooms, the lecture hall is a common feature in first year courses. In their first year, students usually feel lost amidst a sea of faces and have little opportunity to discuss what they are learning with

others. The friendships they develop are usually with individuals of similar background, precluding academic and social interaction with others who may be different from themselves. Typically, students will not know the names of students sitting beside them in lecture halls week in and week out. Placing students within a supportive team can help to counteract the isolation usually felt in these types of learning situations.

In FTC, instructors endeavour to encourage diversity in teams as part of the learning process, and use the computer management system (CMS) to randomly generate student teams within each section. Instructors then check teams to ensure a balance within each is achieved according to gender and ethnicity in order to encourage interaction and to capitalize on the existing diversity within the class. However, since it is difficult to determine ethnicity from students' names alone, the current practice is to ensure that female students are not placed alone in a team of males and that there are at least two females within a team.

Since there has traditionally been a higher enrolment of males in FTC, what typically happens is that some teams will be all male. The purpose of not having a female alone within a team of males is that research has shown that females tend to be less participative when there are more males present. The concern is to provide a level playing field for all students to participate as equally as possible (Tannen, 1990). Thus, most teams will include a minimum of two to three females within a six member team.

The size of the team is important as well. In FTC, teams of five to six students have been found to work best due to varying participation rates of students. In every team there will usually be a mix of weak and strong students and problems can occur if a team is comprised of students who either are unwilling to work within a team or who are regularly absent from discussions and from participating in group assignments. In cases such as these, it's important that the instructor not only teach students how to work in teams, but also to effectively monitor teams for signs of non-participating members and to intervene when needed to restore balance in team functioning.

According to Michaelsen et al., there are three general uses for small groups or teams in education; casual use, frequent use in structured activities through cooperative learning, and the transformative use of groups in team-based learning (Michaelsen, Knight, Bauman & Fink, 2000). In the casual use of groups, there is little planning involved and there is no establishment of a team culture. In cooperative learning, the activities are more carefully planned ahead of time and are woven into the structure of the curriculum. This gives students a sense of community and working with others. The third form is that of team-based learning, which differs from the previous two uses of groups in learning in significant ways.

For the purposes of this study, team-based learning is defined as a particular instructional strategy that is designed to support the development of high-performance learning teams, and provide opportunities for these teams to

engage in significant learning tasks (Michaelsen et al., 2000). This can only be accomplished if team-based learning drives the curriculum and activities, and is not treated as an add-on feature. Teamwork is considered the primary form of activity in FTC and the curriculum depends upon students working together in highly functioning teams to construct knowledge, network, support and to be accountable to one another throughout their learning processes (Michaelsen et al. 2000). For example in FTC, if one team member does not participate in a class or online conferencing activity, it is their team that they are letting down and not the instructor. The smooth functioning of the team depends upon each member being accountable to the others and to what they need to accomplish.

For students who are not familiar with working within a team culture of this sort, it can be difficult when confronted by their peers if they are not doing the work the rest of their team expects from them. As members of a learning team, individual students have a higher level of commitment to learning and can produce much greater results together than they can alone. In order to go beyond cooperative learning and to build learning teams, Michaelsen et al. (2000) offer some guidelines:

- groups must be selected by the instructor
- student accountability must be ensured, both individually and to their team
- assignments must require input from all team members
- students need to receive immediate and frequent feedback
- students need to have the opportunity to evaluate one another

In addition, the role of teams within a blended learning curriculum needs to closely follow the tutor model of learning -- that of being student-centered and discussion-based with a high degree of personal engagement from the instructional team. With the help of asynchronous team conferences, student interactions can be monitored and appropriate intervention and coaching tactics can be implemented to encourage students in their team building processes.

In FTC, the tutor model itself is not conducive to scalability factors whereas instructors and TAs spend upwards of 30 hours in an online conference week, reading student posts and offering feedback and guidance. In addition, in the institutional framework that determines instructor workloads, online contact hours are not officially recognized nor counted as student contact hours. However, using the tutor model style of learning can be one way to teach students to interactively engage with other students and faculty and to provide the contact that first year students need, as previously mentioned.

By working in small teams, students build their confidence and competence in engaging in an academic community of inquiry. With instructors and TAs taking on the role of facilitators to monitor and guide conference and classroom team discussion sessions, students have access to a variety of resources to help in their understanding of course concepts and activities. The experiential learning cycle described by Kolb (1984) supports team learning precepts whereby students build their knowledge incrementally by engaging in a task, using discussion and dialogue to reflect on what they are learning. This

activity allows them to build their own unique culture within their teams, based on their interactions with one another. The intimacy and perceived anonymity of the online environment offered by team conferences allows for many opportunities of interaction and contact not usually available in personal meetings. For example, in the online conferences, students and instructors can meet and respond to one another more quickly than by an arranged F2F meeting. Students who are too shy to ask questions of the instructor do not feel the same reluctance in asking questions in the conferences or in responding to their colleagues' questions. These factors are all conducive to helping students build their competencies and feelings of belonging within the academic community.

In designing learning activities within a blended learning curriculum, the FTC teaching team chooses from amongst both traditional and innovative learning methods in order to maximize purposeful interaction within teams and to ensure that the necessary supports, both technological and human, are in place for team development and bonding. Although technology can provide a medium and shape the structure of interaction and discussion, the participants are charged with acting upon their environment as co-constructors of meaning as they interact with the course materials, assignments and their fellow teammates. How the team builds its community is wholly dependent upon how each student in each team negotiates his/her space, resulting in each team developing its own distinct personality. When collaborating within a solely text-based environment, it is apparent that more thought and deliberative effort needs to be extended into creating a sense of place for the participants.

Virtual Community

One of the concerns of integrating CMC into course curricula is the issue of developing community and a consistent learning environment for students. The use of social cues, whether online or offline, is an important factor in establishing a firm sense of social presence within an educational cohort. The degree of social presence within a CMC environment can be an important factor in determining how well students will participate and interact with one another and how the instructor can best aid in supporting the learning process. Some evidence of the role that social presence plays in interaction will now be presented.

Polhemus, Shih & Swan (2001) define social presence as "the extent to which the communicator is perceived as real". Further, research findings suggest that an overview of social presence would include:

- *Social Richness* – evidenced by intimacy and immediacy. Choices in written text can help to create a psychological sense of closeness and immediacy (Weiner, Johnson & Mehrabian, 1968)

- *Realism* – how well conceptualizations of human factors can be experienced as real, including the degree of social response even if portrayed through an animated character.

- *Transportation* – through three distinct ideas, "you are there" (feeling a part of the event), "it is here" (it is happening to you), and most importantly, "we are together" (a sense of closeness).

- *Immersion* – the degree to which the interrelators are absorbed, engaged and engrossed in their interactions with one another.

- *Social Actor Within Medium* – where the personality of the interrelator transcends the medium utilized.

- *Medium as Social Actor* – interrelators respond to cues provided by the medium itself, rather than to each other. (Lombard & Ditton, 1997; Polhemus et al., 2001)

As a demonstration of these findings, the following example displays one FTC student's decision to take a risk in the course, and disclose her uncertainty and fears around communicating both online and in class sessions (Table 1).

At this point in the online conference, it is the first week of study. Students have already established the climate for their team interactions through the previous day's postings, and have not yet met in a F2F class session.

Table 1: Evidence of Social Presence in Team Conference

Team Conference Postings	Observed Factors
D65: Hello, everyone ^^ This is D65. Well...Let me talk about my problems about the communication. I'm an immigration from Taiwan, and I've lived Canada 4 years. However, my English isn't very good (or I'm lacking of confident?!), and I always shrink back when I have to speak English. That's strange that we are having a classmate who's worried of "speaking", but it really happens on me ^^|| I don't mean that I can't speak, the main point should be that I'm worried of "expressing" myself. For example, we're here and meeting new people, and when someone reaches me and says something to me, I'll get very nervous and don't know what happen in the sudden. After that, I'll be regretful and think "I should say this or I should have done that, what am I doing at that time!" It seems I am slow in reacting, and it is. I'm not really know how to write my feelings, ... In the discussion, I don't speak a lot. When I agree some point, I just nod rather than saying something like "I agree" or "Yes, I think....", those words are swallowed from my mouth.(don't do that, they're not taste!) Then our team was doing the presentation in front of the class, and I just talked several simple sentences about the topic. At that time, my	***Social Richness*** Teammates are drawn in by this student's opening line of "let me talk about my problems ...". Through personal disclosure, this student has made herself vulnerable to her teammates in an effort to be understood. She relates her experiences and her feelings around those experiences, and invites her teammates to participate with her in helping her to improve her communication

Team Conference Postings	Observed Factors
brain was blank but my mouth kept saying something....(even don't know which language I'm saying >_<) After I've finished my presentation, I feel regretful again. My part of presentation is talking about why former people didn't believe computer would be so popular in the future, and I think I could give the example that "ancient people won't believe that people can fly in the sky, but it happens now". ...but that's too late >_< I have to improve my communication skills in English, but it seems I still get some fears to overcome. I don't know if this would help the discussion, but I just want to tell everyone that I get this problem and I will try to solve this.(it may take some time?!) And also....Forgiving me if I ask some silly question or I'm reacting slowly; I still get a lot of vocabularies in every place....(translator helps me a lot in this paragraph as well ^_^) Thanks very much ^_^ I'm not sure if I'm using the right words, if there's some misunderstanding, please tell me and I'll try my best to replace my words!	within the team. In this posting, this student's personality clearly shines through by her choice of narrative and use of expressions and emoticons.
D63: D65, I would to tell you that you are not alone in the way you feel. There far more people than you would imagine who feel exactly the same way you, if not more. From reading your post (and from the length of your post) I get the impression that you possess a very talkative side to you even though you tend to not show it :P I admire your courage in expressing yourself in front of a group of people that you have never previously met. Remember there is no such thing as a "stupid question" and never to hesitate asking if you have a question. If you tend to be the quiet type then you usually you would prefer using the facilitative or equal style of communication as it can be very powerful.	***Realism*** This student quickly affirms the previous student's personal disclosures by acknowledging it and then offering suggestions in helping her to improve on them. This student does not share any of his own personal experiences with the group.
D64: Hi, D65. This is D64. I have the same problem as you and I think we can overcome this problem together. Like your situation, I didn't know what to say during the "Intro to computer system" team discussion as well. I had a lot of things in my mind but I could hardly let them out of my mouth. I believe it's caused by my fear and self-doubt. Presentation is more scary. It's too hard for me to talk in front of people ,which is already difficult for me to speak my native language in front of the whole class, especially when I need to speak my second language, English.	***Transportation*** This student empathizes with D65's post and acknowledges that she has the same struggle, adding her own personal experiences to the discussion.

Team Conference Postings	Observed Factors
I think online discussion is easier than the face-to-face discussion for me. I can express myself well by typing but I can't express my feeling well by talking. Hope the group discussion can be a good chance for us to learn the communication skill. Again, D65, I hope we can overcome this problem together. Also, please forgive me if some unproper words or grammar are used.	
D61: Hello team members Hi D65, I read your 'POSTS' they are very good. Don't loose heart just be confident, even i am an immigrant from india. I read,wrote and have spoken english right from my birth but still i am not good in speakin english as guys here do because i mostly speak hindi, punjabi becasue they are my native languages i cannot get rid of them. But i made firm determination that i will speak english i nhome and with my community people also. also my assent is different and even hard to understand. yeap i use to feel shame, when i talked with my cousins who are born here bu tthen i realized that to improve i have to talk anyhow in english . so don't care about anybody atleast i can sure u that our team members are with u. learning a language is not a month job but needs time and practice. i respect the way chinese community spend their money, effort in learning ENGLISH. There are my some friends(chinese) whom i first met at BCIT doin ESL course, writing etc.he did the same course 3 times but didn't loosed his courage to do it he passed second time but he did 3rd time to improve his percentage. so don;t sit back please i am witn u we will have face-to -face talk soon.	**Transportation** Another student adds his story and personal experiences to the discussion, further affirming D65's experience with tagging his post with, "I am with u".
D62: Hey guys I just wanted to tell you that French was the only other language i ever tried to learn and i was terrible at it, even after 5 years trying to learn it. If english is your second language then you people amaze me. if i was put into a situation where i had to learn a language completely different from my own, and then try to adapt that into a social setting i would be lost 99% of the time guaranteed. Your courage to speak up and say something like u did (D65) is amazing, and I'm not sure i could do it in your place. Thank you for showing me that statistics and calculus are placid challenges in comparison to what others must face.	**Realism** This student, although having a different experience than his colleagues, attempts to empathize through a parallel experience. He acknowledges the difficulties that D65 faces, yet keeps an emotional distance between himself and his teammates, by the use of "you people".

In this example of a mixed gender team, team mates responded fairly quickly and empathetically, disclosing personal information about themselves, and in turn, effectively succeeded in establishing an initial element of trust within the team, confirming Polhemus et al.'s supposition of the use of affective language as prompting trust and reflection within the team. Through the use of personal narration and emoticons, the students in this team became emotionally engaged in their exchanges by identifying with one another through similar experiences. Developing a vibrant and meaningful online environment while concurrently establishing relationships through class sessions seems to be an important balance to strike within curriculum activity development. In FTC, we have endeavoured to provide situations and opportunities for these types of interactions to take place through whatever means possible in order to encourage students to experience 'realness' with one another and to enrich their learning.

