

Online Collaborative Learning for High School Students
Using a Blended Approach for the Promotion of Self-Monitoring Skills

Sharon Peters

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Abstract

Online Collaborative Learning for High School Students

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While online learning environments have become common at the post-secondary level of academia, teachers of high schools have not yet adopted the online environment as an alternative and supplementary environment to augment the learning which takes place the classroom. Given the greater stability of computer network labs and ubiquity of home computers, many schools may begin to consider this option. In this Action Research study, this teacher explored a blended approach to instruction to introduce an instructional unit on learning styles and self-monitoring skills. Results of the data indicate that while most students enjoyed the online component of schoolwork, high academically successful students enjoyed it least and reported the least changes in academic performance, while the average ability students reported the most enjoyment, gains in academic performance, and desire to use online environments in the future. Average students also reported a greater tendency to ask for friends for help with their studies after the learning unit which points to a recognition of the benefits of collaboration. The use of appropriate language for online learning environments was an issue at the beginning of the unit but improved over time with proper modeling and awareness of expectations.

Acknowledgments

No man is an island, entire of itself - John Donne

The work of this thesis represents the concerted efforts of many individuals over nearly three years. One of the features of the paper is collaboration and certainly it required many acts of collaboration by quite a few people in order to come to fruition. When I presented my project to my thesis committee, I began by saying how blessed I felt that the topic and content of my thesis work were still fascinating and enjoyable to me even after so many hours of study, processing, and writing. And I am also grateful that the knowledge gained through this study is so very relevant and useful to my current teaching practices.

So it is that I begin my thanks to those who lent their support and expertise to me in the last few years. First, I begin by thanking my students who enthusiastically permitted me to use them as “lab rats” for this study. I remember them fondly and remain in contact with a few even after leaving the school more than two years ago. They were a cohort of generous, kind and caring individuals who possessed keen senses of humour. It was a joy to sift through the data they shared with me as they made observations and insights into their own learning processes.

I would like to also express my thanks to my colleagues at Emmanuel Christian School and Lower Canada College. From ECS, Patricia Dearling, Rod Cornell and Michel Gagné were especially supportive in listening to my ideas and helping me work out logistical details. I owe a debt of gratitude to Brian Moore, my colleague at LCC, who

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Of course, I want to thank my parents for patiently putting up with a daughter who could never get enough of school.

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CHAPTER 1

RATIONALE

The Purpose of the Study

In the last decade or more, we have seen the use of online participation and collaboration in university and college level courses become ubiquitous. However, this mode of learning has not yet become quite so commonly used at the high school level (Winograd, 2002). While many high school teachers have used class web pages and email to communicate with their students, fewer teachers have yet explored the use of computer-supported collaborative learning (CSCL) as an additional course delivery method to the traditional methods of classroom instruction (Jonassen, 1995a, b). At the time of the writing of this thesis, however, the use of online asynchronous learning spaces is becoming more widespread even in the K-12 domain.

As a teacher of secondary students with very mixed academic abilities, I am often seeking ways to improve student performance across all levels. I have observed that those students who are consistently poorer performers on assignments, quizzes and tests tend not to employ effective self-monitoring skills. Students who self-monitor think about how well they are doing, check their progress, and make appropriate changes in strategies to completing the task (Winne, 2001). Incorporating coursework into an online learning environment where students must participate in group discussion and collaborate to create a group product may be an effective means of encouraging the development of self-monitoring skills (McLoughlin & Oliver, 1998; Ley & Young, 2001). By using an online learning environment, the students are able to better explore, reflect, and

collaborate outside of class and lab time thus permitting more time for reflective responses and greater flexibility for these exercises.

My own experiences with distance and blended learning as an adult learner initiated this inquiry: Could an online learning environment, using a conferencing system as a tool, provide additional support for the students of the high school courses I taught? Specifically, could participation in a CSCL learning environment be designed in such a way as to increase self-monitoring skills of the students? Would that environment be able to also effectively support those students who are learning-challenged by ADHD and other learning dysfunctions? Would the use of the online learning environment ultimately lead to better student grasp of the course content, and consequently, better academic performance? Self-monitoring skills have been related to better overall academic performance (Ley & Young, 2001). My experience leads me to the hypothesis that, designed effectively, the online learning environment would indeed benefit all the learners.

Thus this study began as an exploration of using a CSCL environment as a tool to promote self-monitoring skills and other course content as part of the overall course presentation. It was decided that the Action Research model of research investigation was the best method suited to this study. The design of this instructional unit incorporated both face-to-face instruction and asynchronous online instruction. Twenty-eight grade nine students agreed to participate in the study which took place over a period of about six months as part of the curricula to the courses of biology and introduction to technology. By initially using class time to present the instructional unit, adequate

scaffolding was provided for the students to carry out the requirements of the unit (McLoughlin & Marshall, 2000).

Self-monitoring skills, which is a type of self-regulation, have shown to be a characteristic of academic success for elementary and high school students. In spite of the widespread recognition of the importance of self-monitoring skills, the mandatory Ministère de l'Éducation, des Sports et des Loisirs (MELS) curricula did not promote or require its instruction in secondary education at the time of this study. Results from a pre-unit questionnaire and journal reflections by the students indicated a need for the instruction of self-monitoring skills and an interest in those skills by the students.

Literature Review

A review of the literature on self-monitoring skills, computer-supported collaborative learning and instructional design for online learners served to inform the design process of the instructional units for this study.

Self-Monitoring skills

A number of studies have been carried out over the years in the area of self-monitoring (Butler, 1995; Lan, 1998; McManus 2000; Ley and Young, 2001; Loomis, 2000). While some have focused on the self-monitoring skills in online environments, none of which I am aware have yet focused on self-monitoring skills for high school students in a blended environment. Indeed, apart from anecdotal evidence in conversations or on the Internet, no research in the area of blended environments for high school students could be found to date. A recent M.A. thesis from Concordia University (McEwen, 2002) was completed in the area of online communication in a conference

system somewhat like what I have used. In her conclusion, McEwen recommended that better self-monitoring skills on the part of the subjects, who were adult learners in this case, might have improved the outcomes of the learners' performance (147). In fact, she hypothesized that these skills would be better if taught even earlier to learners. This provided me with an impetus to attempt to instruct the younger high school students whom I teach to practice self-monitoring skills as they engage in online collaboration and study of the course content.

Self-monitoring skills are the abilities and strategies used by learners to self-record and self-observe their own progress and make appropriate self-reflective changes. These skills fall under the broader umbrella of self-regulation, which in many cases, have been correlated with academic success (Butler, 1995; Lan, 1998; Zimmerman, 1998). Ley and Young state four guiding principles for embedding self-regulation into instructional practice (2001). First, guide learners into developing a successful study environment, and then organize activities to have students engage metacognitively. Thirdly, use instructional goals and feedback, and lastly, provide learners with continuous evaluation information. They also promoted the idea that self-regulation skills could be instructed in an online format. The online format encourages students to journal or record their thoughts and reflections as they examine their own study skills or as they study. They state that any instruction that supports SR (self-regulation) may prompt the learner to monitor. Observing and recording actions or behaviours according to criteria or goals can enhance metacognitive monitoring.

Boekaerts (1997) distinguishes between metacognitive knowledge, which includes the subset of self-monitoring skills, and motivational beliefs about a knowledge

domain. That is, she acknowledges the essential role of motivation in self-referenced cognition and how it affects a learner's judgment when describing how the learner believes they exert control and sets goals in a learning situation. Boekaerts makes a variety of design recommendations for teachers which include the creation of a powerful learning environment which promotes self-regulation. As well, she suggests the use of interactive learning groups particularly to form a social learning environment which will promote motivational self-regulation amongst the students (1997). These recommendations motivated part of the design of the learning environment that I would eventually create. In particular, the students were very deliberately put into smaller groups to collaborate. My choice of students for each group included a variety of well-motivated and less motivated students, and more academically and less academically successful students.

Computer-Supported Collaborative Learning

While research in the area of computer-supported collaborative learning has been well explored for higher education, distance education, and adult learners, little research has yet been done on its effects and impact on children and adolescents, particularly in the blended environments of traditional classroom teaching and asynchronous online conference systems. While I have accumulated a good deal of anecdotal evidence that blended environments are being utilized by teachers around the world, few have taken the time to document their experiences or carry out quantitative or qualitative research about it. What follows, therefore, is a literature review on CSCL which reflects research performed mostly in higher education contexts.

While research in CSCL has proliferated in the last fifteen or so years, much of the early research on computer-assisted learning focused on individual instruction from a behaviourist perspective. Drill-and-practice skills and other repetitive exercises were emphasized; however, these kinds of activities were limited by providing only low-order thinking skills (McLoughlin, 1998). Discovery and experiential learning were explored by a few researchers, including Papert and his LOGO environments, but again these were limited to individual knowledge gains (Jonassen, 1998; McLoughlin, 1998). While discovery and experiential learning were constructivist in approach, they did not acknowledge the broader classroom environment and the influence of social interactions where language, dialogue, discourse and communication play important roles. Interest in Vygotsky's socio-cultural model of learning led many researchers to examine the role of the social context in the promotion of higher order learning (Nastasi and Clements, 1993; Crook, 1994).

One study that blended computer-supported learning with face-to-face instruction in a K-12 setting was the study of a computer-supported intentional learning environments (CSILE) created originally by Bereiter and Scardamalia (Hewitt, 2001). The study was limited to a local-area network without a connection to the Internet and, thus, limited to school hours. However, the CSILE environment provided a discourse medium similar to the online learning environment that was used for this study. Collaborative construction of knowledge was encouraged in a public course area that preserved all the interactions of the students for later review. This environment also provided equal opportunities for students to have a voice within the class. Substantive collaboration that reflected understanding was encouraged (Hewitt, 2001).

Salmon (2000) outlines a five stage model of computer-mediated communication (CMC) participant behaviour. Each stage requires participants to master certain skills. The first stage is access and motivation; the second is online socialization and the third stage is information exchange. The two final stages are knowledge construction and development which are demonstrated through the participant's abilities to reflect, articulate, and evaluate one's own thinking.

This five stage model probably well represents the average distance learner. A blended learning environment, however, probably greatly accelerates the rate at which these stages occur. In fact, the first two steps are skipped almost altogether because access is already possible and the fact that most adolescent learners have positive attitudes about technology. Because the classroom socialization has already taken place, online socialization was easily by-passed. In fact, because of the amount of time that some of these students spend online chatting with their friends, the challenge was to get the students out of superficial "chat" mode and into an asynchronous approach to communication which reflected deeper thinking. Information exchange is the stage when the typical online learner discovers the amount of information access. They must learn to cope with not just static information available to them, but information available to them from other people as they collaborate with other online learners. This management of information can become overwhelming to learners. On the one hand, we have never before had so much information available to us so easily. On the other, it is the teacher's responsibility to instruct and guide students with how to sift through the volume of information so that the most important and reliable information can be discerned and best used. Information exchange between learners was an important learning goal for this

study. Acceptance of information from one learner to another and the reshaping of the information constitute knowledge construction and development of reflection and evaluation which represent the final two stages of desired participant behaviour.

