

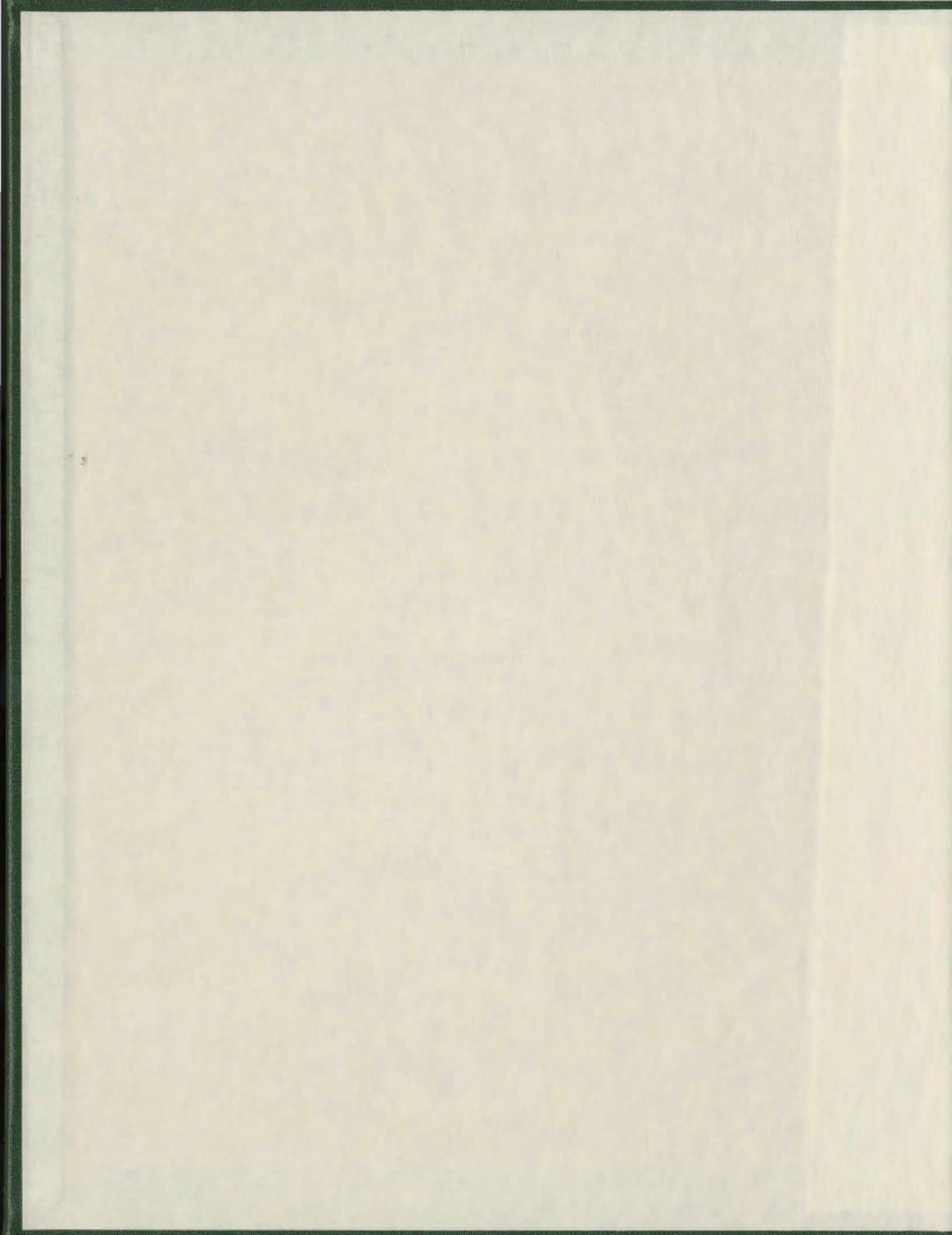
SOCIAL INTERACTION PATTERNS IN CLASSROOMS
WHERE COMPUTERS WERE USED EXTENSIVELY:
A CASE STUDY IN A PREDOMINANTLY INUIT SCHOOL

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**SOCIAL INTERACTION PATTERNS IN CLASSROOMS WHERE COMPUTERS
WERE USED EXTENSIVELY: A CASE STUDY IN A PREDOMINANTLY INUIT
SCHOOL**

by

Duane Smith, B.P.E., B.Ed.