Although research has established that the online environment has a certain degree of 'realness' and allows for intimate interactions to occur, some studies suggest that online communications can lead to isolation, loneliness and depression (Kraut, Kiesler, Helgeson, Hudson, Mukopadhyay & Cummings, 2004). However, in these studies, there was no differentiation in how students were using the internet, such as internet surfing, gaming, emailing and other such activities, although the type of activity and the time spent in it would presumably determine the degree of social isolation. In a more recent study, researchers revisited their earlier conclusions and found that there were positive

effects from online interaction, particularly in people who used it as a device to further enhance their F2F interactions (Kraut et al., 2004).

In FTC, the AC is designed to promote closer communication amongst team members and allow more opportunities for individuals to participate with their colleagues. In addition, context seems to play an important role in how connected a student will feel in the online environment. If the student uses CMC as an extension of his/her social and learning persona, then this student may have a different experience than the student who uses CMC for utilitarian purposes only, such as to fulfil assignment requirements and to receive a grade.

In terms of establishing the legitimacy of engaging in online learning and its benefits for first year students, it is evident that CMC is negotiated somewhat differently than is communication in traditional F2F settings. Although participants are depending wholly upon text-based discourse, which includes the absence of physical cues, CMC has the potential to provide a much more intimate encounter with fellow colleagues than F2F discussion allows. For example, Walther uses the term 'hyperpersonal' to identify CMC as where, depending upon the context of the CMC, intimacy levels are greatly enhanced as; "users engage in selective self-presentation, imbuing in their messages highly preferred personal and relational cues" (Walther, 1996). In addition, the use of different types of narrative styles may aid in developing greater connection with teammates as the following example from one FTC student team, the CareBears, illustrates (Table 2).

Table 2:   Team 'CareBears' - Developing Connection through Narrative Style

(S1) Hello Team ...! I hate to start this out like a Romper Room session but we just have to say hi to everyone. (Names each student) ... HELLO! Us folks on the Team .. roster are hoping to have some very good brainstorming discussions with you over the next few days. We should begin reading all the readings and links as usual and be prepared for the discussion. Until then, I'm proud to be part of this team! Dasvidania!!!   P.S. Introductions and other greetings should be in reply to this thread to reduce clutter. P.S.S. This is a tasty burger!
(S2) Welcome strangers and non-strangers! I look forward to discussing with all of you from Team .., and again, Team ..! With all of our brain power, I'm sure we'll come up with some great ideas; if not, I won't tell anyone - just joking. (Come on people, it was only a joke, don't look at me like that...)   Smile people!
(S3) Hell there Team Five! (Names each student) ...welcome to the world of Team .. sit back and relax. Your flight attendants will be (Names each student in host team).   Enjoy your flight with Team .. Airlines.
(S4) Hey Team ..,   Thanks for the warm greeting. I'm looking forward to having some new names to talk to instead of the same boring people I've been stuck with in Team ... Haha just kidding.   Hopefully we'll have some fun with our new 'team" and have some good discussions.
(S5) Hyies!!! Just wanted to be part of the welcoming committee for team ..! Looking forward to chatting with you guys!!!! ^_^
(S6) Hey guys, wow I'm surprised how quickly everyone's posted... Good Job! I'm looking forward to conferencing with everyone!
(S7) Craziness Looks like everyone's eager to post. I'm looking forward to this!
(S8) Hey guys, how's it going? I know some of you guys already and I am so eager to start :) Can you smile?
(S9) Hiyo team ..! Let's rock this conference!
(S1) Hi guys! Just for a little fun, but get back to work after! A joke has once again gone TOO FAR! LOL. ... and I thought it would be funny to actually assign Carebears to each of us trying as hard as we could to match personalities and such. We've come up with the following!!!
(S6) Wish Bear (S1) Tender Heart Bear (S3) Grumpy Bear (S2) True Heart Bear (S5) Cheer Bear (S7) Bedtime Bear (S9) Brave Heart Lion (S10) Lotsa Heart Elephant (S11) Swift Heart Rabbit (S4) Noble Heart Horse
(S12) Loyal Heart Dog (S8) Bright Heart Racoon   P.S. I'm lame... hehehehhehe! But I'm not flying on something!
(S2) Care bear's stare! 5...4...3...2...1! Go Team Care Bears! ^__^
(S3) Woah woah woah....why am I grumpy bear :O gets insanely grumpy* Oh i see why....

In this online discussion, S1 emerged as a leader for his team and was the one to establish the Care Bears team persona. In all his postings, S1 demonstrated a

strong and lively personality that was never seen in the classroom. In class sessions, this same student was quiet and contributed very little in his team activity discussions. This is one piece of clear evidence that supports the notion that AC can provide another avenue of interaction for some students that they may never otherwise experience. With S1 leading the way, this team demonstrated a clear and conscious effort to build community and a sense of belonging in their CMC, especially when partnered with another team for this activity. The use of humour and self-disclosure within reciprocal and respectful exchanges seems to provide students with a greater degree of commitment to one another and they may begin to view themselves as a team with a clear team identity (Garrison, Anderson & Archer, 2000).

Although the traditional methods of delivering social context cues are absent in CMC, through inventive use of emoticons and paradigm perception shifts of the users, new methods are continuously being developed to more effectively negotiate this medium. CMC also provides students with the opportunity to edit their messages before sending (a feature that would be a valuable asset in F2F interactions), a visual record of their 'conversations' with one another, and a record of when and where the 'conversation' took place. Accordingly, Feenberg (1989) suggests that this type of action and interaction represents a change in the role of language due to how it is negotiated in its textual and symbolic forms, for example, through the use of emoticons, and the ability of CMC to support a "social memory" for its participants.

Although some FTC teams were successful in creating interactive online discourse, particularly when a strong leader emerged such as in the case of S1, some studies find that students will view the online environment as too time consuming. In addition, the perception of some is that more effort is needed in CMC compared with classroom contact to foster a sense of community and connectedness with their fellow students and instructor (Maddux, Ewing-Taylor & Johnson, 2002). Students can be at different stages of readiness when taking part in online learning and this affects their levels of engagement with the coursework, especially when teams are a key component of the course. Groups can experience frustration with some of their members, particularly when some are seen as not contributing their full share in the on-line discussions, meetings and group presentations. Further, Taylor & Burgess (1995) discovered through their research that a small minority of students were angry about this new approach to learning and felt that they had not learned anything from their experience. Their study indicates that there may be students who will have difficulty with this method of instruction regardless of all attempts of the instructor at orientation and coaching.

Dealing with virtual environments can be confusing and frustrating for some first year students. Despite these issues however, in many ways the online environment can be a much richer source of interaction than classroom settings, primarily due to its text-based nature. Consider the experience of reading a well written story, where rich visual pictures are painted using textual information alone. Contrast this example with attempting to verbally articulate your own

personal interaction and reaction to a well written story. It is usually a difficult task to recreate to another, the same experience that the author of the story has conveyed to the reader. Much as a well written story can be highly interactive so that the reader can relate to the story characters and derives meaning from this experience, so can online communication afford an even richer experience due to the characters' ability to respond to the reader. In addition, once the interactions have ceased, the resultant product is the 'hard' or static documentation of the interactions that have taken place, much the same as the construction of a building: once the active operation (construction) has been completed, the finished form is then left, creating a permanent record of the transactions that have taken place.

Social Presence

Further to Lombard & Ditton's 1997 study of using the medium as the actor in building virtual community, Polhemus et al. (2001) investigated the factors that are important in creating a strong sense of social presence in CMC. They posited the existence of twelve factors that contribute to the degree of social presence felt in the online environment. They are:

- closing
- acknowledgement
- feeling
- paralanguage
- humour
- social sharing
- social motivators
- value
- invitation
- negative responses
- self-disclosure

- personal address

Moreover, it was concluded that the use of affective language, in other words, the degree of emotion displayed in written language by students, was the single most important contributing factor in developing social presence and in creating trust and reflection within the team or community. Our experience resonated with this conclusion. As was shown in Table 1, teammates responded fairly quickly and empathetically, disclosing personal information, and in turn, succeeded in establishing an initial element of trust within the team.

Through the use of personal narration and emoticons, the students in the Table 1 and Table 2 examples were highly engaged in their exchanges, finding identification with one another through similar experiences. In Rabby & Walther's (2002) study on computer-mediated support, this type of action is identified within a team as "social support communication" where students will respond to their colleagues by demonstrating that they are valued and cared for by other members of the team. Cutler (1995) adds that "the more one discloses personal information, the more others will reciprocate, and the more individuals know about each other the more likely they are to establish trust, seek support, and thus find satisfaction". Furthermore, Ermans, Koopman, Rutt & Steensma (1996) found that group members who can empathize with one another will respect each others' interests and develop trust within their group, providing a source of both cognitive and affective assurance for one another. These are all important factors to consider in helping first year university students to adjust to and bond with their new environment.

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Building Virtual Teams

To maintain mutual trust within a team using CMC, it is important that students develop their own team agreements and decide on their team communication ground rules. In FTC, the first online activity assignment serves more than the purpose of a team agreement; it also provides a way of engaging students early on in the course and having them commit to their team. Students are directed to investigate the structure of a popular online community, for example The Well (www.well.com), list the elements that they observe that contribute to the success of this community and then discuss within their team what their own successful and unsuccessful team and online experiences have been in the past. Through these disclosures, students quickly begin to know what their team members have experienced, how each reacts in different situations and what each is willing to commit to in creating this new team.

By developing their own team agreements, students tend to feel an increased sense of responsibility towards one another rather than to their instructor. This can play a role in creating a sense of community accountability which can be further reinforced through additional team building exercises that stress students' responsibility to their team members. The following conference example displays one team's discussion on how they would define their own team environment (Fig.3):

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Figure 3: Development of Team Agreement
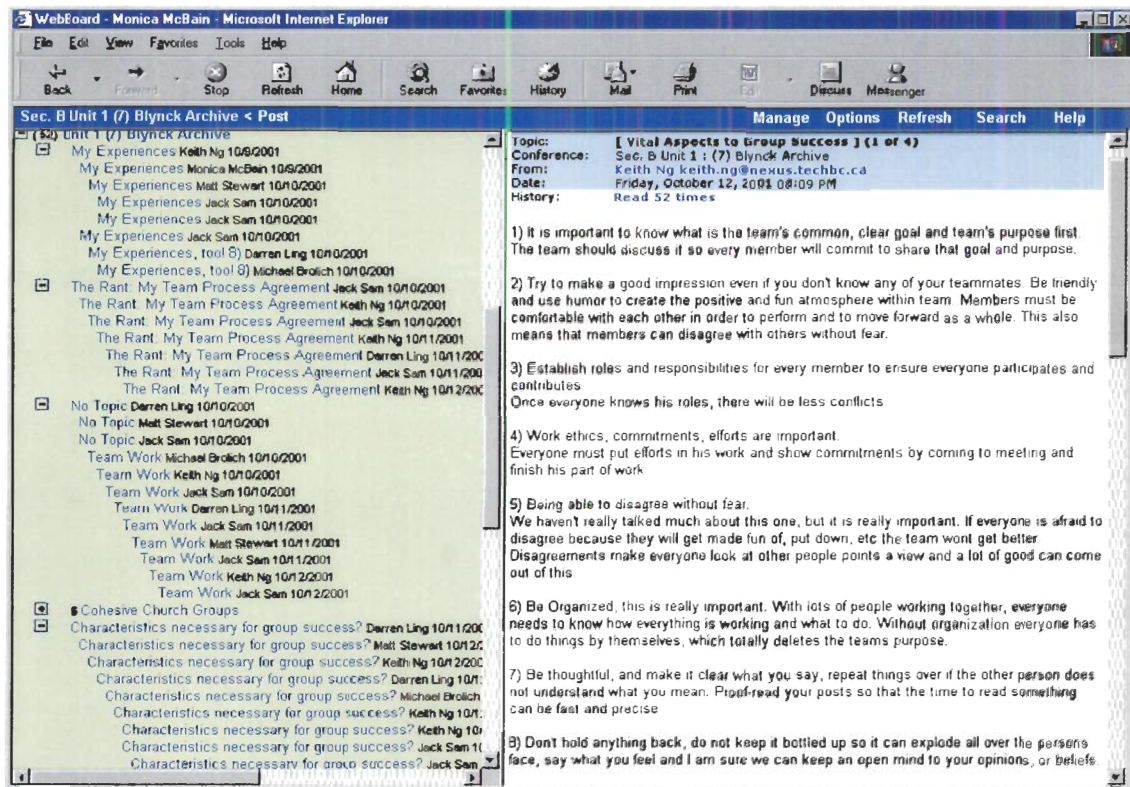
Through this exercise, students create buy-in within their own teams largely through establishing their own unique sets of rules in determining how their team members will conduct themselves in personal meetings and in online activities. Throughout this initial team process and during the term, instructors and TAs take on the role of facilitators of learning, expecting students to develop their own styles of interaction with their team mates and to provide feedback for one another.

The AC, as used in FTC, has proven to be a highly desirable feature for course delivery for both students and instructors, as it allows another dimension of interaction. In F2F class sessions of 50 students, it is not as readily apparent

what the level of critical discussion students are engaging in during their

assigned activities. Yet in AC, a permanent record is generated that both

students and instructors can use to build on and refer back to. For FTC, both

positive and negative aspects of asynchronous team conferencing using CMC

have been observed, as outlined in the following summary of pros and cons

(Table 3):

Table 3:   Pros and Cons of Asynchronous Team Conferencing in CMC

Pros	Cons
Allows for anytime interaction through a virtual meeting place	Reliance on technology that sometimes fails
Aids in developing a peer support network with team members	Steep learning curve for some students not familiar with virtual interaction
Greater participation opportunities for shy students	Not all students are comfortable with communicating online
Can encourage more intimate interactions due to perceived anonymity	Absence of physical cues due to text-based environment
Provides a level playing field	Frustration felt by some teams with non-participating members
Allows time for reflection and response	Time involved for students to read, post and respond to one another
Postings can be referred back to, responded to and built on	Time involved for instructors and TAs to monitor and give feedback
Allows students to practice their writing skills	Competent writing skills needed (or need to be practiced) due to the text based environment

In this course, the con side of using team conferences for learning can be

overcome through different teaching strategies, such as orientation sessions,

frequent communication between instructor and students (especially in times of

technology failures) and consistently encouraging students to apply and practice

their academic writing skills within a low stakes writing environment that allows

for mistakes and corrections to be made without grading penalties.