Instructional Design for Online Learners

For this group of students, it is important, firstly, to acknowledge that this instructional unit is not taking place entirely in an asynchronous manner with learners who are not familiar with each other. The advantages of the blended approach to instruction have been noted. Margaret Driscoll (2002) provides four definitions to blended learning:

- 1) To combine or mix modes of Web-based technology to accomplish an educational goal.
- 2) To combine various pedagogical approaches (i.e. behavioral, constructivist) to produce an optimal learning outcome with or without instructional technology
- 3) To combine any form of instructional technology with face-to-face instructor-led training
- 4) To mix or combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working

My concept of blended learning encompasses all of those definitions. I designed course material for an online learning environment (OLE) that would serve as more than merely a resource to Internet links, as my web page provided. The OLE would serve as an environment where additional instruction, communication, and exchange between students took place. I then examined more closely the self-monitoring skills of the students, first by highlighting strategies toward achieving those skills, then challenging

those students to incorporate them into their online learning. Although the present study took place within the integrated course designs of introduction to technology and biology, the focus of this study is on the self-monitoring unit and not on biology, although some of the course projects for biology were carried out using the online environment.

Stamm & Howlett (2002) state that the likelihood of success in learning gains is increased when instructional design is integrated seamlessly with the course's delivery tool, and recommend that the Instructional Design Model of Dick, Carey, and Carey (Dick, et al, 2001) be used as a guide in designing such an instructional package.

In order to design an instructional unit that promotes the use of self-monitoring skills to a mixed group of learners, much care must be taken to create an online learning environment that possesses universal design features. Universal design (Bowe, 2000) implies that adequate treatment to accessibility has been given to the overall design of the instructional package. In this case, navigability of the course requirements needs to be clearly outlined in the conferencing system. Redundancy of content will be used as device to ensure clarity. Instructions, expectations and content of the course unit will be made available not only in the conferencing system of Nicenet, but also on class web pages, in hard copy form of a handout and on the bulletin and chalk boards of the classroom.

CHAPTER 2

METHODOLOGY

Design

Action Research and Design Research. The Action Research method of educational research was deemed most suitable because of its focus on the attempt of the researcher to find a solution to a problematic situation within an educational context. The researcher is a participant who is able to systematically study the problem and produce an intervention based on data collected *in situ* and theoretical considerations.

Kurt Lewin is generally credited with coining the term “action research” and he envisioned it as a circle or spiral of planning, action and fact-finding about the result of the action (Lewin, 1946). Carr and Kemmis (1986) provide a classic definition of Action Research as it is most generally accepted:

Action research is simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out (p. 162).

Fundamentally, Action Research is a practice of researcher participation and self-reflection and is recognized as a type of qualitative research. However, there remains

considerable controversy about whether Action Research is merely a procedure or template for action rather than an authentic research methodology (McTaggart, 1996).

Usually, Action Research has four stages to its methodology: planning, action, observing/data collection, and reflection. Stringer (1999) simplifies the stages to three stages: look, think, and act. However, Action Research can involve several applications of traditional research approaches, such as ethnographic, descriptive, and quasi-experimental, within the same study. In order to establish valid results, this present study used a mixed method of procedures in order to attempt to triangulate the data.

Action Research has been identified as a form of Design Research (Hoadley, 2002). It has been pointed out that most research methodology does not support innovation in design, while a central defining feature of Design Research is sustained innovation in education (Bell, 2002; Bereiter, 2002). In Design Research, which is cyclical and recursive in nature, the initial task of the researcher(s) is to immerse themselves in the educational context of the situation and identify the need for intervention. Then the researcher will develop a plan of action, followed by an implementation stage when data is collected and artifacts are analyzed. This completes the first cycle of Action Research. The analysis and interpretation then inform the researcher to make corrections and alterations for the second cycle of action research. The second cycle repeats the first and so on. The data may be collected and analyzed using a variety of methodologies. For this study, quantitative data (questionnaire responses) were analyzed using descriptive statistics. Responses to a focus interview and

a qualitative examination of students' comments in their online assignments were also utilized.

The Action Research study was based more on qualitative observations of data rather than quantitative and, as such, does not represent the traditional classic methodology of quantitative research. Because of the iterative nature of this kind of research where intervention decisions are made as the study progresses, it was considered best to present the specifics of study in chronological form, which will be offered in Chapter 3. The two cycles of Action Research will be presented along with appropriate artifacts from the study that gave impetus to a change in course of action or reflection.

Participants and Research Context

The study took place in a confessional private secondary school in the West Island area of Montréal which is a suburban area. Twenty-eight secondary III students (grade nine), male and female, aged 14 and 15 years of age, participated in the study. The students represented a variety of ethnic and linguistic backgrounds: Anglophones, Francophones and Allophones. Most of them live in the suburban municipalities of Montréal. For that academic year of 2003-04, I was the teacher of three secondary III subjects: English, biology, and introduction to technology. The students are required to take the biology and introduction to technology (ITT) courses as stated by the Ministère de l'Éducation, des Sports et des Loisirs (MELS). I have become very familiar with most of the students in the course as I have taught them for the previous two years. The students represented a very mixed group of high academic performers and very low academic performers. The low academic performers included some students with well-

documented histories of ADD and ADHD and other students who may have possessed inadequate skills in study habits and low motivation. Initially, some of these students were willing to participate in the study, but eventually dropped out. From my previous knowledge of the students, I was aware that most or all of the students possessed favourable attitudes toward computer usage and computer-mediated instruction.

This project was undertaken initially in the Fall of 2003 with the planning phase and continued with the implementation phase beginning in January 2004. The second Action Research Cycle was completed in early June 2004 before summer dismissal for the students.

Personal Bias Action Research specifically uses the designer as researcher approach in its methodology and thus must concede the relatively subjective role of the researcher as they interact with and upon the participants. Familiarity with the subjects of the study is to be expected in this instance and taken into consideration as a feature of its methodology. In this case, most of the students who were involved in the study had already been in a student-teacher relationship with the researcher for over two years. Formative changes made of the study during the two cycles were sometimes influenced by this familiarity.

It is also important to acknowledge my role in this study as learner, researcher, teacher, and educational technologist. The confluence of these roles significantly contributed to the eventual choice of the focus of this study. My previous educational training had last taken place more than a decade before I returned to formal graduate studies in educational technology. For about a decade I had occasionally taught English a second language to international students at other various universities. After a hiatus of

ten years, I returned to classroom teaching in a high school setting. My own familiarity with computer applications greatly aided my re-entry into this environment. However, I sensed much was lacking in my own teaching approaches and I began to search for opportunities to return to formal studies.

Learner. At that time, I requested support from my school to update my computer skills with a one-year subscription to the Connected University®, an American institute which provided professional development through online distance education courses to teachers in the area of computer applications and integration of technology into education. Over the course of one year, I took about seven online courses that provided me with training in the integration of technology into the curriculum. Much of the online course work demanded collaboration with other teachers around the country and sometimes internationally. Participation in these courses was a positive experience and provided me with essential experience as an online learner. These courses served as a good model for me as I later chose an appropriate vehicle for online delivery and designed the instructional units for this study.

Within a year of participating in those courses, I made the decision to apply for graduate studies in educational technology at Concordia University. While traditional face-to-face instruction was an important part of course delivery, much of the course work required the use of an online environment, FirstClass® which was used in a variety of ways. Some of the course work required online collaboration between students. One of my courses, *Distance Education for Developing Nations*, required the collaborative instructional design of online courses for distance education in countries of the developing world and explicitly required the participating students to collaborate online

as they created the course. These collaborative experiences provided me with greater understanding and familiarity with the potential benefits of online collaboration using a constructivist approach.

Teacher. The creation of the instructional units for this study came about for a variety of reasons. Most of the students who took part in this study had been my students for two years previous to this study. For the academic year of this study, I was teaching three courses to these students. Obviously, this implies a good deal of my own familiarity with this group of students.

Educational Technologist. As a graduate student pursuing studies in Educational Technology, I was engaged in the pursuit of instructional design approaches which would match the needs of my students. Access to technology support of a networked computer lab on the school premises along with the ubiquity of home computers permitted the possibility of an online component to the course content. Often there was not enough time to cover the material in the biology and English courses I taught to these students. Also, because I taught an introduction to technology course as well, I was able to integrate the use of technology into the instructional approach and accordingly, attempt to satisfy some of the needs that arose from this situation.

The final stages of the second cycle of Action Research coincided with the end of the academic year. At this time, my relationship as a teacher with these students came to an end as they moved up to another level of their education. My role of researcher continued as I catalogued and analyzed my data in order to draw conclusions from the sources of data.

Researcher. My course work in research methodologies exposed me to a broad spectrum of potential research methods. Classroom-based research, which uses authentic learners in an authentic learning situation, is very different from classical experimental research in a lab setting. Consequently, it was not a difficult decision to see the appropriateness of Action Research to this study. Action Research is a form of Design Research that demands close researcher participation by the agent who is attempting to introduce intervention and innovation into a learning situation which would be considered an ill-structured domain (Jonassen, 1996). Action Research permits the close contact between the researcher and the subjects. This is a research method that is best suited to the study of authentic educational experiences because of its similarity to the day-to-day experiences of classroom teachers who make regular formative assessments and adjustments to instructional practices in a K-12 educational setting. As a researcher, I was able to self-consciously and reflectively establish the need for intervention, design instructional units in an appropriate learning environment, assess its effectiveness and make appropriate changes.

Materials

Parent Consent forms and a letter to the parents explaining the study (see Appendices 3.1 and 3.2) were handed and re-collected prior to the beginning of the study. Three of the thirty-one students who were approached to participate opted out of the study. Pre and Post-unit questionnaires were distributed and submitted in hard copy form (see Appendices 4.1 and 4.2) at the beginning and conclusion of the research cycles and kept for later quantitative analysis. Instructions to the various assignments that composed this study were given in the online conference course area (see Appendix 6.1 for a sample

of an assignment). An evaluation rubric was created for the unit (see Appendix 5.1) which was made available for the students in the online conference area. More details regarding the various instruments are provided in the sections below covering the chronology of each Cycle.

Procedure

A pre-unit questionnaire, which measured self-monitoring skills, attitude, motivation levels and levels of computer usage, was distributed before the students were introduced to the Online Learning Environment. Computer lab time was made available so that students could have access to the online course area and to online resources during class time. Online resources were made available on the class webpage and some independent online resources selected by the teacher were linked on that webpage and in the course area. The students were required to submit some of their assignments in hard copy form. A few of the assignments were emailed to the teacher for evaluation. Some of the submitted assignments were posted in the online conference course area. One of the assignments was a collaborative group project that was later presented orally to the class.

Use of the OLE took place in early December 2003 for the first Cycle of Action Research. Comments, dialogue, and other forms of interactive participation in the OLE were recorded and kept for later analysis.

About three weeks later, after the winter break, the students were directed to use an online virtual quiz that helped them identify their learning style. Students were later divided into small groups of 5 or 6 members to comment on their learning styles as well as provide study tips and strategies to the other group members. Students were also required to respond to at least two of their group members' comments and tips. Within a

few days the students were required to continue to work in their groups to create a collaborative product, a study guide for a unit of biology that would be covered on an upcoming exam.

In the second cycle a few months later, the students reviewed their study strategies in the online learning environment, responded to others' posts, and reflectively shared how they would apply what they had learned in the biology course. A similar follow-up questionnaire about the use of the OLE was distributed to measure the students' perceptions of the effectiveness of the online portion of the coursework. Similar questions were taken from the first survey as well as such questions as, "Being aware of my learning style has helped me improve my study habits" and "I believe I can learn as much in the online component of a course than in a classroom". Several students took part in a focus-group interview as a final set of data. In the interview process, the students were asked to comment on their perceptions of the ease of use of the online environment and the perceived drawbacks to the use of an online learning environment for academic purposes.