**A thesis submitted to the School of Graduate Studies
in partial fulfillment of the requirements for
the degree of Master of Education**

**Faculty of Education
Memorial University of Newfoundland
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Newfoundland

English Abstract

The purpose of this study was to examine the nature of social interaction patterns that emerged in schools where there was a predominance of Inuit learners and computers were used extensively. Five high school teachers and their students, selected from a predominantly Inuit school on the north coast of Labrador, Canada, constituted the participants from which the data were collected. Data collection procedures were qualitative in nature and included classroom observations, semi-structured interviews, and document analysis. All data were coded and analyzed.

An analysis of the variables which influenced the degree of social interaction revealed two general patterns: cooperation and competition. Classrooms where computers were used extensively were predominantly cooperative in nature. The results indicated that there was less teacher-student friction; more individual teacher attention for students; students helped students, as well as their teachers; teachers helped other teachers; and computers were personified as assistants. However, the sharing of computers by students was found to be a result of necessity. Competition was present because there were too few computers for the number of students in attendance.

Recommendations were made to give local stakeholders in education an opportunity to facilitate more effective computer utilization in predominantly Inuit schools.

Inuttitut Takujattisiujâtut

(Inuktitut Abstract)

Tâna kamagijausimajuk sakKititsigasuatlutik Kanuk pigalausigammangata takkua songunitsautillugit Inuit ilinniatet amma Kagitaujait attutaupâKattaniningit. Tallimait ilinniatitsijet amma ilinniatet Kulanganitut kamagijausimajut avangajunik Labradorimi, kanatami. Kagitaujanik atuttilugit ukua katittutausimajut imâk pitlutik, takunnagalatlutik. ilangani oKalâKatigitlutik, amma allagalausimatlutik.

Tâna kamagijausimajuk sakKititsimajuk maggonik pigalausinginik: ikajuttigiluannik amma salâKagasuanik. Tamani ilinniavimmi Kagitaujait atuttaupaningit imâk sakKititsimajuk ukuninga ilinniatitsijet, ilinniatillu pikatagetsianik, inutuluannik, ilinniatitsijet takunnaluanik ilinniatinik, ilinniatet ikajutigitlutik, amma ilinniatitsijet ikajutlutik ilinniatitsijiKatiminik, tâkkua Kagitaujait ikajuttiutillugit. Kaujjut tâkkua Kangitaujait atuttauKattajut kisiani atuttaugiaKalimmata. SalaKagasuanik tammanilauttuk nammatunik KagitaujaKangigaluamut takkua ilinniatet unuluagaluamut.

PikKujijugaluat tâkkuninga tigumiattini ilisautinik atuluattitaugasuallutik tâkkuninga Kagitaujanik. Taimak ilinniatet ililuagajammata. Tamani Inuit songuluammata ilinniavingani.

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Thank you to all the students and staff who participated in this study. I am very grateful to them for allowing me into their classrooms and sharing their experiences with me. Their good cheer and openness transformed the often tedious process of data collection into a joy. Without their participation, this study would not have been possible. A special thank you to Mrs. Doris Flowers for translating the abstract and the parental consent forms into Inuktitut.

My gratitude is extended to my parents and family, as well, for their understanding and encouragement over the years. Finally, my thanks and love are extended to my wife, Melanie, for the sacrifices that she has made and for having the courage and humour to marry me in the midst of this endeavour. This thesis is dedicated to her.

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CHAPTER 1

INTRODUCTION

Background to the Study

Social interaction has been viewed as a fundamental goal of education (Clements & Nastasi, 1988) and as an essential component of cognitive growth (Bearison, 1982). The change in classroom social interaction patterns as a result of the use of computers has become a prominent part of the educational research literature. Social interactions between students and students, and between teachers and students, have influenced the impact of computer use in schools (Collis, Knezek, Lai, et al., 1996). For example, enabling peer interaction increased the likelihood that students would effectively achieve their goals during computer activities (Levin & Kareev, 1980). Such findings suggested that as the number of computers in schools increased, the nature of classroom social relationships could likely have changed.