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Throughout the delivery of FTC, the online environment has played a significant role in both providing another dimension for learning opportunities as well as for interaction. It not only provides a learning place for students, but for instructors as well in regards to developing skills in constructing personal conduct guidelines, creating assignments exclusively for online learning and devising ways in which to enhance negotiation and interaction within virtual spaces. One lesson learned along the way was the importance of ensuring that instructors kept a strong online presence as facilitators and monitors. For example, typically in their first team conference, some students will revert to MSN-type language and instructors need to remind students that CMC in university is an academic place of discourse, and thus, academic writing conventions must be followed. In addition, due to the perceived anonymity of the online environment, it was noted in one online conference, during the time of TechBC, that some students attempted to use the Q&A inappropriately as a way to air their grievances about the course. As a result, instructors within FTC learned to establish a strong presence in all CMC by setting and enforcing clear guidelines for student online conduct (Fig.4):

Figure 4: Inappropriate use of the Q&A

Inappropriate use of the Q&A
Adjusting to a new learning environment, academic protocols and expectations, heavy workloads and instructional technologies can be very frustrating for first-year students. There is so much to learn all at once. Since so much of your work will be text-based, produced and recorded online, at times your feelings of frustration may seep into your work. Thus it is important that all students are aware of the content, context(s) and meanings of their words, take responsibility for their work, and critically evaluate what is and is not appropriate for an academic learning environment.
The Q&A is a learning tool that allows for efficient and effective communication across all sections of the course; it is not a forum to voice personal concerns or problems you might be having with the course, other courses, or the CMS. The Q&A is used for constructive learning and information sharing.

Inappropriate postings in the Q&A are dealt with by promptly deleting them, with the offending student emailed and reminded to direct such postings directly to their instructors. Taking decisive action in such circumstances is a crucial part of building a respectful academic community where students are encouraged to engage in positive interaction with one another and their instructors, as well as to take responsibility for their actions and to be responsible to the wider academic community. We found that the community guidelines that FTC instructors established were respected by our first year students, whom the next chapter identifies as net generation (NetGen) students. One of the traits identified in NetGen students is that they respect social conventions.

The reader should now be acquainted with the context of the institutional climate presented in this study and have a general overview of the type of curriculum that is involved in delivering the FTC course. The stage has now

been set to explore who the actors (the students) are, what their motivations are and the types of scripts that need to be involved in engaging our NetGen students. In the next chapter, I will outline some of the characteristics of our current first year students and explore what motivational elements were used to capture and engage their interest and participation in the FTC course activities.

CHAPTER 5: CURRENT STUDENT CHARACTERISTICS

Assisting students to smoothly integrate into an academic community is an issue that I, as an instructor and researcher, have given consistent thought and action. Throughout the development of FTC, first and foremost in all activity and assessment development, have been the questions: "How can we improve on this activity/assignment to better appeal to our students and provide a richer learning experience for them" and "How can we receive institutional support in this effort?" There is a profound sense of responsibility and awareness of how we, as first year course developers and deliverers, frame the first year experience for students. What we do to interact, teach and assess our students may have either a positive or negative affect in how these students will conduct themselves as a member of the academic community. To begin to analyze what we, as instructors of first year students, can do to develop our skills in this area, we must first recognize that our student population continues to change and that we may need to change with them.

According to Newton (2000), today's university students are vastly different from the last generation of students in several important ways. Newton (2000) labels these students as 'new millennial students' with the following defining characteristics:

- greater exposure and experience with adult activities (i.e. drinking, sexual behaviour) through the internet and media
- greater exposure to informational activity, and thus are better informed about the world than past generations

- greater expertise with technology that often surpasses that of their parents and instructors
- group activities are the norm, with primary partnerships formed later in life
- higher levels of stress and anxiety
- higher commitment to paid work at the expense of school work
- unrealistic expectations for attaining their career goals
- aware of university regulations, but have the attitude that cheating is OK if you do not get caught
- involvement in community is dictated by their circle of friends

With their greater access to information through technology, it is apparent that how students view the world is greatly influenced by the media with its accompanying inordinate amount of data and by a greater amount of interaction with various and new types of online communication systems. In the induction phase of university life, students have a confusing array of new experiences to contend with, as the leap from high school to academia can be a difficult one. Many are unprepared for the increased study time and higher standards of work expected by their instructors.

As previously suggested, course developers and instructors need to be aware that this generation is different from its predecessors in many ways. In addition to Newton's description of the new millennial student, Tapscott (1999) identifies these students as the 'Net Generation' (NetGen), people who by age 21, will have spent an average of 10,000 hours playing video games and 200,000 hours communicating online (Prensky, 2001). Howe & Strauss (2003) identify the net generation as people who:

- were born in 1982 or later
- are respectful of social conventions
- identify with their parents' values
- are focused on grades and performance

- mostly believe that it's cool to be smart
- have a fascination for new technologies

According to Jones (2003), today's students commonly multi-task and integrate online gaming into their daily lives while socializing and studying. Although many researchers claim that the student population has changed, Owen points out that there may be a larger category of computer game players in the 20 – 35 year old range who are professional adults and are more familiar with technology than our youth are. In the United States, the highest home internet use is amongst 35 – 44 year olds (Owen, 2005). In addition, Fila observes that women over 40 are "more likely to play online games every day than men or teens of either gender" (Fila, 2005). With these factors in mind, and from observing the current student population within FTC, it is apparent that not all students entering university are technologically literate and some face an enormous learning curve in blended learning or online courses.

Overwhelmingly however, the results of current research indicate that incorporating technology into course delivery is one of the most significant ways in which to appeal and capture the attention of NetGen students, despite some students who are not as technologically literate as others (Attewell & Savill-Smith, 2003; Howe & Strauss, 2003; Jones, 2003; Prensky, 2001; Pierfy, 1997; Randel, Morris, Wetzel & Whitehill, 1992; Cohen, 1969). Indeed, if some type of online gaming element can be incorporated into the curriculum, particularly for first year students, it may be beneficial in not only engaging student interest, but may also affirm the needs and lifestyle that many students are currently

experiencing elsewhere in their lives. Course delivery methods that can utilize elements of virtual communication and online gaming are in keeping with types of interactions that most students are already familiar with and commonly use amongst themselves.

Gaming Pedagogy

Researchers (Attewell & Savill-Smith, 2003; Prensky, 2001) have found that there are many reasons why online gaming appeals to today's youth, such as:

- Providing structure (following the rules of the game)
- Motivating through competition with self and others
- Playing the game (using motor and cognitive skills)
- Providing ego gratification (through achieving different levels of play)
- Creating pleasure and intense, passionate involvement
- Learning and sparking creativity

These elements contribute to create the concept of learning as a fun activity that makes any task appear to be easier and enjoyable, rather than learning as work and thus hard or to be avoided. Further, gaming is perceived by players to be more interesting than traditional classroom instruction (Cohen, 1969; Pierfy, 1997; Randel, Morris, Wetzel & Whitehill, 1992). For example, Digital Marketing Service conducted a study of 3,600 casual game players and found that teenagers spend an average of 7.4 hours per week participating in online games and spend more time playing than they do on homework (Fila, 2005).

Empirical studies conducted within a military context have reported that incorporating gaming elements into teaching practices has led to improved

learning through increasing motivation, persistence in tasks and greater retention of course concepts (Whitehall & MacDonald, 1993; Ricci, Salas & Cannon-Bowers, 1996). In addition, Oblinger (2004) states that the pedagogy used in educational gaming is consistent with the attributes associated with how people learn such as activating prior knowledge, context, feedback and assessment, transfer of learning, and experiential and social dimensions. Although there may have been many different forms of gaming used successfully in military training and in school-based education, how gaming elements should be incorporated and applied within course delivery needs careful consideration for both pedagogical rigour and student appeal.

Online gaming elements have been applied and documented in various educational settings as a means to instill motivation and foster interest and excitement around academic engagement and active learning (Childers & Berner, 2000). Collaborative teaching methods such as teamwork, experiential activities and the use of technology, would all be factors in capturing students' interest on a variety of levels, thus providing a potentially more successful learning experience. Researchers have also found that NetGen students prefer informal systems of learning, working in teams in peer to peer based activities, engagement and experience, a structured environment, and are visual and kinesthetic learners who are comfortable with the online environment and multi-tasking and possess positive attitudes towards their education (Oblinger 2004a; Raines 2003). Perhaps there is a possibility to gain back some of those hours

spent in online gaming, as suggested by Fila (2005), and more creatively engage our NetGen students by combining gaming strategies into everyday pedagogy.

Motivational Strategy

Motivation is one of the key factors in learning, and many researchers have argued that gaming can enhance motivation to learn in formal educational settings (Bowman, 1982; Driskell & Dwyer, 1984; Bracey, 1992). Carefully examining what motivates students to learn (other than grades) is important in determining what role online gaming might play in education and in continued student participation. One group in the UK studied the motivational effects of online gaming, resulting in the following observations (Harris, 2001) (Table 4):

Table 4:   BECTA Motivation Study

What indicates motivation?	Independent work, self-direction, persistence, pleasure in learning
What generates motivation?	Active participation, prompt feedback, challenging and achievable goals
What can motivation usefully support?	Collaborative interaction, peer scaffolding of learning, creative competition, equal opportunities
What does sustained motivation rely on?	Relevance to the user, recognizable and desirable roles for the players
What are the problems with motivation through gaming?	May lead to obsession, may cause transfer of fantasy into reality, may induce egotism

In the BECTA study, both positive and potentially negative influences were identified with gaming. For example, students who are inclined toward compulsive behaviours could conceivably become addicted to online gaming, to the exclusion of concrete social relationships and attention to homework. In general however, the BECTA study supported the position that online gaming

increased motivation for learning, and found that most elements of online gaming

promoted social connections and equal access opportunities for students.

Herz (2001) states that students work harder when involved in educational

game playing, as it;

> Fuels participation and invests the player in the experience
> because it transforms knowledge into social capital. Not only do
> players 'own' their own learning (because they participated in the
> construction), but ownership is worth something in a social context
> where one's status derives from peer acknowledgement (an
> incentive that is often more powerful than grade point average or
> teacher approval).

Further, in my personal interviews with students, one of they stated regarding

why online gaming appeals to them is that it creates a level playing field, where

the participants can be of different social and economic backgrounds and the

emphasis is on how well participants play the game rather than on the

participants themselves.   One student mentioned that in one multi-level online

game he was involved with, players ranged in age from teenagers to

professionals in their 40's and 50's, and included people from all over the world.

It is evident that online gaming provides opportunities for social interaction that

would not have existed previously, and gives us a glimpse into what potential

benefits there may be for higher education.

The reason for including an element of online gaming within course

curricula is to offer opportunities for interactivity and engagement that many

university students fail to experience in lecture-style classrooms. Through the

use of competency-contingent incentives and by recognizing the importance

students place on their grades and their own competency levels through

cognitive engagement (Bandura, 1986), online gaming can provide a greater

level of enjoyment and engagement for first year students. The attributes of

gaming environments, according to Foreman (2003), also contribute the following

factors to course activities:

- Provides elements of urgency, complexity, learning by trial-and-error and scoring points
- Supports active learning, experiential learning and problem-based learning.
- Is inherently learner-centered and provides immediate feedback
- Represents a performance-based environment through active discovery, analysis, interpretation, problem-solving, memory and physical activity

The key issue before integrating online gaming into course curricula is to

consider how gaming can be relevant in regard to the overall course objectives.

In particular, to determine if gaming is relevant to the needs of first year students

in FTC, a further examination is needed of what the specific purposes are of

using online gaming within blended learning.

Gaming for Engagement

Looking toward the future of using technological devices in education, Kerr

(1996) points out that computer-based learning is not a panacea and is not

automatically better than traditional forms of education simply because it is new.

He warns that special care must be taken when applying new technological aids

in education and recommends against trying to reconfigure traditional teaching

into an online form. More than a century ago, Dewey warned that in using new

techniques to make learning interesting, we need to ensure they are relevant to

the course objectives: education cannot simply be 'sugar-coated' in order, "to get the child to swallow and digest the unpalatable morsel while [he] is enjoying tasting something quite different" (in Hickman & Alexander, 1999). We also need to be aware of how we are using online technologies, as it is a highly social medium that needs careful assessment of its effectiveness and value to our educational practices.

Arguing from a socio-cultural perspective, Olson (1987) warns that greater use of computers and technology in education may result in greater class differences between people who are computer literate and those who are not, thus creating a split society with those who are computer literate becoming more successful and those who are not computer literate becoming ghettoized. Postman (1993) concurs with Olson and goes on to lament the growing reliance on computers as a potential danger to the tradition and history of Socratic dialogue in higher education, suggesting that computers could be the end to open speech and critical thinking development.

These researchers raise some important issues to consider when using new methods, ideas or technology to enhance education. However, as Bowman notes, traditional educational practices can use some improvement. For example, gaming provide players with clear guidelines, challenges students, are, based on collaboration, provide novelty and give students more control over their learning environment (Bowman, 1982). These are all elements that would appeal to our NetGen students and keep interest in learning high. Perhaps they

could even reduce attrition rates. The arguments against using newer ideas such as computer enhanced activities in education seem primarily to be concerned with issues of isolation and lack of collaboration, whereas the proponents of technology for learning argue just as strongly that it promotes collaboration and problem solving.