Evaluation and assessment are necessary and fundamental exercises in traditional classroom teaching for K-12 learners. Although the evaluation procedure is not part of the current study, a rubric was needed to assess the amount and quality of the student online participation. It was difficult, if not impossible at the time of the design of the instructional unit, to find a model for online assessment for high school students using CSCL as part of the curriculum. Finally, for the first Action Research cycle, a rubric was designed (see Appendix 5.1) that included the elements that were perceived to be important to these assignments.

The rubric measured the quality and number of contributions, whether the contributions included the required criteria, grammar and spelling, and the good citizenship exhibited by the student in the conference area. The rubric was handed out in hard copy form to the student as well as posted in the conference area. This was to give the students a clear guideline on what quality of effort and contribution was expected of them.

Ethical Issues. Before the study could begin, a summary protocol form for permission to use humans as subjects was submitted to the University Human Research Ethics Committee of Concordia University for approval which was later granted. Parent consent forms were then issued to the thirty-one students of the class. Of course, only information taken from those students whose parents have signed the appropriate permission forms could be used. The identities of the students have been altered to protect their identities from those outside the class. Permission from the administration of the school for the study had been solicited and granted. The parent consent forms and parent information letter are included in the appendices (see Appendices 3.1 and 3.2).

Online environments that permit shared viewing and posting by students in the K-12 domain must be selected, used, and monitored with great care. The Nicenet Internet Classroom Assistant was chosen because of its built-in safety features to protect potential students from online predators and hackers. It provides this by allowing teachers to create a course area that is accessed only by a class key. Students must also create a unique username and password in order to gain access to the environment. The students were reminded not to disclose their passwords for the sake of privacy and preventing identity

theft.

CHAPTER 3

SELF-MONITORING UNIT

4.1 CYCLE 1: THE DEVELOPMENT OF A SELF-MONITORING UNIT

Overview of Cycle 1

A pre-unit questionnaire, which measured current self-monitoring skills, attitudes and motivation levels, was distributed before the implementation of the self-monitoring unit in the OLE (Appendix 4.1). The survey included questions such as, “Before I begin a test or project, I carefully read over the assignment so that I am aware of what is required of my performance.” The students then were asked to respond using a Likert scale of 5 options ranging from *Always* to *Never*. Then, in the online learning environment for the first cycle, students were asked to describe their study habits and self-reflectively comment on them. This represented the planning stage of the first Action Research cycle.

After they had completed the survey and the reflection, the students were directed to use an online virtual quiz that helped them identify their learning style. Students were later divided into small groups of 5 or 6 members to comment on their learning styles as well as provide study tips and strategies to the other group members. Students were also required to respond to at least two of their group members’ comments and tips. Later, as

a collaborative product, the students were asked to create a study guide for a unit of biology that would be covered on an upcoming exam.

Planning Phase. The pre-study questionnaire was designed to measure current self-monitoring skills, attitudes and motivation and be used as an instrument that would be used to observe changes in behaviour and attitudes over time. A class area titled “Self-Monitoring and Biology” was created in the Nicenet Internet Classroom Assistant environment (found online at <http://nicenet.org/>). A class key was generated which would be passed out to the students in order to enter the class area. The first assignment was created. In this assignment, the teacher posted a brief description of her own study tips and strategies and some of the struggles she has in this area and asked the students to each respond about their own study strategies.

In the next assignment, students were asked to visit a posted link, VARK: A guide to Learning Styles, (found online at <http://www.vark-learn.com/english/index.asp>) and take the interactive questionnaire about learning styles in order to identify their own predominant learning style. Once they finished the questionnaire, they were to perform a screen capture of the page and save it as a jpg file. Then they were asked to write a minimum 200 word response to their results and email both files to the teacher.

After they had completed this assignment, they were directed to move on to part two of this assignment which required them to share their learning style with their designated group. They were asked to share the way in which they discovered that they learn best. They were also asked if they agreed or disagreed that knowing your learning

style helps improve their study habits and if they planned to use the strategies that the helpsheets provided.

Action Phase. Students filled out the questionnaires and they were collected for later analysis. Computer lab time had been booked so that the students could have access to the online course environment during class time. Class time in the computer lab was provided for the online assignments. The expectation was if the assignments were not completed during class time, the students would finish the assignments on their own computers at home as homework. Later, when it was obvious that a number of students were struggling with submitting the assignments, additional computer lab time was provided.

Immediately after filling out the questionnaire, the students were brought to the computer lab in order to complete the first assignment of describing their study habits and providing tips for the rest of the class. The students were then asked to respond to two other students in the class. They were given class time in the computer lab with the expectation that they would completely finish the assignment in one week. Some students struggled with meeting the deadlines.

After the winter break of nearly three weeks, the students were introduced to the second assignment which was posted online in the course conference area. They were asked to submit an electronic copy of their 200-word responses to an online learning styles questionnaire. As well, they were expected to submit a jpg file of a screenshot of their questionnaire results. Afterwards, they were asked to share their learning style with their small group to which they had been assigned. Class time in the computer lab was

provided for these exercises with the expectation that they would finish the assignments at home if necessary.

One week later, the students were asked to remain in the same small group and collaboratively produce a study guide for certain sections of the mid-term biology exam for which they were all preparing. Again, class time in the computer lab was provided so that the students could begin their work and collaborate face-to-face if necessary. They were asked to post the specific duties of each small group member so that appropriate delegation of duties could be observed.

Observation/Data Collection Phase. Although much care had gone into the creation of the online conference course area, the students required more initial guidance into what was required of them when they were first introduced to the online environment. In the first journal entry, I had written:

Dec. 3, 2003

Journal Entry #1

After much planning, reading and thinking through design, I began the data collection today.

The questionnaire was given first. It was hard for the students not to contain themselves during the time they were filling it out. It looks as if the topic of study habits was an interesting topic to them – for now.

As hard as I worked on the creation and design of the first assignment, it's already clear to me that I will have to make some modifications by tomorrow. In general, I think too much information was given to them online at one time. There was much confusion about what they were expected to do. It was also a mistake to not model it first on the big screen in the classroom before taking them up to the computer lab to introduce it to them.

By tomorrow, I will have made it clearer in Nicenet what is expected of them and will show them on the big screen in the classroom step by step.

It was surprising to me that so few students would read the instructions, they wanted to ask me personally for clarification. This is what tends to happen in the computer lab where it is very difficult to give directions to the entire class.

Also, I should make hard copies of the first assignment for all of them for reference offline.

It will be interesting to see the students' responses to the website, because now I am beginning to wonder if they read information on websites.

It was clear this early that adaptations to the approach of the online unit would have to take place. A number of students had to be reminded of the due dates of the initial assignment and later more computer lab time was given so that those students could finish.

Many students took the assignment seriously and organized their thoughts on their study habits carefully. Here is one example of a student who is one of the high academic achievers of the class:

Hi friends, this is a friendly message from your good pal *Fred* (a.k.a. "Kool guy") I wanted show you guys a little tip I have for all you people who get distracted very often while doing your homework. Take it from me I get more distracted than most of you, I'm sure but I still get my work done. Here's my secret:

1. Obviously, find yourself a quite, well-lighted, well-vented area in which you don't have a lot of distractions like people, or food, or people, umm... and mostly food.
2. Go to the toilet and do your special business before starting.
3. Drink some water.
4. If necessary, take a shower.
5. have a bite to eat.

6. get everything you might need e.g. pencil, eraser, pen, paper, ruler, text book, dictionary, brain etc.

7. Don't forget to do your chores first.

8. Make sure no one in the house needs your help and if they do, either help them or don't let them find you.

9. That favorite T.V. show you are waiting to watch, tape it!

10. Have a fruit beside you so in case you get hungry you can have something healthy to energize you.

11. (Optional) Pack a bottle of "hand sanitizer" e.g. Purel. It helps, believe me, it works like a charm. I work better when I feel clean!!!

Well there you have it, my top 10 + 1. You can thank me later cause I usually charge people for this information (joke).

The students were also required to respond to at least two of their classmates over a period of about a week. In the responses, many of the students wrote briefly in a manner that did not display conscientious grammar skills, such as they would have presented in an in-class formal written assignment, but used their more familiar "msn chat" type of language manipulation. Here are several examples:

yo man good study skills, I always listen to music when I study it relaxes me.. but not too much. Anyways talk to ya later in class or something, peeeeeeeeeeeeeeace .x0x. ...Jill...

SAI, i really like how you describe you're study habits. I really agree with you that you should always take in between the study time because i find it makes you less stressed. And also i agree that you should not study when it is late because when its late you are more tired and you will probably forget it the next day. And i am the same as you because i always do my stadies the last minute were just like twins. Luv, Candy

Yeah, ure no good, if ppl tried doing that they WOULD get no where in life, lol! You get 100's in bio, i know i know...but so do I!! Except in this new circulatory stuff. Anyways, yeah...back to the reply. Ure "tricksssssss" are not so good for ppl other than yourself. Yeah, so thats it. Have fun! bye bye

p.s. All in good fun, you know, don't take it personal.

For the second assignment given a few weeks later, the students were required to submit an electronic copy of their document by email to the teacher along with a jpg file of a screenshot with their score results from the online VARK questionnaire. Their assignment was to write a 200-word response to their learning style results and address the following questions: *Were you surprised? Have you learned anything new about yourself? Have you ever used these strategies before? Do you think they will work?* The

students' responses were thoughtful and usually provided concrete examples of why they agreed or, in some cases, disagreed with the results of the learning style questionnaire.

Here are some examples:

After doing my "Learning Style" quiz, I realized that it was quite correct. My "Learning Style" turned out to be Kinesthetic, and I agree. The web page says that my learning aids would be: All my senses (sight, touch, taste, smell, hearing...), laboratories, field trips, field tours, examples of principles, lecturers who give real-life examples, applications, hands-on approaches (computing), trial and error, collections (rock types, plants, shells, grasses...), exhibits, samples, photographs, recipes (solutions to problems, previous exam papers). And the majority of those I agree that I would do, besides collections of rock, plants, shells, & grasses, I've never had one of those. And I don't really understand what they mean by the last example of 'recipes'. The pages also give some example of habits and other things I may have, they are: My lecture notes may be poor because the topics were not 'concrete' or 'relevant'. I will remember the "real" things that happened. Put plenty of examples into my summary. Use case studies and applications to help with principles and abstract concepts. Talk about my notes with another "K" person. Use pictures and photographs that illustrate an idea. Go back to the laboratory or my lab manual. Recall the experiments, field trip...

Write practice answers, paragraphs. And to role-play the exam situation in

my own room.

The questionnaire that I took said that I'm at my best in reading and writing. I agree with the reading part because I love to read and I like to try to understand the book if I liked it the first time that I read it.

Depending on if I like the subject that I am writing about, I enjoy writing a lot. I don't like writing essays as much as I like writing things like myths or mystery stories. The test gave me an seven on reading and writing.

Then the test gave me a two in visual. I don't really agree with this because I usually remember what I look at. The test also gave me a three on aural. This I can agree with. I have never really been the greatest person at listening. I might be able to if I choose to but if someone starts talking about something that I don't think is that interesting, I usually just zone out for a few minutes. Well that's all that I got on the questionnaire, I hope the reading and writing mark stays the same, at least for a while.