Lately, Inuit schools in Labrador have utilized computers extensively. As well, the students in those schools experienced unique patterns of social interaction. Such social interaction was influenced by the unique upbringing that Inuit children experienced (Condon, 1987), historical patterns of settlement (Kennedy, 1977), and the importance of respecting and maintaining face in the Inuit classroom (Eriks-Brophy & Crago, 1993). Inuit students' reluctance to express their feelings (Trask, 1979) was one example of unique social interactions stemming from such factors.

While unique social interaction patterns were studied in classrooms where

computers were used extensively and, also, in Inuit settlements, as separate entities, the research literature did not include the results of both occurring simultaneously. To the best knowledge of the researcher, there was no research that described the patterns of social interaction which existed in classrooms where computers were used extensively in a predominantly Inuit school. This study attempted to provide a view of such social interactions, as well as the variables which influenced them.

Statement of the Problem

The problem addressed by this study was the lack of knowledge of social interaction patterns that emerged where there was a predominance of Inuit learners and computers were used extensively. Despite being major factors in the implementation of computers in Inuit schools, these patterns have not been identified in the research literature.

Inuit education has been influenced by values and traditions that have originated in external cultures. "Computers are being introduced to the Native culture by the dominant non-Native culture; they are not endemic to Native lifestyle" (Heffron, 1984, p. 22). Similarly, following the advent of television in the Arctic in 1973, social interactions in most Inuit communities began to revolve around television programming (Heffron, 1984). The fear existed that traditions and values could be repressed if computers were introduced into schools without stakeholders addressing the unique cultural differences of the Inuit people.

Purpose of the Study

The purpose of this study was to examine the nature of social interaction patterns that emerged where there was a predominance of Inuit learners and computers were used extensively. As Inuit students accessed computers in learning activities with greater frequency, questions emerged regarding the nature of classroom social interaction patterns in the context of their unique communities. These questions required in-depth analysis to better tailor educational programs to the characteristics and needs of Inuit students.

This study was designed to investigate the following research questions:

1. How did situational determinants of the organizational environment, such as rules and regulations, influence social interaction patterns?
2. How did group environment characteristics, such as group size, social norms, and leadership, influence social interaction patterns?
3. How did task characteristics, such as ambiguity, structure, and duration, influence social interaction patterns?
4. How did the technology of the medium, such as ease of use and speed of access, influence social interaction patterns?
5. How did individual characteristics, such as personality types, influence social interaction patterns?

Questions numbered one through five were posed in relation to Taha and Caldwell's (1993) description of variables which influenced the degree of social

interaction.

6. Which patterns of social interaction were present in classrooms where computers were used extensively in a predominantly Inuit school?

Significance of the Study

In *Our Children, Our Future*, the Royal Commission of Inquiry into the Delivery of Programs and Services in Primary, Elementary, Secondary Education (1992) stated, "The lack of relevance and lack of flexibility in the present school curriculum is often cited as a factor which contributes to the poor performance and attitudes of native children" (p. 316). In addition, "Learning styles and cultural characteristics need to be studied and the findings reflected in the school curriculum" (Royal Commission of Inquiry into the Delivery of Programs and Services in Primary, Elementary, Secondary Education, 1992, p. 317).

Other researchers also noted that culturally relevant, social interactions required study. For example, Eriks-Brophy and Crago (1994) stated:

At the present time, however, little research documenting the organisation of discourse and interaction occurring in aboriginal classrooms exists in the literature. At a time when aboriginal leaders all over the world are seeking increased self-government, local control of their communities and resources, access to the organizations which control power within the dominant society, and the overall empowerment of their people, the study of culturally meaningful classroom interaction is important. (p. 116)

Such research was particularly important at this time as the number of computers increased in Inuit schools. This study was significant because it identified issues regarding

cultural differences in computer-facilitated instruction. With additional perspectives, local stakeholders in education would have an opportunity to facilitate more effective computer utilization in predominantly Inuit schools.