The arguments in support of technology enhanced education using gaming are rooted in incentive and motivational theories proposed by Bandura (1986) and Foreman (2003). From a review of research in online gaming, it was evident that in order to keep our course relevant and engaging, the FTC teaching team could incorporate some of these elements that appeal to our NetGen students in an effort to increase and retain student interest (Foreman, 2003; Garris, Ahlers & Driscoll, 2002; Herz, 2001; Harris, 2001; Bracey, 1992; Driskell & Dwyer, 1984; Bowman, 1982). Based on extensive experience, I have concluded that instructors who can elicit motivation, pleasure and increased involvement from their students by incorporating online gaming in their curriculum have an enhanced probability of attracting and maintaining student interest and of keeping their first year NetGen students engaged.

Gender & Gaming

In addition to the aforementioned key issues with technology enhanced education, another challenge that needs to be addressed before considering the development and incorporation of online gaming, is gender preferences with respect to types of games. Researchers have found that males tend to favour

games in which characters destroy one another, and that are repetitive, competitive and skill based and which take place in fantasy settings, whereas females tend to prefer games that involve characters and relationships, have intricate plots that offer some type of resolution and that take place in real life locations (Kafai, 1996; Agosto, 2004). Further, Jenkins (2001) observes that in online and computer games, males and females have different preferences as follows (Table 5):

Table 5: Gender Difference in Online Gaming

Females	Males
Leading characters are every day people they can relate to and are as real as their own friends	Leading characters are fantasy based action heroes with super power capabilities
The goal is to explore the environment and to have new experiences with different degrees of success and various outcomes	The goal is to win and play is linear based. The outcome is black and white, players die or survive and there is only one "right" solution
The play focuses on multi-sensory immersion, discovery and strong story lines	The play focuses on speed and action
Features every day real life settings and offers new places to explore	Features non-realistic fantasy settings that are larger than life
Success in the game comes from the development of new friendships	Success in the game is measured by the elimination of all competitors

The preceding findings are broad generalizations. There also exist a proliferation of websites such as LadyGamers.com which suggest that many females enjoy playing action games as much as male gamers. In designing an online educational game, the FTC team intended to incorporate the preferences of both genders, such as real life environments, action, strategy and rewards, so as to yield an activity that would appeal as much as possible to a diverse range of student gaming preferences, regardless of gender.

Motivated by the research pointing to the educational benefits online gaming and the nature of FTC as a blended learning course that commonly utilized the virtual environment, an experiment was launched. An online device that combined gaming elements with assessment was conceived and developed for the purpose of assisting students to prepare for their weekly course activities. In the next chapter, an examination of this online gaming tool will be presented. How this tool was designed and developed and how students interacted with it will be outlined and discussed.

CHAPTER 6: FOCUS ON ONE ONLINE ASSESSMENT TOOL

Throughout the development and delivery of FTC, there have been many opportunities to observe, discuss, reflect and revise the activities and assignments as a means of enriching our NetGen students' first year experiences. In this chapter, data has been collected from students using a voluntary online survey (Monkey Survey), conference postings, personal conversations and personal observations to inform course activity and assignment revisions. One aspect of revision that is continually revisited by the FTC teaching team is the issue of assessment.

Over the last couple of decades, assessment practices in higher education have been changing. There has been increasing emphasis on the learning aspect of assessment, with its accompanying focus on formative rather than summative assessment, using models to assess by, looking for a variety of ways to assess, and sharing the responsibility of assessment with those who are being assessed (Gibbs, 1994; Mohl, 1996; Shepard, 2000). Some of the challenges arising from the change in assessment practices can be felt by students and instructors alike. For the instructor, increased enrolments mean larger class sizes, particularly at the first year level, placing increasing demands on the instructor to assess a greater number of students. Added to this is the knowledge that good assessment practices require feedback that is both timely and valuable to the students' learning process, creating a great deal of pressure

for the instructor to adopt quick turnaround methods to evaluate their students' progress.

The question on which I choose to focus here is how to integrate assessment into the curriculum in such a way that it both facilitates a more efficient evaluation process for the instructor and encourages and promotes deeper learning for the student. In applying the constructivist approach within assessment strategies, students learn from active participation, have opportunities to explore their own ideas through discourse and inquiry, and take responsibility for their own learning. Teaching and alternative assessment practices focus on concept development and deep understanding, which traditional assessment methods largely fail to evaluate (Anderson, 1998).

Assessment in higher education is important to different people for different reasons. For the three major stakeholders in education (the student, the instructor and the institution), different reasons for assessment are involved (Mohl, 1996; Peterson & Einarson, 1997; Shepard, 2000):

For the Student:
- Recognizes personal academic strengths and weaknesses
- Enables informed educational and career decisions
- Provides motivation for learning through performance
- Provides opportunities for participation in their own evaluation

For the Instructor:
- Monitors student progress
- Provides opportunities for curriculum evaluation and refinement
- Motivates students

- Provides feedback and assessment in time efficient ways
- Provides opportunities to the student for deeper learning

For the Institution:

- Sets institutional and academic standards
- Informs policy-making
- Decides where to direct resources, such as personnel and money
- Highlights areas for improvement in program structure, course content, and pedagogy
- Evaluates the competence of its graduates

Given the many different purposes that assessment serves, it is apparent that deliberate assessment strategies need to be developed in order to meet the requirements of all actors involved. How students are assessed should be based on our understanding of how students construct meaning and learn, should encourage positive learning habits, should use a diverse range of formative and summative strategies, should give clear guidelines to students on what they will be assessed on, needs to be concretely and fairly measured and consistent and should give valuable feedback, should allow opportunity for reflection and revision, and should be an integral part of course design and the learning process (Brown, Race & Smith, 1996).

Increasingly, instructors need to define the gap between "what is" and "what should be" when developing effective curriculum that will encourage students to develop more effective and meaningful learning strategies. This is important because the types of assessment practices implemented by the instructor will determine what students will learn, how they will learn it and how

they will prepare for assessment. Assessment strategies need to also involve students as co-constructors of how they will be assessed (primarily in formative rather than in summative assessment strategies). Including students in their own assessment processes will ensure greater 'buy-in', possibly resulting in higher interest and participation. The question faced that prompted the consideration of developing a new online assessment tool was; "How might the FTC teaching team cope with increasing enrolment while simultaneously providing a fair and consistent assessment process that takes into consideration the needs and preferences of NetGen students?"

Development of the Virtual Interactive Pet (ViP)

In an effort to address this question, the Virtual Interactive Pet (ViP) was created specifically for the needs of students in FTC. An important aspect of this course is that the class sessions and weekly conferences are highly collaborative and there is little lecture involved. Rather than students attending class and having the instructor spend two hours going over the course material, students are expected to read the course material themselves before attending the class session or online conference in order to prepare themselves to engage in the activity. From the online conferences, it was patently clear which students had completed the assigned readings before participating and which had not. A great number had not. Students who had prepared themselves before participating were better able to begin to critically apply what they were learning, while unprepared students were unable to add anything substantive to their team discussions. The prepared students were increasingly becoming frustrated with

the unprepared students, especially in team conferences that were graded or in conferences where peer feedback was heavily relied upon.

To address these issues and to encourage students to complete the weekly readings, instructors implemented a pen and paper "pop quiz" that students completed at the beginning of their class sessions. However, the quizzes were unpopular with students, took a long time to mark, and for the percentage of grade earned, did not change students' reading habits significantly. Thus, the quest began to design an online assessment tool - one that students could negotiate through their own initiative and that was self-scoring to reduce marking load for instructors.

The timing for developing such a tool was ideal, due to the participation of the eLearning Innovation Centre (eLINC), our campus technology support group that was taking on projects of this nature at the time. Because we were able to develop this project from conception to implementation as a joint initiative between our technology team and our course teaching team, it provided an ideal opportunity to test the effectiveness of a new online learning tool. The initial result, achieved over a period of 5 months by a team of eLINC programmers, myself and two undergraduate students, was an online gaming device that allowed weekly quizzes to be automatically scored and visually reported in the online course syllabus page. The important design and technical elements of the ViP were as follows:

Design:

- Provide a unique learning & assessment aid
- Be used as a supportive agent in learning
- Use constructivist & active learning principles
- Promote student self-direction
- Help students to make connections between understanding & applying course concepts
- Utilize gaming principles to instill motivation & generate interest
- Be designed by students for students

Purpose:

- Assist students in reviewing weekly course material
- Help students assess how they are doing in the course
- Give students responsibility for a portion of their grade
- Capture and engage students' attention
- Provide the basis for critical discussion with colleagues
- Assist instructors in their assessment load
- Prepare students for weekly class & online conferencing and writing activities

Technical:

- Use Perception quiz software
- Hold 35 – 70 questions
- Provide multiple choice, fill in the blank & multiple response-type questions
- Develop a randomized question set
- Be supported by eLINC

Although the design of the ViP was a course level initiative supported by our campus technical team, the visuals and functionality of the assessment tool were designed by students in order to appeal to students.

ViP Concept

In the initial development stage, the idea for the ViP was much tamer than the previously mentioned ideas of eliciting excitement from students through gaming. The inspiration was the "tamagotchi" (Fig.5), an electronic pet developed in Japan in the 1980's that caught on in North America by the 1990's. It was a small, hand-held toy that children could "take care" of when prompted by electronic cues (Maita, 1996).
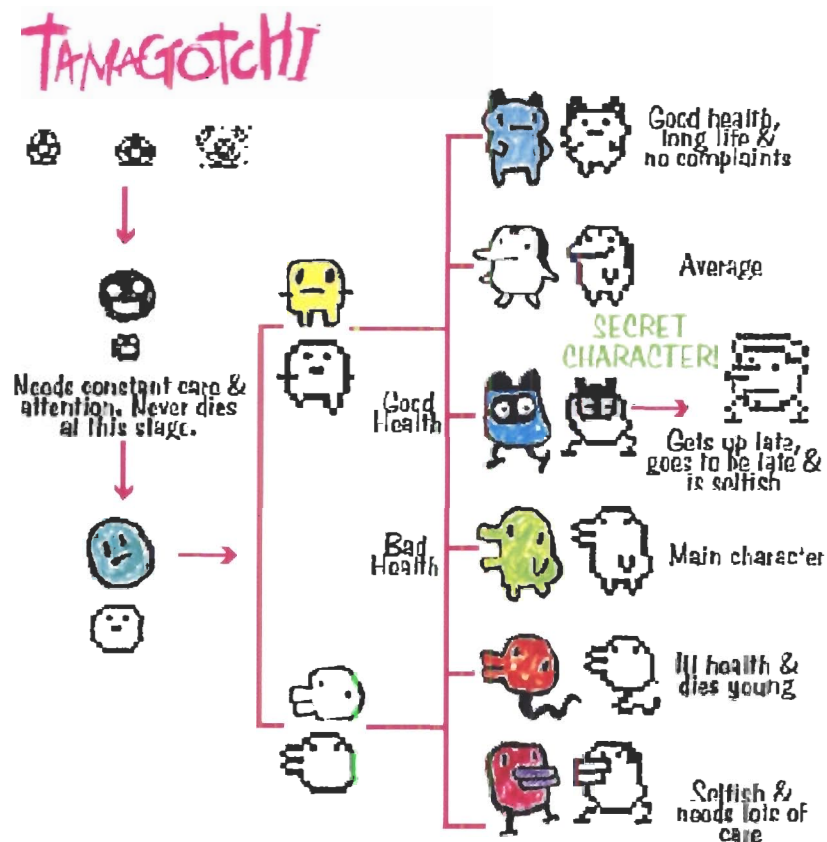
Figure 5: Tamagotchi.

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According to the Japanese story, tamagotchi are:

> ... little alien creatures from Planet Tamagotchi, who crash landed on earth, and The Professor and his assistant Mikachu found them. The Professor built them little egg shaped protection cases so they could survive on earth, then Mikachu painted some, took them to school and started the Tamagotchi craze... (Maita, 1996)

How well you take care of your tamagotchi determines the growth and the stage your creature will reach as depicted in the following growth chart (Fig.6):

Figure 6: Generation One/P1 Tamagotchi Chart.

According to Tamagotchi Planet (Maita, 1996):

> When you first pull out the tab in your Tamagotchi an egg will
> appear. After you set the clock it will take 5 minutes and the egg will
> hatch. For the first hour of your little creatures life, he will need
> almost constant attention, so be prepared to have an hour spent
> with your little pet. When a baby is first born it needs constant love
> and attention, as a short while the young one will not need so much
> so fast. If you check the health meter you will determine what the
> young Babitchi or Shirobabitchi needs. When he is just born,
> everything will be empty. Your job is to feed the little one meals
> until he is full, and play a game with him until he is happy, and
> clean up his mess after he goes poop. For that first hour the hungry
> and happy hearts will empty rather fast. After a good 20 to 30 mins
> he will take a nap. After a short 5 minute nap he will wake up. After
> another 30 mins or more, he will finally cease his demand need for
> food and play when he changes into his child form or Marutchi or
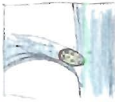> Tonmarutchi, depending on the generation you hatched.
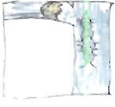
From this point on your Tamagotchi will not need as much attention as he did when he was a baby. Everything you do from point on will determine what kind of caretaker you are. Six to eight days from now you will have your adult character. During this time you will need to discipline your young one when it calls for your attention, but doesn't need anything and refuses to eat and play the game. You can make your Tamagotchi happy by feeding it candy instead of playing the game, but it is good to play the game and keep the weight down and keep your little friend healthy.