To begin with, I was not surprised at all when I fell into the multimodal category. I usually try to fit into whatever learning style the teacher is teaching in. I have learned that my study styles are not that uncommon and in fact are more like 50 to 70% of the population's style. I also learned that I am stronger in the visual, read/write, and kinesthetic categories than in the aural category. Unfortunately I scored a zero in the aural but I'm sure

I'll learn more about it since I did so badly on that part. Later on I'll try to read over the helpsheet and see what I can improve in the future. The strategy listed on the site is pretty new to me and I have never done anything like this so I would say it is pretty new. I find that in the end these strategies will help me and eventually I will try to improve my aural category so I will be more all-around. In conclusion this site was pretty useful to me in that it showed me what I was good at and what I need to improve or change.

As well, it was clear that the students perceived this as a formal written assignment and thus, chose to use a more formalized type of language.

For the second part of the assignment, they were asked to respond in the online learning environment and once again, they reverted to their more casual and much briefer style of writing.

I am kinesthetic, too! :D . Which means i am a doing person. I learn things on field trips better, and things along those lines.

Good day everyone. How is everything going? Well I just want to tell you about my learning styles responses. My final results were 4 Visual, 4 read/write, 4 kinesthetic, and a big 0 for aural! I guess this kind of makes sense seeing that I am not the type that gives good aural directions or the type that listens to speaking very well. >_< I just wanted to tell you guys that I'm not really a good listener but I can compensate with my different abilities which I try as hard as I can to focus on. THE VARK thing helped

me out to identify my strong pointas and now I know which ones I need to improve and pay more attention to. :) I plan on improving my aural perception and pay close attention to the details montioned on the site. Well thanx very much for ur attention and ty very much ;)

~WOOT WOOT!~ From your bud Chuck

hallo peeps,

after i took the "quizzie wizzie" for VARK i found that my learning style was: MULTIMODEL (VARK).....!! Yeah, i really wasn't surprised cuz i found that for different things i like to listen, watch, (and everything else) but my strongest point was aural, which i was surprised cuz i really have a hard time paying attention to instructions if i'm tired or bored! haha, i think it should have been kinesthetic, cuz i like to learn bu doing things, it keeps me "unbored". anywho... yeah that's it

The responses to the students' posts were even briefer and as casual. Those who posted their initial response earlier in the week rather than later generally had more peers respond to them. The students were open about their weaknesses and strengths and demonstrated a high degree of sociality as they interacted.

Reflection Phase. The journal entry from the first day made it clear that greater attention to the explanation of procedures should be made to students upon their first introduction to an online learning environment. Modeling of the steps to entering the system, creating a username and identity, and navigation of the online learning

environment should take place through the use of a projected image and white screen. Also, the students appeared to need multiple modes of redundant information in order to complete the required tasks correctly and on time. That is, they should be given a hard copy handout of the requirements and due dates of the assignment and the assignment requirements should have been posted on the class webpage as well as within the online learning environment. As well, the teacher should go through the assignment requirements orally with the class and elicit questions from the students about what is required of them.

The students relied upon their more casual Internet communication skills while they were responding in the online environment. Less attention was paid to proper formal grammar and spelling principles than that of the second assignment that was emailed to the teacher for evaluation. However, the students displayed good “netiquette” behaviour with their classmates and were playful and sociable as they communicated their ideas.

Because I had wanted the students to freely express themselves without constraints during their first attempts at using the online learning environment, I had not stepped in to moderate or communicate anything to the students in the online learning environment. While it had not been necessary at all to address any inappropriate behaviour, I later questioned whether a presence there by the teacher might have had some influence to improve the performance of the students. Because the unit was taking place in a blended environment where I had face-to-face contact with the students every day, I took advantage of that contact to communicate whether the student was falling behind in their assignments or could improve their performance. For the next cycle, I

decided that I would try to be more of a presence in the online environment and make responses to the students' posts.

4.1 CYCLE 1: THE DEVELOPMENT OF A SELF-MONITORING UNIT

Overview of Cycle 2

A second cycle of Action Research took place in the final few weeks of classes in May and June 2004. Students filled in the post-unit questionnaire and were handed back their responses about their learning style from the first assignment nearly six months ago. Additional questions about attitudes and motivation were added to the post-unit questionnaire. Students were then asked to respond in the online learning environment about whether they agreed or disagreed with what they had written earlier as well as some other questions about new strategies and perceptions of improvement because of the strategies. Three additional online assignments were given that related to the course in biology the students were completing. One of the assignments required the students to share specific real-life applications they had consciously employed that had to do with two of the human biology systems that had been studied in the course of the year. Another assignment asked them to respond to questions about genetics and ethics based on a movie that the class watched. The final assignment required the students to upload documents of group projects on the study of drugs that the class was undertaking and asked the students to use the conferencing system to post the delegated responsibilities within each group.

Planning Phase. Nine additional questions were added to the original pre-unit questionnaire. The new questions asked the students about enjoyment of the use of the

online environment and attitudes toward it as well as whether they had experienced any improvement in academic performance due to new or conscious study strategies.

One of the journal entries of the teacher outlined her intentions for Cycle Two:

Ideas for Action Research – Cycle 2 (May 16, 2004)

- Have students fill out “My Study Habits Questionnaire” again, with questions at the end about if they implemented anything new in the four months between.
- Have them reread their posts on nicenet, and respond – do they still think that what they wrote about themselves is valid? Has anything changed? Have they changed their approaches to learning?
- Revise above idea: print out each student’s first assignment from Cycle One, hand back to student and have them respond in Nicenet by next Tuesday.
- For second week – have them respond to a question about the Biology that we have studied. They must choose one of the system units and respond to what lifestyle choices they are making that are wise and what they intend to change or anticipate in the future (i.e. Application questions to

Biology). Perhaps have them research something more about their chosen unit and add a link they wanted to share with good information on it??

- For final project: they must work in groups of 3 or 4 to work on a collaborative multimedia project. They must create a product – based on their knowledge of biology – and market this product. They will have a digital camera, Photoshop, PowerPoint and Web design software (i.e. Swish and dreamweaver) at their disposal to create this product. Forty percent of the mark will be based on their collaboration on Nicenet.

- Interview a few students??

All of the above ideas were implemented and the appropriate assignments were provided both as hard copies to the students and on the class webpage and the Nicenet conference area so that the students had many ways of finding the information. An appeal to the students for a focus group interview yielded three students who stepped forward and agreed to participate in a focus group interview after the unit had finished.

Also, I decided that I would attempt to respond to each of the students' posts so that they had some positive feedback associated with their work.

Action Phase. Hard copies of the post-unit questionnaire and assignments were distributed. The post-unit questionnaire included the same twenty-five questions as the pre-unit questionnaire in December, along with nine additional questions. They were also asked if they had consciously employed any of the study strategies suggested by their

peers, if they had noticed any improvement in their grades because of the study strategies, and to respond to statements about attitudes toward learning in an online environment. The questionnaires were submitted to the teacher for future analysis.

Computer lab time was made available so that the students could complete the online learning units. The students were given hard copies of all the assignments and advised that they were also posted both on the class webpage and in the online course area.

After the students had responded to the questions about reviewing their study strategies in the online learning environment, each student was provided with some feedback and encouragement by the teacher.

In the following weeks, the students were asked to complete three other assignments in the online learning environment. For one of the assignments, they chose to respond in two of eight areas representing the different systems of the human body that had been studied in the year. They were asked to provide concrete examples of how they had applied the biology material in their own personal lifestyle from what they had learned about those two systems. For another assignment, the students were asked to create a collaborative group presentation on a specific drug. They were expected to upload documents so that everyone in the class would have access to the information. The third assignment was a bonus assignment for those students who wanted to earn extra marks. A popular Hollywood movie, *Gattaca*, was shown over several of their lunch hours and questions about genetics and ethics were posed in a conference area in the

online learning environment. Sixteen of the twenty-eight participating students contributed posts to this conference area.

Observation/Data Collection Phase. The notes taken in Nicenet as well as the actual products of the students were collected and evaluated. This time, each student was provided with feedback by the teacher in the online learning environment. The students appeared much more facile in their use of the conference areas and were much quicker in getting the job done. They continued to display playfulness in the online conference area as they wrote their responses to the questions on the assignments as well as to each other. The use of casual msn chatter was less conspicuous, although the care and attention to correct grammar and spelling was not as evident as what would appear in a formal assignment that is submitted on its own as a document.

This was the first time that the teacher responded publicly in the online environment to each of the students' posts. None of the students responded to the teacher's comments, even when questions were posed to ask for clarification or more information. This could have been due to the fact that, because the teacher had not responded before, they were not expecting a reply from the teacher and had not bothered to check. Also, they may not have understood that a response in the online area was necessary because of the blending of online and face-to-face environments.

Three students returned after classes were finished to participate in a focus group interview. The audio was captured for later analysis. The interview was about 30 minutes in length. The teacher asked questions of the students to which they responded.

Reflection Phase. Data was collected in the form of the post-unit questionnaires, online conference responses, uploaded documents and an audio interview of three students and the organization of the data ensued.

As the raw data from the questionnaires was entered into a spreadsheet, the disparity between responses from the higher academic achievers of the class and the average achievers was noted. Those students who performed above average in the three courses tended to perceive themselves as already possessing good study skills and were less inclined to enjoy or want the participation in an online activity. This observation eventually led to the decision to separate the two groups of students, based on their academic records and the teacher's knowledge of their abilities, in order to more closely examine these phenomena.

CHAPTER 4

DATA RESULTS

Summary of findings

Data analysis of the responses to the pre- and post-unit questionnaires, a focus group interview, and comments posted by the students are presented to demonstrate the students' perceptions of their own self-monitoring skills and improvements in their study skills over time. The students were also asked on the questionnaire to report their attitudes about the online learning unit. The questionnaires were originally created to measure students' perceptions about their self-monitoring and study skills and to compare results over time. However, upon a cursory examination of the responses, it became clear that differences in responses could be noted between the higher achieving and the average academic students. This became a focal point for comparison for the quantitative data analysis. Nine additional questions had been added to the second questionnaire as a further way to capture data and shed light on attitudes to the online unit of instruction.

Not surprisingly, the higher academic achievers reported possessing stronger study skills than the average academic achievers in the first pre- unit questionnaire before their introduction to the online unit of instruction. Gaps that widened significantly between the two groups in the post-unit questionnaire are also noted.

RESULTS

Quantitative Data

After the two questionnaire results were received, the database file was incorporated into a spreadsheet to organize and code the data. The researcher began analyzing the raw data by computing descriptive statistics, such as mean, mode, frequencies and correlations. The data analysis method used in this study is quantitative.

A cursory examination of the raw data of the responses from the pre- and post-unit questionnaires revealed that those students who tended to be higher academic performers were responding differently from the students who had lower academic averages.

In order to examine the potential differences in responses, the class was divided into two sets of students. Ten students were included into the first group. These students were identified as high academic achievers in the class according to their academic performance in the three courses of English, biology and introduction to technology for the first few months of the academic year as well as previous experience with the students in the two years before the study. These students had achieved an average of about 85 or more in all of those courses. The remaining eighteen students represented the group of average achievers. These students' grades ranged from 61 to 84 in one or more of the courses.

Once the set of twenty-eight students had been divided into the two groups according to academic ability, the data was examined to compare and contrast the responses of these groups. Means were compared between the two sets of students. In order to see if such differences existed, two-sample t-tests assuming equal variances were performed on some of the responses of the questionnaires.