Limitations

By the very nature of this study, unintentional bias might have occurred during the collecting and reporting of data because the researcher was a non-Inuk individual. He, like most of the teachers in this study, was raised in a predominantly white, middle class environment. This was unlike the cultural upbringing of most of the students in this Inuit community. Bias in collecting and reporting data may have also been due to the researcher's previous experience in teaching students who participated in this study. However, care was taken to minimize the potential for bias in that observation sessions were conducted by the researcher exclusively in the classrooms of others as a passive observer.

A second limitation related to the generalizability of the findings and conclusions because this study was conducted in one school. Although the context may be similar in other settings, the uniqueness of the school in which data were collected limited the generalizations to other schools. Similarly, given that Inuit culture has differed from region to region, generalizations to other Inuit settings, let alone other aboriginal settings, could have been limited. As well, the generalizability of the research may have been limited by a novelty effect because students and teachers moved into a new school in the

community shortly before the study began.

A third limitation may have been the extent to which teachers and students might have wished to report personal opinions. Social interactions and cultural differences have often been sensitive issues. This study's findings may have been limited by the reluctance of participants to reveal information related to these issues.

Definition of Key Terms

Specific key terms were used throughout this document. For the purposes of this study, their definitions should be interpreted in the following context.

Extensive Use of Computers: The utilization of computers by students as the primary means of classroom activity.

Labrador Inuit: The most southerly and easterly of Canada's Inuit. The Labrador Inuit have possessed a unique writing system and Inuktitut dialect. They have resided in northern Labrador since before 1450 (Haysom, 1992).

Settlers: Descendants of mixed European-Inuit marriages, or of other EuroCanadians, mainly Newfoundlanders (Richling, 1989). In Inuktitut these people have been referred to as xabluangayuk, which translated to "half-white" (Ben-Dor, 1977).

Social Informatics: The body of research and study that has examined the social aspects of computerization.

Social Interaction: The reciprocal influencing of the acts of persons and groups.

usually mediated through communication (Gould & Kolb, 1964). This has included behaviour relating to people such as cooperation, conflict, interpersonal relations, and influence.

Summary

Social interaction has been recognized as an important component of education, in general, and computer-based instruction, in particular. While social interactions were studied in predominantly Inuit schools and communities, the research did not focus on social interaction patterns that existed in Inuit classrooms where computers were used as the primary means of classroom activity. Such research was important at the time of this study because computers, which have not been endemic to Native lifestyle, have increased in number in Inuit schools.

This study utilized qualitative data collection procedures to explore several research questions regarding the patterns of social interaction which were present in classrooms where computers were used extensively and the variables that influenced such interactions. Despite limitations, the researcher intended that this study would identify issues with regard to social interactions in computer-facilitated instruction. As such, the findings could contribute to a broader understanding of the importance of cultural influences in the curriculum of Inuit students.

Chapter one provides an introduction to this study. A review of related literature is presented in Chapter 2. Detailed accounts of the data collection procedures and other

issues related to methodology are described in Chapter 3. An analysis of data is presented in Chapter 4. Finally, conclusions and recommendations are provided in Chapter 5.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Conceptual Framework

Social interaction as a stimulus for cognitive development has become an eminent issue in developmental and educational research (Blaye, Light, & Rubtsov, 1992). Interest in the social aspect of computer use increased as recent paradigms of learning stressed the role of interaction, rather than focused exclusively on mental states of the learner (Schofield, 1997).

Vygotsky's social constructivist theory and his concept of the zone of proximal development have assisted educators in the interpretation of social interaction patterns in classrooms where computers were used extensively. Vygotsky emphasized the social context of learning, as noted by Maddux, Johnson, and Willis (1997), "We call Vygotsky's brand of constructivism social constructivism because he emphasizes the critical importance of interaction with people - other children, parents, teachers - in cognitive development" (p. 79). Cognitive growth occurred in the resolution of cognitive conflicts from interaction (Clements & Nastasi, 1988). A key element to these views of social constructivism has been that culture, transmitted by conduits such as parents and teachers, gave the child cognitive tools, such as cultural history, social context, and language, needed for development. Students constructed understanding and knowledge in their own minds, a process facilitated by collaboration.