What kept children interested in their own tamagotchi cyber-pet was that they had to take care of it daily in order for it to thrive. Once it was neglected, the tamagotchi would become sick and eventually die. Borrowing from this idea, the ViP was originally designed as an online pet that students would care for every week by 'feeding' it through correctly answered quiz questions. In return, the ViP would change, develop and grow depending upon the attention it received from its caregiver. In this way, students would be given complete responsibility over the 'care' of their 'pet', which would thrive or perish depending upon the amount of attention it received. The idea was to give students full control over a portion of their grade through the 'care and feeding' of their 'pet'. If students cared about the development of their online character, then the motivation to do well in the quizzes would be high since their success in answering correctly would directly relate to how well their pet fared.

Time and resources did not allow for an online character device with this high degree of technological programming needed. Instead, the idea of creating something simpler, such as a morphing or changing image based on the level of scoring was developed instead. A third year IA undergraduate student was hired as a research assistant to create the images needed for the different stages of

ViP development. In consultation with the FTC teaching team, she developed

the following proposal (Fig. 7):

Figure 7: Initial ViP storyboard

Stage	Picture Description	Animation	Sketch	Stage	Picture Description	Animation	Sketch
1 egg	A plant stem with a egg with spots on it (like duck egg)	Egg shakes every once it a while - something wants out		7 monster moth	New wings Bigger head with a mouth and eyes.	Flaps wings, flies up & down, bites flower	
2 break-ing out of egg	Egg shell broken with a flat creature with cilia crawling out	Cilia wave around like legs		8 ant with horns	Wings turn into horns on an ant-like creature. Grows hind legs	tba	
3 cater-pillar type	Body lengthens out, gets more colour, less cilia, more distinct "legs"	Crawling down plant stem as in a warm-like manner		9 Turtle	Horns turn into spikes on a shell	Legs slowly growing longer. Antennas and tail slowly shrinking	
4 ground pupa	Cilia turn into roots and part of body sinks into ground, while rest looks like growing plant parts.	Top parts wave as if in the wind.		10 4-legged creature	???	tba	
5 plant-like fungus	Two sticking up parts turn into plant like stems flowers at the end.	Flowers wave in the wind.		11 Human-like figure	Standing up human-like figure	Waves hand	
6 cactus wings	Flower stems bulge out start becoming wings, grows head &antennas	Sliding around like a snail Head growing		12 Grad	Human figure with grand hat and diploma	Leans over and picks up flowers.	

From these initial sketches, a collaborative discussion ensued amongst the

development team, resulting in altering the images in some places, with the

following final images for the first run of the ViP launched in Fall 2003 (Fig. 8):

Figure 8: ViP Stage One of Phase One
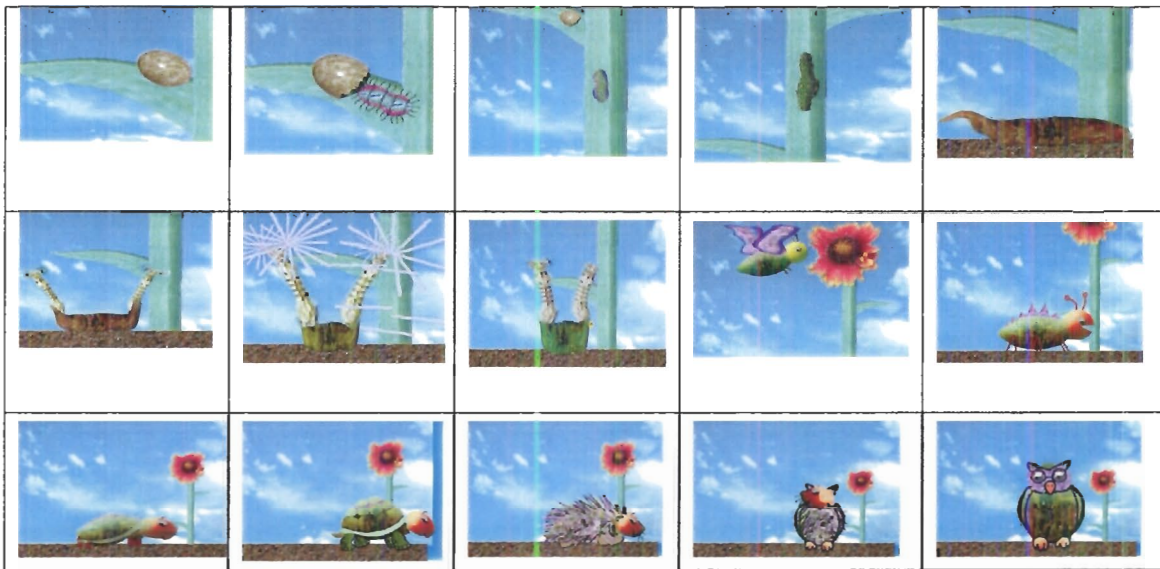
Within these stages, there is movement as well as growth for the purpose of creating a sense of expectation. For example in the first stage, the egg shakes, in the second stage the egg breaks and the creature crawls out, in the third stage the creature climbs down the flower stalk and in each subsequent stage, the creature changes from the previous form into the next form.

With each correctly answered question, students received 10 points and moved on to the next stage of ViP development. Through weekly quizzes, the maximum score that students could achieve each week would be 200 points. The images were created to be entirely fictional and not to emulate any 'real' animal or 'real' evolutionary stage. On the one hand, this kept students in suspense about what would happen next. On the other hand, some students were confused when the ViP failed to follow any known type of evolutionary pattern.

In the second part of Phase One, in the Spring 2004 term, the development team felt the need to create a new set of images in order to keep student interest high. As a result, we developed a scenario format in which a space ship escapes from an exploding planet and settles on a new planet. Sound effects were added in this second offering of the ViP, giving students an added aural dimension to their images. The sounds were first of the spaceship landing, then of the spots of light descending from the spaceship, and as buildings and traffic increased, so did the noise level. In the end, the planet blows up and the viewer is left with an image from the beginning of Stage 1 of the ViP (Fig. 9).

Figure 9: ViP Stage Two of Phase One
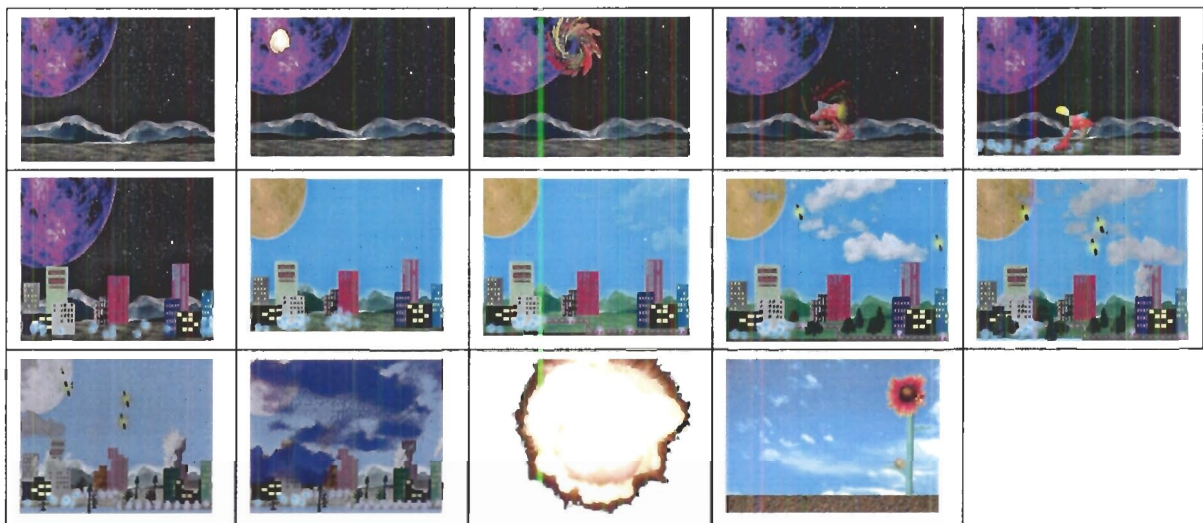
As students didn't know what to expect from the weekly progression of their ViP, motivation was high to complete the quizzes as fully as possible in order to see the next phase of development (figures and evidence for this will be provided in the 'Reporting' section), with the final phases of their ViP generating even more

interest and discussion. This was evidenced by a lengthy discussion in the Q&A

prompted by the resultant explosion of their ViP (Fig.10):

Figure 10: Exploding ViP Discussion

To whom it may concern, After completing this weeks ViP quiz, I checked my ViP to see that the score was added correctly. To my satisfaction, it was and my new ViP animation loaded successfully. All was going well until a dark cloud descended upon my productive city and my ViP exploded! I was just wondering if anyone else has experienced this problem. It seems to have had no effect on my score (it remained intact) but I can't help but feel a great swell of pity for the former inhabitants of my once productive ViP town.
I haven't stopped laughing... lovin' it
Yes, well this is what happens after civilization reaches a certain point.
I had the same problem too. I felt so sad for them that I wish I got lower scores on my quizzes so that they could live in their prime society. Is there anyway to lower my score to give those little fellows a chance? Things were going so good, I had fresh trees growing, nice size population, very little polution...what happened?
I know what you mean, it would be a small sacrifice to make; exchanging points for our ViP-ites to live once more. Unfortunately, I think we just have to come to terms with what has happened. It seems no amount of wishing can bring our tiny firefly friends back to life.
I have found a way to view the ViP once more! Although, it is a double-edged sword for it is a recording of the ViP-ites' last moments on the streets of their ViP city. If you too would like to see your ViP again, click the single R on screen. Be warned though, the footage may be disturbing to some viewers. I myself am not sure if I can click the R again after what I saw.
The society deserved what it got! Over industrialization of a society will inevitably lead to its collapse! If you watched the little buggers from the start, they arrived from another planet, presumably another they destroyed, and set colonization on this new one. They continued to consume the natural recourses of the planet until some dark cloud descended upon them. Whether this is a case of wrath of an angry god or a direct result of the toxins sprayed into the air, the result was equally just. Any society that cannot manage itself well enough to prevent destruction of the world around it should be wiped out to prevent infection of the universe, ref. Humanity. I am sure that these were some sort of flash representation of the problem facing us once we consume the earth, but it just goes to show our inevitable downfall. We will not change our consuming ways, the greatest pro earth movement of the 70s did little to sway the production and consumption native to our people. While these little green guys may have been destroyed by some black cloud, we will either wipe ourselves out or some race or greater intelligence will come along and wipe us out for the crimes against ourselves. I say good riddance, we failed as a race, we deserve it.
I have been told that this was somewhat intense. Let me assure you, this is a much toned down version of my thoughts of the race to which I belong. If you want to hear my full opinions on this subject, or my rather macabre view of our social system, please contact me outside Q/A.

> I was wondering, if this alien race destroyed this world, how many other worlds has it destoryed? Also, if they destroy every world that they land on, how do they go to other planets in the first place? I would also like to say that if a planet suddenly blew up, there most likely would be massive disturbance in that solar system as the other planets would be thrown of orbit. Thus destroying more life on other planets. I have changed my view on these...these creatures...monsters...I'm glad they are gone.

> Clearly, you came to know too much and your firefly people had to pay the price. I, however, seem to be immune to these knowledge-related mishaps and my civilization is still going strong! Yes sir! I predict a bright and prosperous future for my little sprites!

> Yes, well your sprites are simply behind the trend - which is to go out with a bang! I'm not sure what the next evolutionary state for the fall is, but it will probably involve a higher form of life than the fireflies...but don't you think having a archaic civilization of toads is better than a thriving civilization of fireflies?

> As long as there is planets to blow up, these little killer fireflys will not rest till every single one of the planets in our solar system are destroyed. I for one will not sit here and wait for them to catch me off my guard. I am barring my doors and nailing my windows shut.

Judging by the response from exploding the ViP, it was evident that students were closely following the developments of their ViPs and that this method had succeeded in capturing their attention and imagination.

Scoring

eLINC provided the technica support needed by supplying an existing quiz bank software program, Perception, for the instructor to use in developing quiz questions. They created a link on the course management system (CMS) for easy access by students, and programmed the results directly into the CMS in order for students and instructors to easily view and keep track of scores. The question banks for the ViP quizzes were created using Perception software, and the eLINC team developed a reporting system that connected the Perception software to the CMS, allowing students to access the quizzes from their main online course syllabus page. The quiz banks were developed to include 25 to 45

questions, from which 10 questions were drawn, appearing randomly each time a student accessed the ViP weekly quiz.

The questions were a mix of multiple choice, fill in the blanks, and questions designed for both lower order and higher order thinking responses. For example, some questions that were fill-in the blank(s) would contain a sentence taken directly from the course readings (Fig.11). Other questions presented a short scenario that required students to synthesize course concepts and understand the course material in order to respond correctly, and others were multiple choice (Fig.12).

Figure 11: Example Perception Quiz Fill-In the Blank Question – Phase 2

Figure 12: Example Perception Quiz Multiple Choice Question – Phase 2

Each "egg" on the sidebar represented one of the ten questions in the set, and once students had completed the set to their satisfaction within the ½ hour time limit, they would click the "Finish" bar and view the questions that were incorrect (Fig.13).