Difference in Means:

Statistically significant differences in responses between the two groups became evident on several questions in the pre-unit questionnaire. Question #2 reads “When I perform poorly on a test, it is because I do not study the right material for a long enough period of time”. On the Likert scale rating, “Always” represented a choice of 1 while “Never” was represented a 5 on the scale. The mean of the ten high academic achieving students for this question was 2.24 while the mean of the other average achievers was 2.93, showing that the higher achievers were more inclined to take responsibility for their poor performance due to lack of preparation.

Table 4.1 T-Test Results from Pre-Unit Questionnaire, Question #2

t-Test: Two-Sample Assuming Equal Variances
Pre-Unit Questionnaire
Question #2 - “When I perform poorly on a test, it is because I do not study the right material for a long enough period of time”

	<i>Higher academic achievers</i>	<i>Average Achievers</i>
Mean	2.24	2.93
Variance	0.62	0.98
Standard deviation	.79	.99
Observations	10	18
Hypothesized Mean Difference	0	
Df	26	
t Stat	-1.90	
P(T<=t) one-tail	0.03	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.07	
t Critical two-tail	2.06	

This area of performance attribution was further highlighted by the responses to the next question, Question #3, “When I perform poorly on a test, it is because the test is too difficult for my abilities”. The mean of the high academic achievers was 4.56 while the mean of the average achievers was 3.62. This difference further suggests that the higher academic achieving students are not attributing their performance to their abilities but to their efforts in preparing for assignments and tests.

Table 4.2 T-Test Results from Pre-Unit Questionnaire, Question #3

Pre-unit Questionnaire Question #3: "When I perform poorly on a test, it is because the test is too difficult for my abilities".	<i>High Academic Achievers</i>	<i>Average Achievers</i>
Mean	4.56	3.62
Variance	0.34	0.46
Standard deviation	.58	.68
Observations	10	18
Hypothesized Mean Difference	0	
Df	26	
t Stat	3.68	
P(T<=t) one-tail	0.00053	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.001	
t Critical two-tail	2.06	

The difference in means between the groups for Question 3 becomes even more pronounced in the second post-unit questionnaire given six months later. While the high academic achievers rated an almost identical mean to the pre-unit questionnaire, the mean of the average achievers went from 3.62 to 3.40.

Table 4.3 T-Test Results from Post-Unit Questionnaire, Question #3

Post-Questionnaire Question #3 – “When I perform poorly on a test, it is because the test is too difficult for my abilities.”	<i>High academic achievers</i>	<i>Average achievers</i>
Mean	4.6	3.40
Variance	0.49	0.35
Standard Deviation	.7	.59
Observations	10	18
Hypothesized Mean Difference	0	
Df	26	
t Stat	4.87	
P(T<=t) one-tail	2.39E-05	
t Critical one-tail	1.71	
P(T<=t) two-tail	4.77E-05	
t Critical two-tail	2.06	

Another significant difference in means of responses was reported in the pre-unit questionnaire question #20, “Before I begin my assignments or study period, I will make a list of what I need to do”. The mean for the high academic achievers was 3.29 while the mean of the average achievers was 3.99 further demonstrating that the higher academic achievers reported the use of study strategies.

Table 4.4 T-Test Results from Pre-Unit Questionnaire, Question #20

t-Test: Two-Sample Assuming Equal Variances
Pre-unit Questionnaire
Question #20 - Before I
begin my assignments or
study period, I will make
a list of what I need to do

	<i>High Academic Achievers</i>	<i>Average Achievers</i>
Mean	3.29	3.99
Variance	1.77	1.06
Standard deviation	1.33	1.03
Observations	10	18
Hypothesized Mean Difference	0	
Df	26	
t Stat	-1.55	
P(T<=t) one-tail	0.07	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.13	
t Critical two-tail	2.06	

Question 12 poses the question “I know what I am doing when I study for most of my schoolwork”; the high academic achievers responded positively with a mean of 1.57 while the average achievers responded with a mean of 2.02. This again demonstrates the high level of confidence the higher academic learners possess about their study skills.

Table 4.5 T-Test Results from Pre-Unit Questionnaire, Question #12

t-Test: Two-Sample Assuming Equal Variances

Pre-unit Questionnaire		
Question 12: "I know what I am doing when I study for most of my schoolwork"		
	<i>High Academic Achievers</i>	<i>Average Achievers</i>
Mean	1.57	2.02
Variance	0.25	0.90
Standard deviation	.5	.95
Observations	10	18
Hypothesized Mean Difference	0	
Df	26	
t Stat	-1.40	
P(T<=t) one-tail	0.09	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.17	
t Critical two-tail	2.05	

Differences between means become more marked in the second post-unit questionnaire. For Question #2 "When I perform poorly on a test, it is because I do not study the right material for a long enough period of time", both sets of students reported an even greater tendency to agree with the statement: High academic achievers moved from 2.24 to 2.00 and the average achievers went from reporting 2.93 to reporting 2.40.

Table 4.6 Comparison of Means from Pre- and Post-Unit Questionnaires, Question #2

Question #2 -“When I perform poorly on a test, it is because I do not study the right material for a long enough period of time”	Pre-Unit Questionnaire Mean	Post-Unit Questionnaire Mean
High Academic Achievers	2.24	2.00
Average Academic Achievers	2.93	2.40

For Question #7, “I frequently play on the computer or chat with my friends during the time I am studying or working on my homework”, high academic achievers reported 3.56 in the pre-unit survey and moved to 3.80 which represents a movement away from distractions to studying. However, the average achievers went from reporting 3.29 in the pre-unit survey to 2.83 in the post-unit survey suggesting they had engaged in even more social or distracting computer behaviour while they were doing their homework.

Table 4.7 Comparison of Means from Pre- and Post-Unit Questionnaires, Question #7

Question #7 “I frequently play on the computer or chat with my friends during the time I am studying or working on my homework”	Pre-Unit Questionnaire Mean	Post-Unit Questionnaire mean
High Academic Achievers	3.56	3.80
Average Academic Achievers	3.29	2.83

However, for questions #28 and #31, “I think my grades have improved in the third and fourth terms due to my improved study habits” and “Being aware of my learning style has helped me improve my study habits” these same average students showed a tendency toward agreement with scores of 2.64 and 2.81 respectively. The high academic achievers did not report the same level of agreement with scores of 3.5 and 3.5.

Table 4.8 Comparison of Means from Post-Unit Questionnaire, Questions #28 and #31

Post-Unit Questionnaire Comparison of Means	Question #28 , “I think my grades have improved in the third and fourth terms due to my improved study habits”	Question #31 “Being aware of my learning style has helped me improve my study habits”
High Academic Achievers	3.50	3.50
Average Academic Achievers	2.64	2.81

The results in the post-unit questionnaire to Question #8, “I think I need to improve my study habits” also show a significant difference from the pre-unit study. The high academic achievers were less inclined to agree with the statement moving from 2.8 to 3.1 while the average academic achievers moved from 2.8 to 2.32, widening the gap between the two sets of students.

Table 4.9 Comparison of Means from Pre- and Post-Unit Questionnaires, Question #8

Question #8 “I think I need to improve my study habits”	Pre-Unit Questionnaire	Post-Unit Questionnaire
High Academic Achievers	2.8	3.1
Average Academic Achievers	2.9	2.3

The gap also widened for Question #9, “My homework is completed on time and I am always prepared for a test or quiz”. The average academic achievers had originally reported 2.21 in the first survey and then later reported 2.68 demonstrating less tendency to agree with the statement. The high academic achievers also were less inclined to agree but less slightly so, moving from 1.90 to 1.99.

Table 4.10 Comparison of Means from Pre- and Post-Unit Questionnaires, Question #9

Question #9 “My homework is completed on time and I am always prepared for a test or quiz”	Pre-Unit Questionnaire	Post-Unit Questionnaire
High Academic Achievers	1.90	1.99
Average Academic Achievers	2.21	2.68

Another significant change between the pre- and post-unit questionnaires took place for the average students for question #23, “I will call upon a friend to study with or

ask for aid”. The average students moved from reporting 3.54 to 2.82 while the high academic achievers moved only slightly from 3.69 to 3.60. This demonstrates a significant difference in either the average students’ willingness to respond positively to the question or their willingness to call upon a friend to ask for aid while they are studying.

Table 4.11 Comparison of Means from Pre- and Post-Unit Questionnaires, Question #23

Question #23 “I will call upon a friend to study with or ask for aid”	Pre-Unit Questionnaire	Post-Unit Questionnaire
High Academic Achievers	3.69	3.60
Average Academic Achievers	3.54	2.82

The final questions of the post-unit questionnaire were designed to explore the attitudes of the students regarding online instruction. The results from question #32, “I enjoyed using the online forum to communicate with my classmates”, bear a closer examination because the mean responses of the high academic group are particularly misleading. The mean is 3.2; however, fifty percent of the students reported that they had rarely or never enjoyed using the online forum. Only seventeen percent of the average academic students reported similarly. The mean for the average academic achievers is 3.08 for this question. This seems to indicate that higher academically successful students are less inclined to enjoy using the online forum to communicate with other students.

The responses to the following question, #33, “I would like to see more of my courses have an online component to them” showed similar attitudinal preferences for the high academic achievers who showed an even stronger dislike for the online courses with all but two of the students responding “Sometimes (3)” to “Never (5)”. The average ability students showed a similar distaste with only three responding positively by choosing “Often” or “Always”. The mean for the high academic achievers is 3.50 while the mean for the average students is 3.29. Both means suggest that “Sometimes” or less often is the preferable amount of time that online course instruction is favoured by the students.

The final question of the post-unit questionnaire, #34, is “I believe I can learn as much in the online component of a course than in a classroom”. Sixty percent of the high academic achievers responded either “Rarely (4)” or “Never (5)” with a mean of 3.90. Only twenty-eight percent of the average academic students responded similarly. The mean for that group is 3.07.

Table 4.11 Comparison of Means Post-Unit Questionnaire, Questions #32, #33, #34

Comparison of Means of Post-Unit Questionnaire	Mean for Question #32, "I enjoyed using the online forum to communicate with my classmates"	Mean for Question #33, "I would like to see more of my courses have an online component to them"	Mean for Question #34, "I believe I can learn as much in the online component of a course than in a classroom"
High Academic Achievers	3.50	3.50	3.90
Average Academic Achievers	3.08	3.29	3.07

Qualitative Data

Validity in Qualitative Research

Traditionally, issues of external validity have had to do with concerns with the generalizability of the research results as well as the ability to replicate the study with similar results. Researchers using the qualitative methods take exception to this view and have offered other means of determining validity.

Guba (1981) suggests that qualitative researchers focus on establishing the trustworthiness of their inquiry as a measure of validity and states four criteria which offer a framework to establishing validity. While traditional criteria used internal and external validity, reliability and objectivity as criteria for establishing validity, Guba suggests credibility, transferability, dependability, and confirmability as the alternate

criteria. In order to establish credibility, the qualitative researcher takes into account all the complexities that are present in the study and acknowledges that which cannot be easily explained. The practice of triangulation is used to further ascertain credibility. Transferability refers to the researcher/teacher's belief that everything is context-bound and the researcher will collect detailed descriptive data of the context. Dependability is established by being certain of the stability of the data. Overlapping methods will be used to create this stability. Because of the intimate relationship between researcher and subjects in Action Research studies, objectivity is obviously impossible. Confirmability is established instead through triangulation of the data and the practice of reflexivity.