The zone of proximal development was a theoretical concept within this theory.

Vygotsky's zone of proximal development was based on the idea that there was a region which was beyond the individual's reach when operating alone, but could be mastered with outside help (Levin & Kareev, 1980). The range of conditions within which such help could be utilized by an individual was identified as the zone of proximal development. Vygotsky (1962) quantified this concept, "The discrepancy between a child's actual mental age and the level he reaches in solving problems with assistance indicates the zone of proximal development . . ." (p. 103). Learning could be optimized if activities were arranged so that time was spent within the zone of proximal development interacting with people who were commonly referred to as more capable others.

The zone of proximal development has had implications for computer-based learning. Students and teachers who learned in environments where computers were used extensively could be conceptualized as more capable others. A debatable issue, however, was whether or not computers could be substituted for such social partners who could help a student within the zone of proximal development. Whereas computers could not reproduce essential characteristics of human interactions, they were viewed as assistants. as Blaye, Light, and Rubtsov (1992) stated, "Although there were strong claims that teachers should not worry about ever being replaced by machines, the computer was at the same time described as resembling an infinitely patient teacher assistant" (p. 261).

Previous Research

Social Interaction Patterns in Classrooms Where Computers Were Used Extensively

Education has been viewed as a social process (Stanford & Roark, 1974).

Researchers found evidence to support changing social interaction patterns in classrooms where computers were used extensively. Teachers and students related to each other in different ways in such classrooms. For instance, on average, traditional classroom interactions consisted of two-thirds teacher talk and one-third student talk (Ruberg, Moore, & Taylor, 1996). This normal pattern of classroom discourse, which included a teacher-initiated topic, student reply, and teacher evaluation of the reply, was subverted in classrooms where computers were used (Kern, 1995). Students talked aloud over or around their computers (Kern, 1995) and were more self-reliant (Collis, Knezek, Lai, et al., 1996).

In a study of students using word processors, Kumpulainen (1996) found that children were mutually supportive, cooperative, and shared expertise in the classroom. As well, even quiet children participated in discussions more readily. Schofield (1997), after reviewing the literature on computers and classroom social processes, summarized that computer use increased peer interaction of a cooperative nature and that many students turned to peer experts for help. As Chen and Paisley (1985) stated, "New social relationships are forming as children turn to each other for help with computer work and begin to share their skills and accomplishments" (p. 79).

A concern was indicated that computers had negative effects on social interaction.

which included less human collaboration and more social fragmentation. The fear was that computers would deprive students of social interaction, thereby leaving them friendless and isolated (Fish & Feldmann, 1990). Research, however, confirmed that there were as many social interactions around the computer as in other activities (Haugland & Wright, 1997). Computer activities, instead of being isolating, were used to increase peer interaction and cooperation (Chen & Paisley, 1985; Kumpulainen, 1996; Levin & Kareev, 1980; Nastasi & Clements, 1993; Schofield, 1997). Conversation during computer activities included high levels of information giving and information seeking on the content of the lesson (Fish & Feldmann, 1990). Furthermore, children who used microcomputers were not typically isolated. They spent as much time as others in social activities, clubs, and sports (Chen & Paisley, 1985).

Despite the view that computer activities provided learners with positive opportunities to build social skills (Haugland & Wright, 1997), the impact of computers on classroom social interactions was not without implications perceived as adverse. These included the computer having functioned as a place to hide from difficult social interactions (Collis, Knezek, Lai, et al., 1996), friction over control of the machines (Schofield, 1997), and the diminished role of the teacher (Fish & Feldmann, 1990; Nastasi & Clements, 1993). The latter of these implications was important because decreased teacher-student interaction resulted in decreased utilization of teachers' verbal ability, the only factor consistently identified to be associated with reading score improvement (Allard & Fish, 1986). Furthermore, it was found that peer interaction may not have been

attributable to anything inherent in computer use. It just might have been that the scarcity of computers necessitated the pairing or grouping of students (Schofield, 1997). Whereas research showed that computers could be used to increase or decrease human interaction in classrooms, the teacher was the critical factor in determining the degree to which human interaction would prevail (Maddux et al., 1997).