Figure 13: Perception Quiz Incorrect Question View – Phase 2
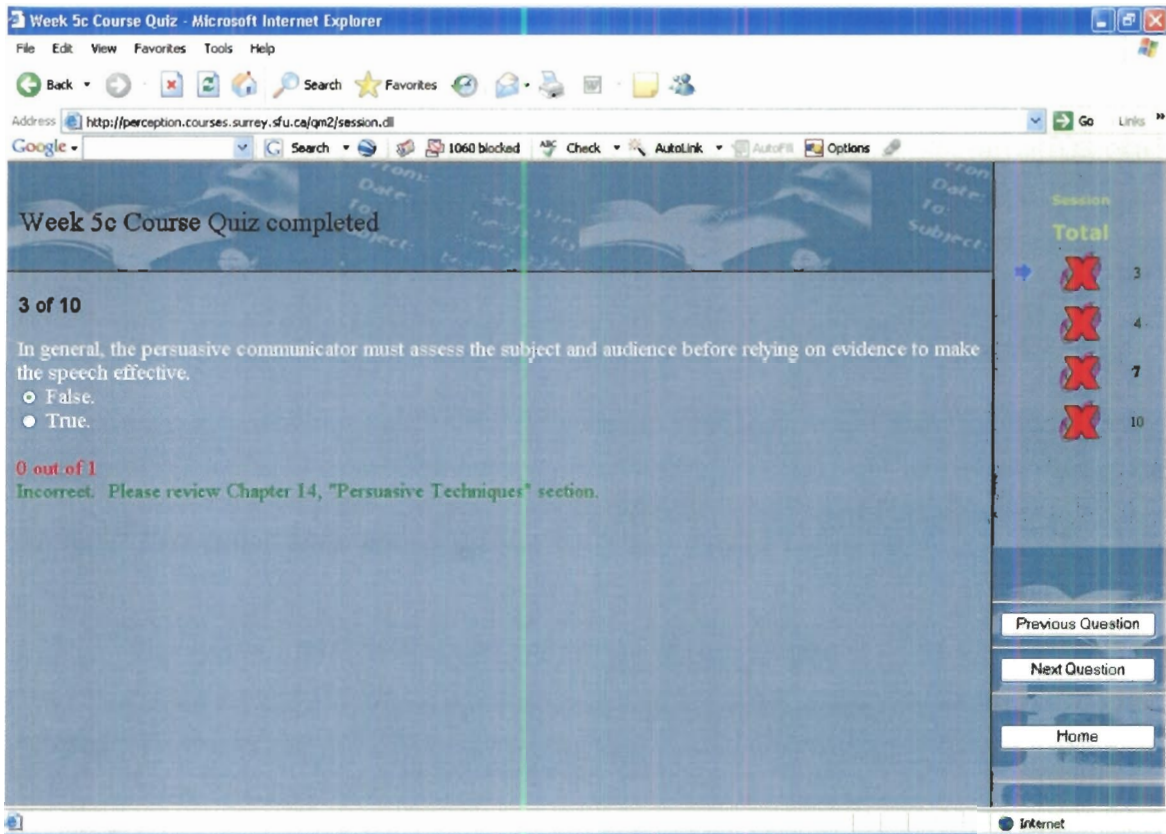
The quizzes were originally designed to remain open during the week, which was revised later to log out after 30 minutes. Students could view and make note of their incorrect questions in order to improve their score when attempting it again. Students completed the quizzes either on their own, or in study groups. Study groups were encouraged; as mentioned earlier, peer support and feedback are integral to the course design and objectives. However, this did pose some problems, as will be discussed later in this chapter. Students could access the quizzes 24 hours a day at their own convenience within the 5 day time limit of the quiz.

The purpose in allowing students to complete the quiz over a 5 day period was to encourage students to read and learn the course materials, making the quizzes a learning strategy as well as an assessment tool. Once all ten questions were completed, students could check their incorrect answers. The test would display only the questions that were answered incorrectly in order to discourage copying and pasting of the correctly answered questions and passing them on to others. As the quizzes were completed, the test logged students' highest score and the ViP grew and morphed into different forms, fed by 'correct' answers.

Reporting

Students appeared to be motivated by curiosity in how their ViP would change every week, and by competing with themselves and their colleagues in obtaining the highest score possible. This is reminiscent of computer and video games that deliver scores based on how well the game is played. Participants in Phase 1 attained high scores as they were personally driven to obtain a score of 100% in their weekly quizzes (Figure 14).

Figure 14: Quiz Score Results in ViP Phase 1 – Fall 2003
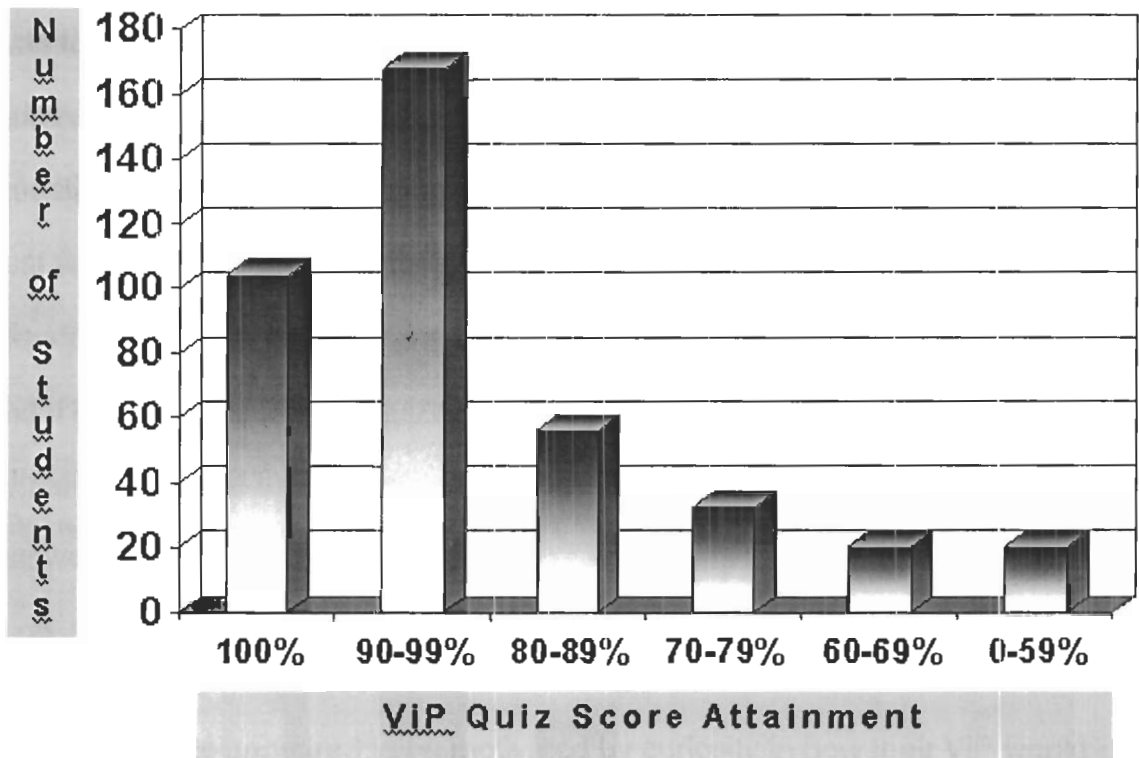
From 400 students who participated in weekly ViP quizzes for the Fall 2004 term, 104 achieved a perfect score of 100%, with 168 students achieving scores in the 90 – 99% range. In other words, 68% of students felt motivated to achieve scores equivalent to an A grade or higher. Comments taken from the ViP Student Survey conducted in October 2003 (Appendix A) supported the possibility that the ViP instrument was supporting student motivation. In response to the survey question, "Do you think that the ViP encourages you to read the course materials?", feedback included:

> It [the ViP] helped me as I had more motivation to do the readings so that I could keep getting the 20C points. I did not want to fall behind the others.

Competitiveness with myself or others pushed me to finish the quiz on time and get it perfect. First, it seemed like it was very easy to get the marks. Secondly, other people were getting perfect scores and I would think, "Why shouldn't I get a perfect score, too?

I was always very self-motivated in getting the best possible mark in the ViP quizzes as it was sort of a type of addiction with striving for the best.

I wanted to get a good score. For every time I got a higher score in my quizzes, the ViP score went up. I also had time to spend understanding and looking for questions that I got wrong [referring back to the textbook or website material readings].

From the ViP website server usage statistics, the data showed that on average, students were logging in to the ViP quiz 11 times and spending 1.38 hours per week in completing quiz questions.

In other assessment activities in this course, students did not appear as focused to obtain 100% in their scores. It seemed that the gaming elements of the ViP challenged students to obtain a perfect score while at the same time provided them with instant feedback on their progress. According to Gee, Hull, and Lankshear (1996), the integration of gaming in curriculum is in line with our current knowledge and skill based economy as it involves problem-identification, hypothesis-testing, analysis and interpretation. In contrast, traditional educational models reward following directions, mastering predetermined objectives and intellectual obedience (Gee, Hull & Lankshear). By using gaming elements to keep students engaged in and motivated by their own learning, they argue that gaming can also prepare students to be competent participants in their later professional lives.

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In the 2003/2004 offering of the ViP, the graphics and functionality were changed based on feedback and a redesign effort was conducted in consultation with students. The purpose of redesigning the ViP was to allow students different features, such as the ability to map their progress in relation to their colleagues. This feedback was given using a group of green balls that moved around on the screen (Fig.15). Each green ball represented one student in the class, and the size of the ball represented each student's score.

Figure 15: ViP Phase 2 - Student's View of ViP Progress
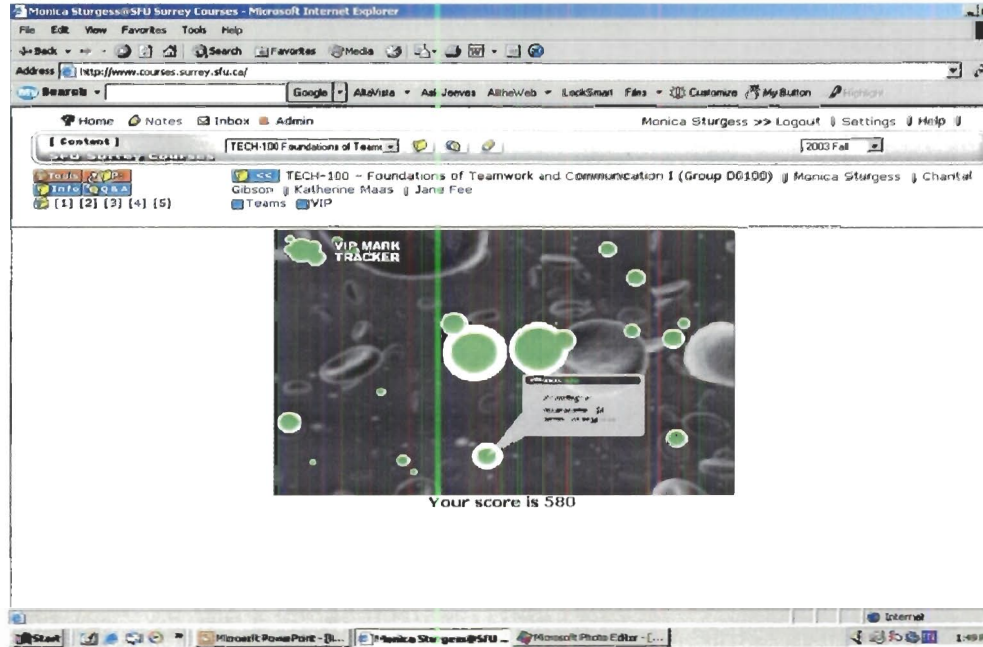
The floating balls gave students a visual graph of their score compared to those of their colleagues in the class, with the score also appearing in text below the screen. By clicking on their own ball, students could view the stage their ViP had reached, and play either an online game or view a short funny movie clip, depending upon the level of their score. In addition, the quizzes changed from

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remaining open for five days and unlimited quiz attempts in Phase 1 to only three days in Phase 2 with a maximum of three attempts per day. The reason behind limiting the number of attempts was to prompt students to complete the quizzes earlier in the week in order to prepare themselves to participate in the weekly course activity. With these revisions, the ViP became more of an interactive assessment tool that appealed to our NetGen students by generating interest, self and inter-competition, and discussion over progress.

Instructors also had a link to students' VIPs and could access their student's scores through an administrative tool, which showed all the scores for each class of students. This reporting tool gave instructors a quick method for checking on students who were not reading the course material and engaging in the quiz activity in order to properly prepare themselves for conference and class discussions. This allowed the instructor to visually locate low scoring students who would then be asked to meet with the instructor in order to discuss any issues they may have and to help the student get back on track with their studies. Thus, problems could be discovered early in the term and action could be taken to help students who were beginning to fall behind before it began to affect their performance in the course (Fig. 16):

Figure 16: Class Reporting Tool – instructor's View

The grading results of Phase 2 were not as impressive as in Phase 1, which can be attributed to several factors. In Phase 1, 26% of participating students achieved 100% in their ViP, score whereas only 2% of participating students achieved 100% in Phase 2 (Fig.17). The reason may have been that in Phase 2, there were programming and technical difficulties that interfered with the scoring system, so many students were one or two correct questions short of a perfect score. In addition, the changes in ViP quiz delivery from being continuously open for 5 days in Phase 1 to only 3 days and 3 tries per day in Phase 2 could have been a major contributing factor in this change. However, comparing the student groups in both Phases of the ViP, 82% of students in Phase 1 (2003) reached a score of 80% or better and in Phase 2 (2004), 74% of students reached a score of 80% or better. The ViP score represented 20% of

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the term grade which, coupled with online gaming factors, provided added incentive and motivation for our NetGen students to pay attention to and well in their ViP quizzes.