Three of the survey questions were also posed to the students in the online assignment where the students were asked to review their original study strategies and respond to some questions about their school performance since then and whether they had used any of the strategies suggested by their classmates. Few students responded that they had not used any of the study strategies suggested by their peers and that their marks neither went up or down as a result. One student, one of the high academic achievers, who responded on the questionnaire "Never" to using suggested study strategies as well as reporting "Never" to improvement in his achievements, consistently reported his perceptions about this in the conference area in response to the same questions:

As far as I can remember, I didn't use anyone's strategies! I didn't even use the ones I suggested to myself! ... I simply kept the good old ones. And my grades didn't go down, but didn't go up either. They stayed pretty well the same.

I still need to improve my study strategy skills in the fact that I should have a list of the material I need to study, and check off all what was done.

Now, I suggest that you guys (and girls) all should keep *your* own study habits, if you think they are good. As I said to someone somewhere somehow and at some point in history: "Everyone has different ways of studying!" ...

I agree that study strategies and skills should be thought in school. Not a very, very deep study and stuff, but a little lesson or two about it -- just like we did! However, it is important that the students *understand* that these are just possible ways and they're optional and there to help! They don't need to follow every single one of them!

This student, however, was one of the few high academic achievers who reported "always" enjoying the use of the online learning environment as well as reporting "always" to the statement that he could learn as much in an online environment as in a traditional classroom setting. He was one of the students who participated in the focus group interview later and similarly voiced his enthusiasm for the online component of the class. When asked if the online unit had not existed, could the same material be covered, his response was that the class could not have covered the unit on learning styles and study strategies without the online environment.

The majority of the students agreed that study skills should be taught every year of high school and expressed how beneficial they found such a unit. Of the twenty-eight

students, only two reported in the online conference area that they objected to study skills being taught every year in high school, one each from the higher academic and average groups of students:

Study strategies and skills should be taught every year... what a shhhtupid idea (Yes, I know how to spell it; stupid). I disagree, firstly because I don't want to learn this all over again next year, and secondly because once you find the studying habit that fits you best, you shouldn't change method unless you are sure of yourself.

And finally, I really don't think that study skills should be taught every year at school. I think it's just a waste of time, everyone has their own study skills. In my opinion, there's really no point to learning about them. Some people are just so smart that they don't need to study. Either that, or they can just study at the last minute, and still get like an 85% or something. So yeah, that's what I think. As long as you pass, then you're OK!

Interestingly, both students reported “sometimes” to the statements #28 and #31 on the questionnaire which asked about improved academic performance due to their knowledge of their learning style and employment of study strategies. And while the high academic achieving student reported enjoyment of the online learning unit, statement #32, the average academic student reported “Never”.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

Discussion of Findings

Overview

The initial hypothesis of this study was that the use of an online learning environment to promote self-monitoring skills for high school students would lead to better student grasp of the course content, and consequently, better academic performance. The online learning environment included conference areas where students could post and respond asynchronously to each other about ideas and questions the teacher had posed. It also provided areas where students could access resources, such as webpages and uploaded documents which contained information pertinent to the course. The students were also required to upload their collaborative group documents as a way of sharing their products with the rest of the class. In the students' responses of the post-unit questionnaire, online conference area, and focus-group interview, most agreed that the online unit about self-monitoring skills did indeed have an influence on their academic performance. However, there was marked divide between the perceptions of the higher academic achieving students and the average achievers.

Differences between Groups

The higher academic achievers entered into the unit already cognizant of good study strategies and their abilities. Also, they were less inclined to perceive a need to improve their study habits with the response to the question "I think I need to improve my study habits" agreeing even less with the post-unit questionnaire than the pre-unit questionnaire (from 3.6 to 3.8 on the Likert scale of 1 to 5). On the other hand, the

average achievers reported an even greater agreement with the same question on the post-unit questionnaire (from 2.8 to 2.3). This may demonstrate that the unit in self-monitoring skills further heightened the awareness of the need to employ better study strategies for these students. However, they do later report that this group of average academic achievers perceived their grades had improved due to their enhanced study skills, so this is an interesting and somewhat dichotomous result.

The higher academic achieving students also reported less enjoyment and desire to participate in online learning units in the future. The results to this are somewhat misleading; while a few were very enthusiastic in their support of online learning, half reported the least satisfaction and enjoyment of all twenty-eight students. It is difficult to determine from these results if their lack of enjoyment was related directly to using an online environment or because of the topics which were being studied. It is also difficult to determine if they were objecting to communication in an asynchronous versus synchronous manner, or collaboration within groups rather than individual performance, or the layout and design of the online learning environment itself. This warrants further study in future research.

Another notable result that shows the differences in responses between the two groups is the response to question #7 of the post-unit questionnaire, "I frequently play on the computer or chat with my friends during the time I am studying or working on my homework". Higher academic achievers reported less inclination to these activities than their initial responses of the pre-unit questionnaire while the average achievers reported a much greater tendency to do these activities. At the same time, these students also reported academic gains in the second questionnaire. It is possible that the sociability and

collaboration encouraged in the online unit may have fostered this tendency to be engaged socially while studying and may have actually benefited the students in their studies. Other researchers have pointed out the advantages of sociability in online learning environments (Kreijns & Kirschner, 2004; Shank, 2004; Lou, Abrami, & d'Apollonia, 2001). Higher achieving students may not have to rely on the help of their peers or may perceive less need to do so while average achievers may perceive a greater need to collaborate and cooperate with their peers as they study. This need for collaboration and cooperation promotes social interaction and may even make the study experience more enjoyable and effective for these students (Kreijns & Kirschner, 2004; Shank 2004).

The later responses from the focus-group interview participants revealed further attitudes and perceptions of the students about the online learning unit. When the students who participated in the focus group interview were asked what the most significant thing was that they recalled about the online environment, one of the students immediately stated that it was the discussions that they were able to have with each other. A second student agreed with that and added that it was “really great, really fun to read the posts” that someone would add to his own post. The same student also enjoyed being able to add his own html code to his messages so that it took on a personal flavour. When then asked if the students found it easier or more difficult to respond in the online environment than in class, all three participants agreed that it was easier to respond in the online conference area. They also stated that they found it easier because there were no interruptions, they could take the time to read or not and they had the freedom to choose to whom and to what to respond.

Two of the three students mentioned taking the time to view the evaluation rubric that had been posted. One had not noticed it at all. One of the students examined it only briefly and thought his performance matched it well so he did not reflect much about it. Another student reported that she did take the time to read it over and consciously apply her responses to meet the criteria. She said, “It made me want to write things better so I could get a higher mark”. Ley and Young (2001) point out that by providing an evaluation guide before the assignment is submitted and afterwards by an external evaluator permits the student to compare their self-evaluation and final evaluation in order to determine their self-evaluation effectiveness.

Two of the students reported that they liked the fact that it was a “paperless” part of the class and were relieved not to hand in an assignment in hard-copy form. When asked about the moderator’s feedback during the second cycle, two of the students stated that they greatly appreciated the feedback from the teacher. One of the students stated that she “felt like an important person was commenting on it [her work]”. While this is the only evidence that the role of feedback from the moderator is important, this is an area which has been identified as very important to a unit in online instruction and communication (Salmon, 2000).

The students who participated in the focus-group interview were also asked if starting course work online as early as in high school was a useful activity. Each of the students agreed that it was. One student commented that it was a “fun way to do the work” and he now believed he was better prepared to experience online learning when he went to college.

As well, the issue of appropriate language for an online learning environment became a focal point for discussion in the focus-group interview. One of the students pointed out that many of the students were using instant-messaging type responses with the emphasis on the word “instant”. Instant messages are meant to be short, in-the-moment type responses. He pointed out the inappropriateness of this type of usage because the online environment is meant to provide an area where one can thoughtfully respond with longer messages.

Analysis of the results of the data also indicate that high school students must be approached with a different set of expectations if one is proposing to use an asynchronous online environment as a mode of teaching and learning. Many students initially gave very brief, instant-messaging style responses to their peers and to the questions posed to them. Students of that age group appear to be more accustomed to the language habits of instant messaging (e.g., MSN Messenger) and may well need to be carefully instructed on how to respond in an asynchronous forum in an academic context. An example by an academically average student illustrates this tendency:

yo man good study skills, I always listen to music when I study it relaxes
me.. but not too much. Anyways talk to ya later in class or something,
peeeeeeeeeeeeeeeace .x0x.Joan..

It became apparent early on in the first cycle that communication skills for an asynchronous OLE had to be instructed and modeled if better crafted responses were to be expected from the students (Salmon, 2000). Hewitt’s (2001) experience with the Computer-Supported Intentional Learning Environments (CSILE) documented the need

for the teacher to often encourage students to respond substantively as they communicated and collaborated in the learning environment. Students also required frequent reminders that they needed to demonstrate understanding in their posts as well. In the case of this study, it did not take long for many of them to sense this and change their style of responses. Students who modeled longer more reflective posts earlier in the conference area provided examples for those later to follow.

Most of the students had never participated in an asynchronous online discussion before, so would need considerable coaxing to not leave the task until the very last minute and assurances that this would be a part of their overall evaluation record. Also, good netiquette practice had to be stressed and included in the evaluation. The students with learning challenges needed additional encouragement as it was very apparent in a public forum if language difficulties were present. During both cycles, these students would often even forfeit the assignment and receive a failing mark for the assignment. How to overcome this reticence on the part of the students is still an issue to be addressed by high school teachers who wish to use this approach in their teaching practices.

Great care was taken to provide students with opportunity initially during class time in the computer lab to begin or finish their assignment so that any problems with login or comprehension of the task could be addressed. Also, the students were assured that their ideas, reflections, thoughts and responses would not be ridiculed by the other students in the forum.

Lack of accessibility to an Internet-connected computer and stability of the technology can be common problems that must be taken into account. Fortunately, most students presently live in a home with a computer; only one of twenty-eight participating

students did not have access to a computer at home. While Nicenet is a stable web tool that has been around for a number of years, the computer network at our school experienced problems with the students logon from time to time. This can be very frustrating for both teacher and students.

In order to receive maximum responsiveness initially to online participation, students may need more demonstrable encouragement and incentives either online or face-to-face during class time. Students must be made to feel comfortable and secure that their thoughts, responses, ideas, and writing styles will not be ridiculed or put down – which is very common for that age group. Therefore, relationships built on trust are essential to this endeavor. A blended approach of regular face-to-face contact as well as online contact provides a rich opportunity to establish trust and confidence between teacher and students, and students and students (Driscoll, 2002).

As stated above, the results of the questionnaires to this study can be divided into two groups: the high academically successful, and the academically average. At least half of the high academically successful students stated that they never enjoyed the online collaboration and that they would not like to use it again. Perhaps because they are already academically successful, they may either be aware of the self-monitoring techniques covered, or already employ those techniques, or they feel that they are not necessary (Boekarts, 1997). These results may also have been skewed by the fact that at least a third of these were students whose mother tongue was French, and the added burden of using English in a public context was off-putting to them. What is notable is that the average group of students reported a much higher enjoyment rate and desire to use the online environment again. A high number of students also stated that study skills,

such as what were offered in the online component, should be offered regularly to high school students.