Light and Blaye (1990), after reviewing the social dimensions of computer-based learning, summarized that patterns of interaction were influenced by group size. Trowbridge (1987) observed seventh and eighth grade students using software designed to teach them about electrical circuits. These students worked either one, two, three, or four to a computer. Measures of interactional behaviour indicated that children working in groups of two or three engaged in the highest levels of interaction, although those working in groups of three were more likely to show competitive interaction. Pairs were the most mutually supportive grouping arrangement. Individuals working alone were more likely to misinterpret program questions than students working in groups, however, individuals' performances were not inferior to those in the groups because individuals were more willing to review information that gave them trouble. Groups of four were too large for all individuals to maintain high levels of interactivity with other group members or the computer program.

Light and Blaye (1990) summarized that the type of software used also influenced patterns of interaction. Crook (1987) observed that software which involved problem-solving games tended to produce turn-taking on the part of children. Rich discussions and

shared control of the keyboard were promoted by a problem-solving type of adventure game. However, while using this game, students' interactions were influenced by differences in reading abilities between group members. More able readers took more responsibility for the total activity because they read aloud, determined the pace of the task, and made group decisions.

Bracey (1988) reviewed the social and psychological consequences of a study conducted in New York City. Smith and Zimmerman (as cited in Bracey, 1988) selected five high schools, one in each borough of the city, in which computers were used extensively in English, science, social studies, business, or mathematics courses. They conducted interviews with students, department heads, computer coordinators, and principals. As well, they surveyed additional teachers and students. Students reported that teachers in computer-aided classes gave them more personal attention than other teachers in regular classrooms. Also, a majority of students felt that they could learn more easily and had greater control in computer classrooms. Teachers reported that students were less anxious and had fewer discipline problems in computer classrooms than in regular classrooms.

Ringstaff, Sandholtz, and Dwyer (1994) conducted a longitudinal, qualitative study over five years using data from thirty-two elementary and secondary school teachers. They examined the role shifts of teachers and students as they adapted to teaching and learning in technology rich classrooms. They found that, over time, instruction shifted from the traditional lecture-recitation-seatwork model to instruction heavily dependent on

student collaboration and peer teaching. This created an unusual situation in many classrooms, as Ringstaff et al. (1994) stated:

. . . some teachers felt discomfort about knowing little more than their students about the technology. In fact, before too long, some of their students had become experts in using particular computer applications, software, or hardware and knew more than both their teachers and their peers. (p. 414)

Students began to take the roles of teachers by providing technical assistance and tutoring without being prompted by the teachers to do so. This sudden increase in peer interaction disturbed some teachers who were accustomed to children raising their hands for permission, whereas others expressed delight about students' eagerness to share knowledge.

Inuit Education

The curriculum for the province of Newfoundland and Labrador has had limited relevance for students in coastal Labrador, resulting in an excessive school dropout rate and few university graduates (Borlase, 1993). In schools, as they have recently existed, Clifton and Roberts (1988) stated, "A persistent theme concerning the education of Inuit students is their relative lack of success" (p. 332).

Factors related to underachievement, as defined by schools, have been studied. Trask (1979), in a study of Inuit students in Labrador, concluded that socioeconomic status, not negative attitude, was a major obstacle to educational achievement. The systemic school failure of aboriginal communities may have also been due to the

discontinuous nature of interactions required of the aboriginal child in a classroom as opposed to those learned in the home and community (McAlpine & Taylor, 1993).

Contemporary schooling and Inuit upbringing have not always been based on the same principles, as Crago (1992) stated:

Still, today, it behooves educators who are dedicated to a multicultural society and to the empowerment of Native people to look at and learn from the indigenous patterns of instruction and upbringing that in many societies long preceded the institution we know as school. (p. 502)

Furthermore, going from Inuit to non-Inuit teachers changed communicative interaction patterns and the promotion of cultural values, both of which required significant adjustments by Inuit children (Eriks-Brophy & Crago, 1994).