Figure 17: Comparison of ViP Scores 2003/2004
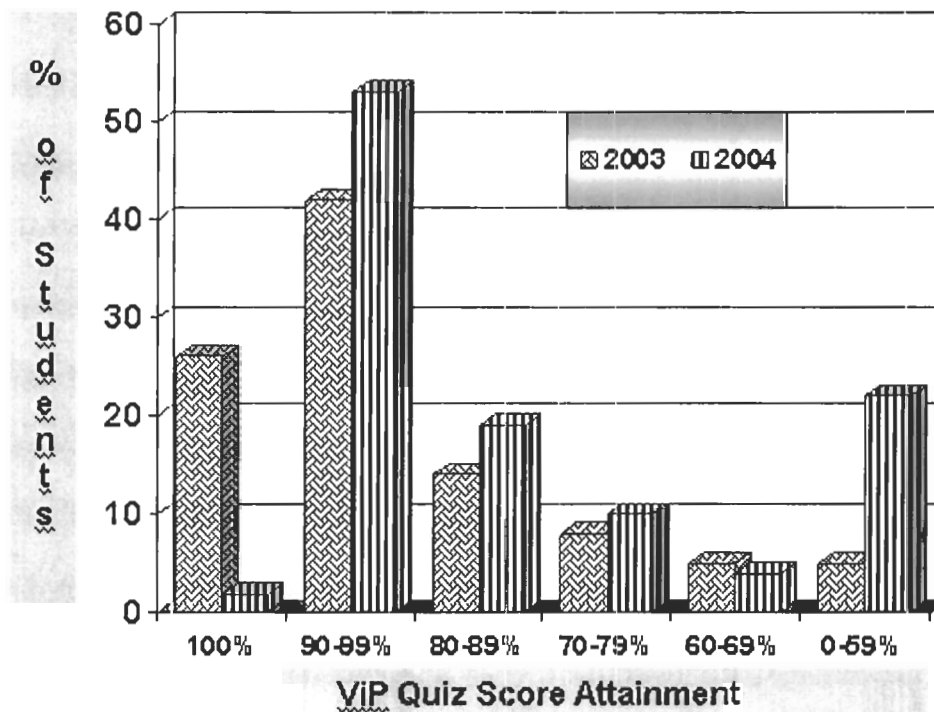
ViP Design Challenges

Initially, the ViP learning assessment tool seemed to be a simple answer to the issue of students not reading the course material in preparation for the weekly course activities and assignments. However, as students completed the quizzes and attention was paid to usability factors, such as how they were using the tools, how long it took to complete quizzes, and how often they were accessing quizzes, some issues arose that were problematic. The following results of a student survey conducted in October 2003 (after two months of quiz

activity) illustrate why changes were made to the ViP quiz tool as a result of student usability factors (Table 6):

Table 6:   Phase 1 – Fall 2003/Spring 2004

ViP Functionality	What worked	What didn't work	Solutions
- Quizzes open from 8am Monday until 11pm Friday - Access as many times as you wish - Quizzes remain open as long as you wish - Quiz bank of 40 questions, with 10 questions randomly generated each time a student logs into a quiz - Quiz bank remains the same for the entire week	- Students could complete the quizzes on their own time and at their own pace. - Students could retake the quizzes as many times as they liked in order to improve their scores.	- Some students were copying and pasting quiz questions and answers and passing them on to other students.	- Limit number of times students can access the quizzes. - Limit how long students can remain logged into the quiz banks. - Change quiz bank questions for each day.

In its first development stage, the ViP images changed weekly depending upon the score achieved. The images, however, were problematic. From the online survey posted for students in October 2003 (Appendix A) after their first term using the ViP, 27% of students found the images to be below par in comparison with the type of work they were producing in their IA and IT courses at this particular campus. Some students (10%) found the images to be unappealing and some (7%) stated that they never looked at the images, only their score. Respondents were also asked about the imagery used. The survey asked students; "Do you find the ViP pictures and progression of change interesting?" Out of 104 respondents, 61 students said Yes and 43 said No. Interestingly, some of the reasons students gave for liking the imagery were the same as some of the reasons students gave who did not like the imagery (Table 7).

Table 7: Student Feedback

Those who did not like the imagery:	Those who liked the imagery:
• Growth rate should be more realistic • The idea of a bug growing up is not the most appealing • I think it should be more realistic • The graphics are ugly, crude • No pictures, we're not little kids • Need to be more creative and colourful • Prefer to see a class graph that shows everyone's scores • More interactivity	• Interesting, good colour, graphics and animation • Interesting to see the image change and grow every week • Like the use of flash animation • Liked the surprise aspect of what will be seen next • Image is ugly, which is cool • Shows score results in the image

The feedback was useful in determining whether or not the first iteration of the ViP appealed enough to students to continue with the original design. As a result of this survey, the design was changed.   For example, in the second offering, a space theme that logically progressed in its building of a civilization was used with the addition of sound effects. For the final offering, the issue of measuring one's progress in the quizzes in comparison to other students in the class was developed, along with greater interactivity of the ability to access different games depending upon the score levels. In addition, it was apparent that further reflection needed to go into this project before redeveloping the ViP images for next year's students in order to continue to deliver the element of surprise, rather than a recycling of the previous year's images. However, whether or not the images appealed to them, students were frequently logging in and spending a fair amount of time each week on the quizzes. This did not include time spent in reading and reviewing the course materials.

In the October 2003 survey, students responded to the motivational aspects of the ViP as follows (Fig.18):

Figure 18: ViP Student Survey – Reading & Course Concepts
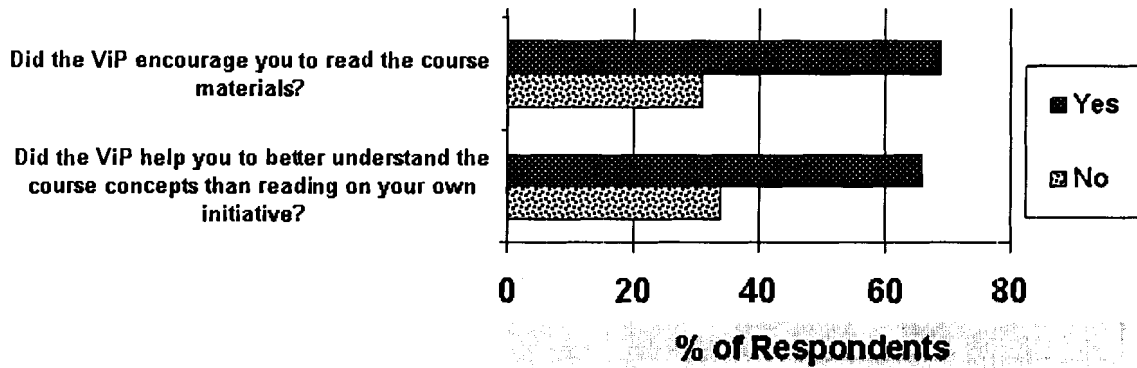
Overall, the results were generally positive, as students stated that they believed the ViP gave them extra incentive to keep up with the weekly readings and to understand and apply the important concepts in their class and conferencing activities. As stated earlier and in response to the question, "Do you think that the ViP encourages you to read the course materials? If Yes, what specific factors helped (e.g. change in pictures, competitiveness with self or others, etc.)" students stated that competition with themselves and their colleagues motivated them to repeatedly try the weekly quiz until they obtained a perfect score. One element that worked well for both students and instructors was the automatic scoring feature. Students took responsibility for their own learning and for a portion of their term grade through the ViP quizzes, and instructors could easily identify students who were disengaged from the course activities and contact non-participants to facilitate their re-entry into the learning community.

For the new term offering, changes were again implemented based on student feedback and other various usability factors as the following table shows (Table 8):

Table 8: Phase 2 - Fall 2004/Spring 2005

ViP Functionality	What worked	What didn't work	Solution
- 9am – 9pm Monday, can also access the quizzes from 9am – 9pm Tuesday and Wednesday in order to better your score. - Access the quizzes only 3 times on each day. - Quizzes remain open for only 30 minutes at a time. - Quiz bank of 25 questions, with 10 questions randomly generated each time a student logs into a quiz. - Different set of quiz banks for each day.	- Students had a choice as to days and times they can complete the quizzes. - Students could retake quizzes up to 3 times in one day in order to improve their scores.	- Some students were copying and pasting quiz questions and answers and passing them on to other students.	- Limit times students can access quizzes. - Post a warning to students letting them know that we can see quiz activity and those that are using others' answers for the quizzes.
- 8am – midnight on Monday only - Students can access the quizzes within this time frame up to 3 times each. - Quiz bank of 25 questions, with 10 questions randomly generated each time a student logs into a quiz. - Quizzes remain open for 30 minutes each time.	- Students could complete the quizzes on their own during the Monday time frame. - Students could retake quizzes up to 3 times in one day in order to improve their scores.	- Same issues as before. - Found that in other web browsers other than Internet Explorer, the ViP quiz questions appeared on one page instead of loading individually as programmed.	- Give students a choice of three days to complete the quizzes. - Open quizzes for only 20 minutes at a time. - Students can access each quiz bank only once per day. - Each day will feature a different bank of questions. - Program the ViP quizzes to function with Internet Exporer browser window only, or program the ViP quizzes so that they function the same in every internet explorer window.

ViP Results

For students, the features of the ViP that worked best were its novelty, competitiveness, and the idea that they had full control over a portion of their term grade. For instructors, the features that worked best were its scalability and the ease with which it enabled them to identify inactive students. Most importantly, students seemed to be reading the assigned weekly course chapters.

What proved onerous for the instructors was the time needed to construct question databases as well as continued student cheating (identified through students reporting cases of cheating to instructors). To remedy these problems, the next implementation of the ViP included using a research assistant to develop question databases, and further restriction of the length of time and number of times students could access the quizzes each day. The quizzes were open for three days instead of five, and students encountered a different set of questions each day.

Unfortunately, these measures did not go far enough in remedying the problems faced. Time spent in developing quiz questions remained onerous and the quiz databases still had to be checked and edited by the course instructor - which was almost as time-consuming as initially creating the questions. Some questions were still incorrect when the quiz went live. Students would send screen shots of incorrectly coded questions to the instructors, and more time would be spent in revising and republishing the quiz and in keeping

track of incorrectly coded questions and manually awarding points to students. The issue of cheating also continued, as students essentially had nine, half hour slots to view the quizzes. This gave students who were cheating ample time to copy and paste quiz answers and pass them on to other students. In addition, a design feature that was not taken into account was that when the quiz was viewed using Internet Explorer, the quiz questions appeared one at a time. It was discovered later that if students used a different web browser, such as Mozilla Firefox, the quiz questions came up all at once on the same screen (Fig.19).

Figure 19: Perception Quiz View using Mozilla Firefox

The problem with this aspect of the Perception quiz was that it rendered copying and pasting a quick and easy task and was not discovered until near the end of two years' of use. This was a technological issue that needed to be resolved if the quizzes were to continue.

One design feature that could have solved the issue of students preparing themselves adequately would have been to deny students access to the online team conference until they had completed the weekly quiz. This would have ensured that, at the very least, students would have fulfilled the main objective of the quiz by reviewing the important learning concepts before engaging in the discussion activity. However, it still would not compensate for issue that arose when using different web browsers.

Alternative Assessment Strategies

Two important factors arose from the ViP experiment as an online assessment and learning tool. The first is that it appealed to some students as it allowed them an opportunity to improve their term grades. From the online survey (Appendix A), in response to the question, "Do you have any other comments or observations to add about the ViP?" students stated;

> It's nice way to boost the mark a little bit.

> All in all I find the VIP's to be a good way to gain ourselves some participation marks.

> I think we should keep the vip to give student something to make up their marks. If all the assignments are hard it is too much stress.

The second factor was that, while the intention behind the creation of the ViP was to prompt students to read the course materials before starting their weekly activities, some students failed to make the connection between the weekly readings and their discussions. This could most clearly be evidenced in the

online team conferences where student discussions were posted. Many times, the TA or instructor needed to remind students about the information from the quizzes that needed to be applied in the online exercises. Much of the conference facilitation time was spent in guiding students in making the connections between the quiz questions and to help them in assisting one another in applying and developing their knowledge and skills in the specific topic area.

The question arises, after examining the issues and time involved in creating even a simple online game such as in the ViP is: why should course developers spend so much time on these types of projects? As Goodlad (1984) notes, students seldom have the opportunity to make any decisions about how they will be assessed, especially in first year courses. The course developer designs the methods that are thought to provide the most effective assessment strategies that encourage student learning while at the same time, provide a means of measuring student learning. Incorporating online tools that appeal to our NetGen students, such as team conferences and the ViP used in FTC, provides students with one avenue in which a portion of their assessment is self-administered. The goal of the assessment strategies used in FTC was to empower students in their own learning processes by allowing them to take some responsibility for their own assessment outcomes. The online team conferences and the ViP were two methods that were, at the time, relatively easily incorporated into our existing teaching practices.

Assessment should be an integral component of teaching and learning, and for most educators, there is a certain amount of concern to have a variety of both formative and summative assessments that incorporate authenticity, variety, validity and reliability (Kellough & Kellough 1999). The practice of assessment provides a variety of valuable information, as noted earlier, in addition to evaluating and assisting students in their learning. Different types of assessment practices aid instructors in determining the degree of success of their teaching strategies and provide information that is useful in reflecting on whether or not the learning objectives of the curriculum have been achieved. If assessment results suggests the goals have not been achieved, they are a valuable aid to reflection and revision.