The survey results are somewhat at odds with the timing, frequency and length of the responses of the academically successful students in the OLE. For the assignments that were recorded in the asynchronous online Nicenet area, the students were divided into five groups of five or six students each. Each group was composed of a mixed range of ability students. Typically, the more academically successful students of each group were the first to pose an initial response in the given period of several days, wrote longer responses and were the first to respond to others' posts. Often these students were the most encouraging and supportive in their responses and frequently embellished their posts with little jokes and playfulness. They appeared to be enjoying the activity and having fun as they communicated back and forth. In order to illustrate this, the following is a response from one academically successful student to another:

Hey Joe, great studying ideas, i should probably use them to get better marks in math, heh heh, but you didn't say how much time you spend studying... or is it just me? And, i think you should take some breaks at LEAST every 30 minutes or so. But the studying right before going to bed, and just shoving your books aside, turning off the light, and just fallin asleep is great, i'll remember to use that quick form of studying! haha, seeyha joe!

~ann~

The student above, “Ann”, successfully responded to “Joe’s” post, poses a question, provides some advice for him, and then commends him on one of his tips in a playful manner. “Joe” responded in return just a few minutes later:

There are evenings that I study more than others. I can easily study for 30 min when it comes to a medium or big test for Bio. For french, I sometimes study just less then five minutes! (And then be the only person with a ten on ten.)

And, just to tell all of you, I indend to take breaks when I work a lot in a row... that's the change I want to do the most in my habits. (And I probably need that one, for I easily spend the whole evening doing work and studying without looking at the TV!)

A few hours later in the same day, a third student, also an academically successful student, responded to both of the previous students:

Yes! It's true that you should take some breaks when you study Joe because you got to let your brain relax. It may sound dumb but it does work for me. You have to get your mind off the studying because your poor brain has too much to deal with, not to talk about the noise that disturbs you. So, that's just my personal point of view but I think you should try it and listen to Ann and I. We're always right! Well now, I got to leave you but I was glad to help you and have a nice time studying.

In the post-survey taken a few months later, after the second unit using the OLE, these three students would indicate that they would only “sometimes” enjoy using the

online forum to communicate with their peers in a school course. This could be interpreted in a variety of ways. Perhaps their enthusiasm for their participation in an online forum later waned. However, one of those students later participated in a focus interview group and he again expressed his interest and enjoyment for the online component of the unit, so it is also possible that the students did not respond consistently in the post-unit questionnaire.

Implications for Practice

As the digital divide closes and technology becomes more accessible and more stable, a greater number of teachers will be challenged to explore online communication as an alternative learning environment to supplement and augment the classroom experience. Some schools are already moving to a blended learning model as a cost-saving measure. As more schools are moving to a one-to-one laptop approach, it may be soon that many teachers will be expected to use this model. Facilitation and guidance will be needed by those teaching pioneers who are now making the move to blended learning and experimenting so that they can share practices that are safe, effective and engaging for the students.

High school students are a different breed than the adult learner and these differences will have to be highlighted and noted so that the instructional design of a blended approach may be optimized. Clear presentation must be made of the expectations of good netiquette practices and appropriate use of language at the outset of an online learning unit. The teacher should establish a clear presence in the online unit by offering encouragement and prompting to the students' posts (Salmon, 2000). While feedback

about this aspect of the online environment was minimal, it could very well be a very important element to the success of the use of an online environment.

Students will need to know that the online environment is a safe, sheltered area where they may share their ideas and opinions without fear of flaming, bullying or visibility by online predators. Sociality between the students should be fostered and promoted unless the students are tending toward off-topics responses (Kirschner, 2004; Shank, 2004). Again, this is another important element to online learning which should not be overlooked. In this instance, the students had already established good relationship practices within the classroom which clearly carried over to the online learning environment. Teachers need to be aware of the quality of relationships within the classroom context to better prepare for how that may transfer over to the online learning environment.

Future Directions in Research

With the rapid expansion of the use of social computing tools such as blogs, wikis and open-source learning management systems by K-12 schools, there is a great need for documented studies of what contributes to the academic effectiveness of such web-based environments. These online shared spaces provide affordances (Kirschner, Martens, & Strijbos, 2004) that take learning outside of the time and space of the classroom. In these environments, students have an opportunity to have an equal voice within the class and teachers have an opportunity to foster community-building and collaboration between students (Hewitt, 2001).

While many teachers are sharing their experiences of using these social computing tools informally through blogs and forums, there is a need for more rigorous

academic studies of these educational practices so that it can be demonstrated that these practices are indeed beneficial for the students and to present best practice approaches.

The students who participated in this study overwhelmingly were in favour of study strategies and skills to be taught at all the levels of high school; however, it is in this educator's opinion, that it is rarely included in the curriculum of any subject at any level. School administrators and teachers endorse the development and promotion of self-regulation and metacognitive skills yet rarely seem to provide concrete learning units in which to apply them. Online learning environments may just be the area in which these skills may be developed because of their ability to record and store data over large periods of time so that they can be accessed and used as artifacts of reflection and development of skills over time.

As mentioned earlier, it was disappointing, yet understandable, that the students who had been diagnosed with the most profound learning difficulties were the ones who participated least in the study and were willing to forfeit any marks associated with the unit of study. For teachers who want to use online learning environments, this presents a challenge. With the capacity of broadband and storage growing so quickly, greater use of other multimedia tools, such as flash-based screencast tutorials, video and audio files, will be permitted, which will bring added effectiveness to multiple learning approaches in online course work. The design of online learning environments which can address differentiated learning styles, including those students who do not express themselves well in written form, also requires further research and study.

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APPENDIX 2.1 : Summary Protocol Form



Concordia
UNIVERSITY

Summary Protocol Form

- **For faculty and staff research:** Submit to the University Human Research Ethics Committee (UHREC), c/o the Office of Research, GM 1000.
- **For graduate research:** If it is funded by a faculty member's grant which has already received ethical approval by the UHREC or if it is part of regular course work, submit to the relevant departmental or faculty ethics subcommittee. Otherwise (i.e., if it is non-funded or internally funded), submit to the UHREC, c/o the Office of Research, GM 1000.
- **For undergraduate research:** Submit to the relevant departmental or faculty subcommittee.

If using the MS Word form, please tab between fields (do not use the enter key) and click on check boxes.
If not using the MS Word form, please TYPE your responses and submit on a separate sheet.

Date: October 24, 2003

What type of review do you recommend that this form receive? Expedited or Full

Part One: Basic Information

1. Names of Researchers:

Principal Investigator: Sharon Peters

Department/Program: M.A. of Educational Technology Programme

Office address:

Telephone number: 514 695-0415 E-mail address:

sharo_pe@education.concordia.ca, sharonpeters@videotron.ca

Names and details for all other researchers involved (e.g., co-investigators, collaborators, research associates, research assistants, supervisors – please specify role):

Supervisor: Dr. Richard Schmid

2. Title of Research Project:

A Blended Approach to Secondary School Courses:
An Action Research Study

3. Granting Agency, Grant Number and Title OR Contractor and Contract Title (if applic.):

N/A

4. Brief Description of Research:

For funded research, please include one-page summary; otherwise, include a brief overall description. Include a statement of the benefits likely to be derived from project. You can address these questions by including the summary page from the grant proposal.

The purpose of this Action Research study is to examine the use of an online learning environment and its effects on the students' learning process and, in particular, its ability to increase or enhance the students' abilities to self-monitor. The Action Research process typically involves four steps: plan, act, observe, and reflect (O'Brien, 1998). The first step is to research and plan the design and maintenance of such an environment. Stamm & Howlett (2002) state that the likelihood of success in learning gains is increased when instructional design is integrated seamlessly with the course's delivery tool, and recommend that the Instructional Design Model of Dick, Carey, and Carey is used as a guide in designing such an instructional package.

My second step would be to implement the coursework in the online learning environment (OLE) within the framework of the courses I am already teaching at

Emmanuel Christian High School. Currently, I teach three Secondary III level courses: English, Biology, and Introduction to Technology. It is with these thirty-one students in Sec. III that I wish to implement the OLE. My goal is to have the OLE implemented by mid-November 2003. This time period coincides with the beginning of the second of four terms of the academic year. The OLE would offer supplementary course material, activities that require online collaboration by the students, discussion questions on ethical topics relating to course material, worksheets and teacher's notes related to course material.

While the OLE is operational, observations of the students' progress will take place through the collection of student contributions in the form of online discussions, emails, collaborative products, and weekly learning journals. Reflection on the appropriateness of the direction and progress of the online activities will guide changes or modifications for the second Cycle of the Action Research study.

5. Scholarly Review of Proposed Research:
Complete the Scholarly Review Form (SRF) if you are conducting non-funded or contract bio-medical research or any other non-funded or contract research involving more than minimal levels of risk.
N/A

Part Two: Research Participants

1. Sample of Persons to be Studied:

Thirty-one secondary III students, male and female, aged 14 and 15 years of age, will be asked to participate in the study. They are students of a mixed range of ability at Emmanuel Christian School, a private school in the West Island area of Montreal. These students are required to take the Biology and Introduction courses, as stated by the Ministere de l'Education du Quebec.

2. Method of Recruitment of Participants:

Parents of the students will be asked to sign permission forms for their children to participate. A description of the study and the nature of the research will be made available to the students and parents in a paper-based and web-based format. As well, an information evening will take place before the study begins to formally present the study.

3. Treatment of Participants in the Course of the Research:

A brief summary of procedure, as well as an account of the training of researchers/assistants.

A survey which measures self-monitoring skills, attitude, motivation levels and levels of computer usage will be distributed before the implementation of the Online Learning Environment. The delivery system for the asynchronous Online Learning Environment is Nicenet, which is a free service that offers online conferencing, scheduling, document and link sharing, and personal messaging. The service has been available for several years and is very stable. Two cycles of Action Research will take

place. Use of the OLE will take place in mid- November for the First Cycle of Action Research. Comments, dialogue, and other forms of interactive participation in the OLE can be recorded and kept for later analysis. Follow-up surveys to the use of the OLE can be distributed to measure the students' perceptions of the effectiveness of the online portion of the coursework. This can take place in late January or early February 2004, after the First Cycle, and again in June 2004, after the Second Cycle. Analysis of the data can take place after it has been collected and be reported in the form of the thesis document.

Part Three: Ethical Concerns

Indicate briefly how research plan deals with the following potential ethical concerns:

1. Informed Consent:
Written consent form or written draft of oral protocols must be attached; see instructions and sample.

See attached
2. Deception:
The researcher must both describe the nature of any deception and provide a rationale regarding why it must be used to address the research question – i.e., is it absolutely necessary for the design? Deception may include the following:

deliberate presentation of false information; suppression of material information; selection of information designed to mislead; and selective disclosure.

No deception is associated with the conduct of this evaluation. All parties involved are aware of the instruments being used and the research methods being conducted.

No active manipulation or deception of the subjects is intended. This is strictly an evaluation of an approach. Nothing harmful or offensive is intended

3. Freedom to Discontinue:

Written and verbal explanations to participants that they may choose to discontinue at any time will be given in the following instances:

- During initial recruitment
- On the consent form
- On the survey documents
- Throughout the collection of data procedures

Participants will be able to indicate their desire to discontinue verbally in person or by Email or phone.

4. Assessment of Risks to Subjects' Physical Wellbeing, Psychological Welfare, and/or Reputation:

This includes low-level risk or any form of discomfort resulting from the research procedure and how it will be dealt with. When it is called for, you should indicate arrangements that have been made to ascertain that subjects are in "healthy" enough condition to undergo the intended research procedures. You should be able to indicate clearly the kinds of risks that may be involved and the action to be taken if someone is unexpectedly put at risk as part of the research efforts.