Inuit Social Interaction

Unique social interaction patterns of the Inuit have been recorded in the literature. Inuit social interactions have included flexibility, creative actions, and consensual relations (Lange, 1977). Inuit relations have been characterized as socially-oriented and free from interference by others. At home, Inuit children have been allowed a great deal of freedom with regard to parental control. Interactions have been playful (Briggs, 1979) and as Condon (1987) stated, "In general, the tone of parent-child interaction is marked by tolerance and mutual respect" (p. 106).

In schools, however, Inuit students have encountered much more control and regulation because of common disciplinary patterns inherent in mainstream educational

systems. Thus, for Inuit children, there has been conflict between home and school environments which has manifested itself in teacher-student interactions and has seriously influenced the quality of learning opportunities. As Roberts, Clifton, and Wiseman (1989) stated, "If Inuit students and their teachers are to direct and coordinate their efforts toward learning the prescribed curriculum effectively, some means for managing the conflict and frustrations inherent within their interaction must be found" (p. 13).

As Inuit culture has evolved, there have been indications of changes occurring in the communicative interactions between Inuit caregivers and their children to adapt to schooling (Crago, 1992). Schools, however, have not reciprocated by adapting to Inuit interaction patterns. As Crago (1992) stated with regard to schools, "They have neither studied nor analyzed Inuit styles of communication, nor have they been as likely to adapt classroom patterns to suit the Inuit ways" (p. 498). While verbal interaction has been highly valued in schools, much of the informal learning that has taken place in Native societies has been nonverbal in nature (Kaulback, 1984).

Eriks-Brophy and Crago (1993) described several elements of social interaction among Inuit students. In a two-year study of six classrooms of Inuit teachers in Nunavik (Northern Quebec), one of the main themes to emerge from the data analysis was the importance of maintaining face, or personal pride, in the Inuit classroom. They noted that the organization of Inuit classroom discourse shifted the focus of classroom interaction to the peer group and away from individual group members. Individual students were not scrutinized in the classroom because their voices were embedded in and camouflaged by

the larger group response. Also, the role of the teacher as a conversational partner for individual students, a role that might be seen as inappropriate for Inuit adults, was minimized. For an adult to become a conversational partner of a child entailed a loss of face for the adult (Eriks-Brophy & Crago, 1993).

In a subsequent article examining the same larger ethnographic study, Eriks-Brophy and Crago's (1994) data indicated a possible link to Vygotsky's social constructivist theory in the Inuit taught classroom. They observed that peer models were effectively utilized in group activities, the correction of errors, and the organization of discourse. Inuit classroom discourse progressed by repetition and building onto peer models provided within the group response rather than through teacher intervention. As one of the teachers in their study stated, "Students can't learn by themselves. No one pushes them to learn if they are by themselves, listening only to the teacher and not to each other. Students don't learn alone. They need the others to learn from" (p. 114). Inuit teachers identified the facilitation of peer exchanges as one of their most important roles in the classroom.

Eriks-Brophy and Crago (1994) summarized many of the social interactions present in the Inuit classroom:

The emphasis in Inuit classroom exchanges was on listening to others as opposed to talkativeness, individual performance and participation. Emphasis on peer rather than individual responses in the organization of classroom discourse allowed teachers to capitalise effectively on peer models in providing correct responses and also promoted important Inuit values of respect for others, cooperation, and responsibility for the peer group. This reduced the need for teachers to intervene in classroom dialogue as regulators and evaluators. (p. 114)

The distinct history of settlement in Labrador has also influenced Inuit social interactions. As Kennedy (1977) stated, "The role which the Moravian Mission played in creating and maintaining the Settler-Inuit distinction was substantial" (p. 274). Moravian missionaries of the eighteenth, nineteenth, and early twentieth centuries catered to the needs of the Inuit people in their own language of Inuktitut and, in contrast to the contemporary system, fostered positive attitudes for Inuit children toward schooling (Kennedy, 1977). Settlers, however, separated themselves from such missionary work. Settlers were more familiar with mainstream teachers, who infrequently socialized with those of Inuit descent outside of the school context (Brantenberg, 1977).