As noted earlier, it is rare for the majority of students to have the incentive and motivation to attain 100% in their grade for any one assessment activity. However, in the case of the ViP, students felt motivated to attain a perfect score, whereas in other assessment strategies used in FTC, students were not as concerned with attaining 100%. For those wishing to work towards receiving an 'A' grade in any assignment, a score of 85% and up would have put them within range, whereas in the ViP quiz score, students felt they needed to 'win' by attaining 100%. Although there were some unresolved issues in the design of the ViP, overall, it did provide a unique element that appealed to our NetGen students. If adequate support can be provided in the future, this project will be revisited and implemented again with further revisions to reduce management time and maximize student interest.

Building these types of assessments within the course is important. When students feel they have achieved a certain level of mastery over their studies, it is likely to lead to a higher interest and enjoyment level in the classroom (Maehr 1976; Maehr & Stallings 1972). In addition, in one empirical study that compared learning incentives with motivational incentives, the results indicated that, "for low-GPA students in the incentive motivation condition, quizzes were not only a more effective way to stimulate text processing, but also a more efficient motivator than homework" (Tuckman, 1996). This appeared to be true in the ViP case, as results showed that students who achieved perfect scores on their ViP were more typically the 'average' students who used the ViP as an opportunity to better their overall term grades (Fig.20).

Figure 20: Comparison of term grades with and without ViP
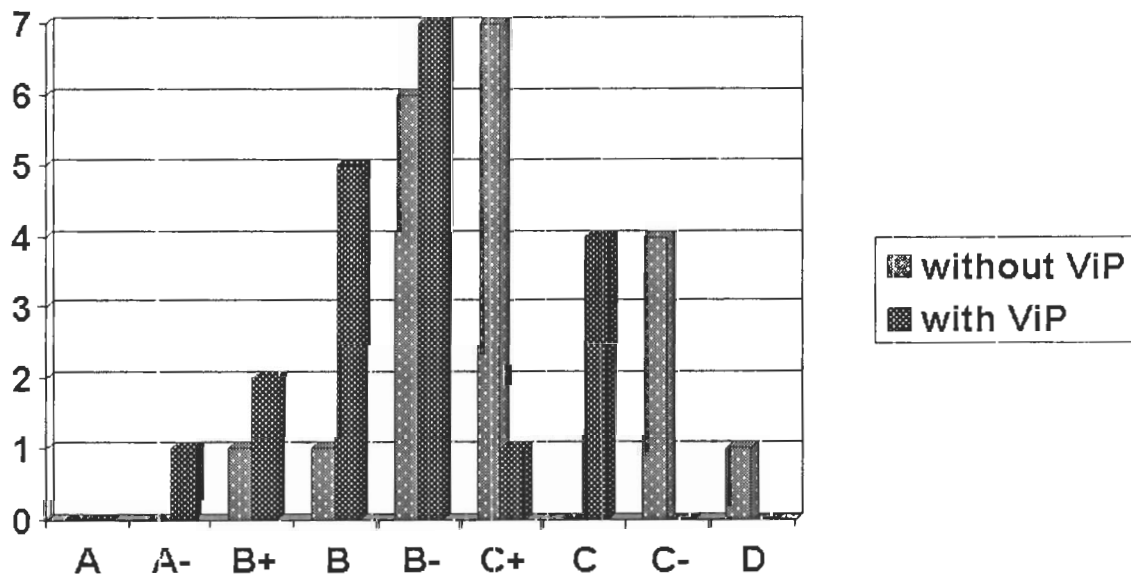
In the preceding example (Fig.20), in one class of 38 students in the Spring 2005 term, 20 students obtained a perfect score on their ViP quizzes and were able to better their term grades from an average of C+ to an average of B-.

CHAPTER 7: VALUING & SUPPORTING FIRST YEAR STUDENTS

Whatever activities and assessments were used in FTC, each was designed to maximize the level of student engagement. For example, I illustrated with quotes from team conferences that students sometimes posted messages they might never have spoken aloud in a classroom setting. This allowed the opportunity for students to respond and support one another in a low stakes environment, where mistakes weren't graded and students had time to think about their responses before posting. Assisting students in developing strong teamwork and communication skills was also an important objective in developing the blended learning balance within FTC. By stressing that students are accountable to one another and encouraging them to build their own team identity and ground rules, students were encouraged to create a sense of ownership and responsibility for their own learning rather than relying on the instructor or TA as the primary source for information, the FTC team intended to shift the majority of the course interaction from student-instructor to student-student, allowing for many different types of interaction and support to occur.

Finally, by integrating game play and giving students the opportunity to take direct control over a portion of their grades, the ViP was intended to allow our first year students another opportunity to develop a sense of mastery during their crucial transitional year. While ultimately the ViP proved impractical, I

believe the spirit of this innovation was the right one. Survey evidence appears to bear out this interpretation..

Discussion

By outlining and examining the evolution of the FTC curriculum in this thesis, I have attempted to show that there are many different potential ways to enhance the first year experience so that it becomes more meaningful for NetGen students. Engaging students in activities and processes that they can relate to may play an important role in reducing attrition rates, and helping to ease students' transition from high school to the personal and academic demands of university. Refining these innovations is a serious business, though. Online tools such as the ViP, that utilize gaming elements, can help to enhance the curriculum; though there are a host of potentially surprising costs and pitfalls that may only be worked out through careful attention to students' responses and iterations of design.

Compared to sophisticated simulation games that involve role play and the creation of online avatars and personas, the ViP is very simple. It was created with the intention of creating a starting point for the learning process. It is through the collaboration, socialization and application that take place afterwards in the form of online asynchronous team conferences and in-class discussions that the learning was expected to occur.

The results of the ViP implementation presented in Chapter 6 illustrate that what initially may seem like a promising innovation may not be as simple to

implement as first imagined. In this case it appears that due to course overload and stress, some students took the easiest road before them (cheating) without too much thought to the consequences of their actions. As a course designer, it is difficult to be aware of the likelihood of such problems until one experiments with different types of assessment (whether traditional or online).

Experience with the ViP has taught me that the motivations behind student learning, as well as the motivations of the course developer in creating online educational gaming activities, need to be addressed and examined before undertaking improvements to the curriculum that include web-based learning aids like the ViP. While striving to better support our first year students, we found that in FTC, simply finding novel ways to engage them and to hold their attention is not sufficient. Online teaching tools should be used as enhancements to teaching and learning, not as a substitute for human interaction. As Noble (2000) stated in his defence of the F2F classroom as 'sacred space'; "In person, you get a sense of me you can't get online. I'm convinced of that," he says. "We have five senses. Why artificially narrow the bandwidth?" (as quoted in Young, 2001). But the metaphor of bandwidth has its limitations. The responses we've received from some of our NetGen students suggest that to their minds, CMC can greatly *increase* the bandwidth for their interactions in class, particularly when combined within a team setting and with F2F classes.

The student participation and feedback we received throughout the history of this course were invaluable in helping the instructor team in reflecting on and

revising this course each year. It was important to consistently examine how students were navigating the activities and assessments in the class and what these outcomes meant to the future development and offering of FTC. The blended learning paradigm no doubt needs further study, and we, as a team, need to approach it with the purpose of informing the design and application of technological innovations and how they can be most effectively incorporated as educational tools, particularly in the arena of team building and peer support.

In FTC, we have endeavoured to understand the factors that motivate our students and what we can do to ease their transition into the wider academic community. However, sadly, many times, students are faced with an institution that is structured to weed out our first year students rather than putting in much needed resources towards planting and helping them to succeed within the academic community.

Conclusion

For our first year students, the importance of developing community and providing much needed support during their formative years at university cannot be stressed enough. From the examples in this study of the elements that combined to make TechBC successful as a community whose spirit lives on, to the unique demands of our current NetGen student population related to how technology is an integral part of their lives, we cannot ignore the evidence that these elements are important when considering how to best support our first year students. The development of the university community and how it

pedagogically, technologically and institutionally supports first year students' experiences are important issues to address.

The many issues touched on this study, however, cannot be addressed solely at the course level. Institutional resources play a huge role in determining the degree of experimentation that can be undertaken in researching and implementing these types of educational and assessment strategies. Wider institutional initiatives need to be implemented through the support and collaboration of all university or higher education departments within the institution. By instigating first year initiatives, as many institutions are now doing, the focus is on improving students' success rates in their courses in order to increase retention rates and academic achievement. However, in the opinion of this researcher, initiatives have not gone far enough and do not seem to explicitly include CMC forms of course delivery. Frequently for example, the measurement of student contact time for instructors does include CMC contact time. Within a blended learning course such as FTC, where more time is spent interacting with students online through conferences, Q&A and email than F2F, the traditional measurement of F2F contact time is greatly misinterpreted. Inherent within this view of teaching is the unspoken message that facilitating students' learning through CMC is not legitimate activity. Ironically, courses that are delivered fully online recognize the legitimacy of faculty-to-student contact time; but for some reason, blended learning courses that endeavour to choose and apply traditional and online pedagogical tools best suited for each learning and assessment situation, are not.

In this study, I have provided a history and background of FTC and the characteristics of our current student population in an effort to understand how to best develop and deliver a course that supports retention of our first year students, in a context of not receiving the full institutional support that first year courses need. Although the FTC teaching team has developed bridges with other departments within the university, such as Student Services, Co-op and the campus Library, and has the support of the TechOne administration, there needs to be a wider awareness and greater support at the institutional level to assist our first year students in successfully completing their initial year of studies and to go on to be successful in continuing and completing their degrees at SFU.

From its conception, TechBC attempted to appeal to our first year NetGen students by focusing its resources in the development of community and through its use of technology. After the dissolution of TechBC, one third year IA student passionately declared, "I would not give up what I have learned through TechBC. It was a life-changing institution, and it's sad to see it go. I know that I am a better student/employer because of it" (Trueman, 2003b). I believe that creating such impassioned views within our students should be the goal of every university.

APPENDICES

Appendix A: Online ViP Student Survey

OPTIONAL:

This is the first year that we have used the ViP as an online learning and assessment tool and we'd really like to get your feedback on this. The following is optional, yet we strongly urge you to participate in this survey so that the ViP can be further developed to meet your specific learning needs. You will be answering anonymously and your answers will be kept strictly confidential.

ViP FEEDBACK **(link to online survey)**

Thanks so much for participating! Your feedback in this course is valuable and will help in determining future directions in our curriculum.

ViP FEEDBACK

1. Introduction

This is our first year in introducing the ViP as a learning and assessment tool in FTC and we appreciate your time in completing this short survey. Your identity will remain anonymous and all answers will be kept strictly confidential, as the more frank and honest you are in your answers, the more it will help us in improving this online tool.

Click "Next" to get started with the survey. If you'd like to leave the survey at any time, just click "Exit this survey". Your answers will be saved.

2. Design

1. Do you find the ViP pictures and progression of change interesting?

◯ Yes

◯ No

2. If Yes, what visual aspects (e.g., colour, graphics, and/or animation) of the ViP do you like best?

3. If No, what types of images would you suggest to make the ViP more interesting (e.g. interactivity, colour, graphics, etc.)?

3. Learning Factor

4. Do you think that the ViP encourages you to read the course materials?

  ◯ Yes

◯ No

5. If Yes, what specific factors helped (e.g. change in pictures, competitiveness with self or others, etc.)

6. If No, what in your past educational experience has prompted you to read and learn the course materials (e.g. having to lead a class discussion, had to give a presentation, had to write a paper, other?)

7. Do you think the ViP helps you to understand the course concepts a little better than if you were to read the text on your own initiative?

  ◯ Yes

◯ No

8. If Yes, what were the specific aspects and functioning of the ViP that helped you (eg. wanted to get a good score, able to spend as much time as I wanted in answering questions, etc.)?

9. If No, why not - what does specifically help you to understand the course concepts better (eg. study groups, self-review, etc.)?

10. Do you think that most of the questions in the ViP quizzes were easy to answer, as you were able to answer most of the questions without reading the course material?

○ Yes

○ Somewhat

○ No

11. You were allowed to retake the ViP tests as many times as you liked within a five day period. Would you prefer:

○ Taking the test the same way – taking the quizzes as many times as you like and logging the highest score over the course of the week.

○ Taking the quizzes just once during a set time every week.

○ Other (please specify)

4. Cheat/Beat Factor

12. Did you think that the ViP quizzes had an easy cheat or beat factor, or do you think that the effort involved in cheating and/or beating took more time than just doing the test?

○ Easy to cheat/beat.

○ Easy, but took too much time, so many students didn't bother.

○ Somewhat easy, some of the time students were giving each other the answers, and some of the time students were doing the quizzes themselves.

○ Difficult to cheat/beat because of the random draw of questions.

○ Difficult to cheat/beat because of other factors.

○ Other (please specify)

13. If you answered that the ViP quizzes were easy to cheat or beat, what were the factors that made it easy to do this (eg. easy to crack the technology, easy to keep track of correct answers and pass on, etc.)

5. Other Feedback

14. Do you have any other comments or observations to add about the ViP?

6. Thanks!

The results of this survey will be used to continue improving and evolving the characteristics and functionality of the ViP.

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Cover Page. Student Photo taken from SFU Surrey Campus archive files transferred originally from TechBC. Terry Lavender, Webmaster, November 2005. Email message.

Figure 6: Tamagotchi. Sammy Lam. Toys N Joys Online, 3632 Waialae Ave., Honolulu, HI 96816. Retrieved March 6, 2006 from www.toysnjoys.com Email message.

Figure 7: Generation One/P1 Tamagotchi chart. Sammy Lam. Toys N Joys Online, 3632 Waialae Ave., Honolulu, HI 96816. Retrieved March 6, 2006 from www.toysnjoys.com. Email message.