The researchers have assessed the level of risk in this study as low. The potential risk is that the participant may feel uncomfortable disclosing personal academic information, and other personal anecdotal information that may occur during the collaboration between students participating in the study. To reduce this discomfort level, the

researcher will seek consent of the student if the anecdote will be used as a quote from a student. Another risk relates to the reporting of findings. Participants may have concern that their personal information will be exposed. To protect the confidential nature of their participation we will be using pseudonyms to protect identity.

5. Protecting and/or Addressing Participant "At Risk" Situations:

The parents and students will be informed that non-participating students will in no way be discriminated against by lowered marks for the courses that are involved in this research study.

6. Post-Research Explanation and/or Debriefing:

After each of the two Action Research cycles have been completed, a short debriefing session for the students and parents will take place to address any concerns or issues that may have arisen, if determined necessary by the participating groups. If sufficient interest is apparent, a public forum for the interested parents and students can be provided after the data collection has taken place.

7. Confidentiality of Results:

At no time will the identity of the students be revealed by name. Pseudonyms will be used to protect the confidentiality of the students and parents.

8. Other Comments:

Bearing in mind the ethical guidelines of your academic and/or professional association, please comment on any other ethical concerns which may arise in the course of this research (e.g., responsibility to subjects beyond the purposes of this study).

Signature **of** **Principal** **Investigator:**

Date: _____

APPENDIX 3.1: Parent Consent Form

CONSENT FORM TO PARTICIPATE IN EVALUATION

This is to state that I agree to allow the participation of my son/daughter, _____, in a program of evaluation for research purposes being conducted by Sharon Peters, of the Educational Technology Programme, Dept. of Education of Concordia University.

A. PURPOSE

I have been informed that the purpose of the evaluation is to measure the students' use of self-monitoring and self-reflective skills while using an online mode of delivery of coursework for Emmanuel Christian School.

B. PROCEDURES

All of the students in the Sec. III Introduction to Technology and Biology courses offered by Emmanuel Christian School will be given a questionnaire that should take no more than 20 minutes to fill out before they begin to participate in the online coursework. Data may be collected from their communication between students and the teacher as they participate in the online courses. A follow-up set of questionnaires and interviews will be given at the end of the online unit.

C. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue my child's participation at anytime without negative consequences.
- I understand that my child's participation in this study is CONFIDENTIAL (i.e., the researcher will know, but will not disclose my child's identity).
- I understand that the data from this study may be used for my thesis.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO ALLOW THE PARTICIPATION OF MY CHILD IN THIS STUDY.

NAME Parent: (please print) _____

SIGNATURE _____

WITNESS SIGNATURE _____

DATE _____

NAME Student: (please print)

SIGNATURE

WITNESS SIGNATURE

DATE

APPENDIX 3.2: Letter to Parents

December 1, 2003

Dear Parents:

Many of you are aware that I am studying for an M.A. in Educational Technology at Concordia University. For my thesis project, I plan to carry out an evaluation of the secondary III students as they work through units of study which will be posted online. The students will be asked to answer questions about their study habits and work collaboratively online in an asynchronous conference area. This is not a real-time chat area such as MSN Messenger or Yahoo Messenger. The students will be able to post replies and remarks over a time period of several days. I will act as moderator in the conference area. The online system I am using is a free conferencing system called Nicenet Internet Classroom Assistant (found at nicenet.org) and is open only to those who have class keys, so you have my assurance that only our class members will be present there. Supplementary course work to the Biology and Introduction to Technology courses will be done in this area. I will evaluate the students' ability to work self-consciously and self-reflectively.

It is possible that I may wish to use some of the comments and communication that the students post as part of my data collection for my thesis project. Identities of students will remain confidential. Concordia University obliges me to seek Parental consent before I embark on this project. Please consider allowing your child to participate. You or they are able to withdraw at any time if you become uncomfortable with the practice.

I believe that most of the students will find this approach engaging and beneficial to their study habits. Online coursework is very common at the college and university level; the introduction to it in secondary school may well better prepare them for this form of education in the future. Many high school students very much enjoy using the Internet-connected computer to communicate with their peers. This is a way to harness that medium and allow it to be useful for developing good study habits.

It has been a pleasure to teach this class so far. I look forward to the challenge of this new approach beyond my regular classroom teaching.

Thank you for your time and consideration,

Sharon Peters
Secondary School Staff Member
Ed. Tech. Coordinator
Emmanuel Christian School

APPENDIX 4.1- Pre-Unit Questionnaire

NAME: _____

	Always	Often	Sometimes	Rarely	Never
1. Before I begin a test or project, I carefully read over the assignment so that I am aware of what is required of my performance.					
2. When I perform poorly on a test, it is because I do not study the right material for a long enough period of time.					
3. When I perform poorly on a test, it is because the test is too difficult for my abilities.					
4. When I perform well on a test, it is because I take the time to study the material thoroughly.					
5. When I study for a test or work on a project, I choose a room where it is quiet and I am not disturbed or distracted.					
6. I frequently watch TV when I am studying or working on my					

homework.					
7. I frequently play on the computer or chat with my friends during the time I am studying or working on my homework.					
8. I think I need to improve my study habits.					
9. My homework is completed on time and I am always prepared for a test or quiz.					
10. When I receive a corrected test or assignment from my teacher, I look over the corrections so that I may perform better on my next assignments or tests.					
11. I give myself a pat on the back when I know I've done a good job on a test or a project.					
12. I know what I am doing when I study for most of my schoolwork.					
13. I would like to take more biology courses, even if I am not required to do so.					
14. I choose the place and time that I study very carefully.					
15. I choose the same time every day to do my homework and study.					
16. I do not allow myself					

to watch TV, chat online, or play games until my homework or studying is completed.					
17. When I begin an assignment, I first decide how long it will take me to complete it, and then allow myself that much time.					
18. My homework assignments take longer than I estimated to complete.					
19. In order to make myself study harder, I will imagine what the consequences of not studying will be.					
20. Before I begin my assignments or study period, I will make a list of what I need to do.					

21. I never seem to do my homework or studying at the same time or place.					
22. I check or proofread all my assignments and homework before I hand them in to the teacher.					
23. I will call upon a friend to study with or ask for aid.					
24. I keep my completed assignments after they have been returned by the teacher.					
25. I spend very little time studying or doing my homework.					

APPENDIX 4.2- Post-Unit Questionnaire

NAME: _____

	Always	Often	Sometimes	Rarely	Never
1. Before I begin a test or project, I carefully read over the assignment so that I am aware of what is required of my performance.					
2. When I perform poorly on a test, it is because I do not study the right material for a long enough period of time.					
3. When I perform poorly on a test, it is because the test is too difficult for my abilities.					
4. When I perform well on a test, it is because I take the time to study the material thoroughly.					
5. When I study for a test or work on a project, I choose a room where it is quiet and I am not disturbed or distracted.					

6. I frequently watch TV when I am studying or working on my homework.					
7. I frequently play on the computer or chat with my friends during the time I am studying or working on my homework.					
8. I think I need to improve my study habits.					

9. I never seem to do my homework or studying at the same time or place.					
10. I check or proofread all my assignments and homework before I hand them in to the teacher.					
11. I will call upon a friend to study with or ask for aid.					
12. I keep my completed assignments after they have been returned by the teacher.					
13. I spend very little time studying or doing my homework.					
14. I am aware of my learning style.					
15. I have implemented at least one of the study tips that some of my class members presented earlier this year on Nicenet.					
16. I think my grades have improved in the third and fourth terms due to my improved study habits.					
17. I haven't changed any of my study habits, but my marks are the same or					

better in most courses.					
18. I have not changed any of my study habits, but my marks are the same or lower in most courses.					
19. Being aware of my learning style has helped me improve my study habits.					
20. I enjoyed using the online forum to communicate with my classmates.					
21. I would like to see more of my courses have an online component to them.					
22. I believe I can learn as much in the online component of a course than in a classroom.					

APPENDEIX 5.1: Rubric for Online Participation

<p>Rubric for Online Participation</p>
<p>Teacher Name: Mrs. Peters</p>
<p>Student Name: _____</p>

CATEGORY	4-5 points	3 points	2 points	>1 point
Quality of Contribution	Contributions are relevant, offer excellent grasp of material, offers new interpretations and applications of discussion material	Shows evidence of understanding most of the major concepts and ideas; is able to agree or disagree when prompted, can offer a different point of view	Has mostly shallow or limited grasp of the material; rarely takes a stand on issues; offers inadequate or very low levels of support to positions of others	Student rarely contributes freely; low grasp of material; low levels of support to others
Number of Contributions	Contributions are prompt and timely. An adequate number of contributions are made	Student generally keeps up with the discussion; needs an occasional prompting to contribute.	Participation is spotty; picks and chooses to whom they will respond; short postings when prompted; takes limited initiative.	Student rarely participates freely; makes short, irrelevant remarks.
Good Citizenship	Student positively critiques the work of others; There is no attempt to dominate conversation.	Student might participate more in some discussions than others.	Student seems unaware or uninterested in responding to others without being prompted.	Student offers inadequate or very low levels of support to positions of others.
Assignment Criteria	Student has exceeded the	Student has fulfilled the	Student has attempted to meet	Student has not met the

	expectations of the course assignment.	requirements of the assignment satisfactorily.	the most basic levels of the assignment.	requirements of the assignment.
Grammar and Spelling	Student uses complex, grammatically correct sentences regularly; demonstrates a high level of vocabulary; has rare misspellings.	Sentences are generally grammatically correct; occasional misspellings; spellcheck may not have been used.	Ideas are understood, but show signs of disorganization; frequent grammar and spelling errors.	Poor use of the language garbles much of the message; only an occasional idea is aparent; spellcheck and grammar check clearly not used.
Clarity of Written Expression	Student expresses themselves very clearly and has formatted the online dialogue to aid understanding.	Clear expression of the language is demonstrated most of the time.	Clear expression of the language is sometimes evident. Some of the wording is vague and ambiguous.	Student does not express themselves clearly.

Date Created: **December 07, 2003**

APPENDIX 6.1: Assignment One

Welcome to the Nicenet Conferencing System!

This is your first assignment for this unit. Please follow the directions closely.

You are required to write **two** items:

- 1) a 200 word (more or less) personal response to what you read on the web page.
Email this document to me.
- 2) A response to the general conference area with other ideas, strategies, tips and advice you wish to provide about useful study strategies that have worked for you.

FOR THE FIRST WRITTEN RESPONSE, go to Link Sharing and click on the link to "Assignment One". Read the information on the web page.

Then write a 200 word (more or less) on your personal response to what you read. You may want to read it over several times and make some point form notes. You will be assessed on the quality of thought and expression on this assignment.

After reading the material in the web page, and using the aid of the WIT Log sentence starters, write a 200 word description of:

1. changes you have made AND/OR
2. changes you intend to make to your environment and computer environment so that study time will be more efficient and useful to you.

Email your document to me. Please send it to me as an attachment to the following address: **sharo_pe@education.concordia.ca**

FOR THE SECOND WRITTEN RESPONSE, respond to the general conference area with other ideas, strategies, tips and advice you wish to add to the conference area about useful study strategies.

Respond to others who have also posted ideas (you are required to respond to at least one other person).

Due: end of day, Wednesday, Dec. 10, 2003