In a study of Inuit-settler relations in an Inuit town in northern Labrador, Ben-Dor (1977) found that out of 78 school children asked to write down the names of their friends, only four settlers and three Inuit had named a child from the other group. Such separation of Inuit and non-Inuit, including white persons who have been referred to in Inuktitut as xabluna, was also evident within the adult population. However, when Ben-Dor studied the adolescent population, a great deal of intergroup contact was found.

Computer Utilization in Inuit Schools

Another element of Inuit schooling which researchers studied was the role of computers in education. Computers have afforded Inuit students an opportunity to access information outside of their isolated communities, as well as prepare for the changing economy of the north. In a study examining the need for an improved educational

administrative structure for Inuit communities. Flynn (1996) found that educational stakeholders, comprised of parents, administrators, Labrador Inuit Association (LIA) employees, Inuit teachers, and non-Inuit teachers, ranked exposure to new technologies as one of the positive impacts that the educational system was having on the Inuit. In this regard, the 1987 Labrador Inuit Education Conference documented two important aspects: Firstly, in developing northern curriculum, labour force implications of new technologies had to be taken into account; Secondly, the emphasis on sustaining traditional Inuit culture created a contradiction between retention of a way of life and advancing technology (Labrador Inuit Association, 1987). In addition, the Inuktitut language, which many of the elders and some of the youth through Inuktitut immersion, were once again starting to speak, had not kept pace with the changing needs of the people. This was especially true in technology, in which there were few Inuktitut words that corresponded to new technical terms and concepts (Boult, Pokiak, & Weihs, 1991).

Recent attempts to improve the delivery of educational programs in schools have centered on matching methods of instruction to the individual perceptual strengths or preferences of the child (Kaulback, 1984). Kleinfeld's (1970) exploratory study of students in Alaska found that Inuit students demonstrated perceptual analysis and image memory abilities which approximated and exceeded national norms. This was evidenced despite the cultural biases of the tests which factored against these Inuit students. These findings had implications for image-oriented, computer-based instruction. As Heffron (1984) concluded, upon reviewing the literature on Native students interfacing with

computers, the computer's highly visual mode could build on Native strengths in learning. Furthermore, Kaulback (1984) stated, "... the entire issue of computer-assisted learning must be examined in regards to its application in Native education. The computer, as a teaching tool, promises to be an effective visual means of presenting and reviewing information" (p. 36).

Summary

The social aspect of computer use gained interest as social interaction was viewed as a stimulus for cognitive development. The importance of interactions with other people was emphasized in Vygotsky's social constructivist theory in which collaboration facilitated students' construction of knowledge. Within this theory, the zone of proximal development was a region beyond an individual's grasp when operating alone but within reach with outside help. Other students and teachers could act as more capable others to provide cognitive assistance to students. It was debatable whether or not computers could have been substituted for these social partners.

Researchers found evidence to suggest that teachers and students related to each other in different ways in classrooms where computers were used extensively. Students' conversation levels, social interactions, and expertise increased in such settings, while discipline problems decreased. Adverse implications were also indicated, such as friction over control of computers and the diminished role of teachers. Patterns of social interaction were influenced by the type of software used and the size of student groupings.

However, the teacher was perceived as the critical factor who determined the degree to which human interaction would prevail in classrooms.

Social interaction patterns of the Inuit have been well-researched and described as unique. Such social interactions have included flexibility, creative actions, and consensual relations. Up to this point, schools have not adapted to these interactions. As well, other Inuit characteristics such as nonverbal learning, maintaining face, and the facilitation of peer exchanges and large group responses have not been commonly emphasized in schools.

With regard to computer utilization in Inuit schools, image-oriented, computer-based instruction has been viewed as a possible means of matching students' image memory and perceptual analysis strengths. Leaders in Inuit communities have realized the need for this new technology to strengthen the labour force. However, computers have been perceived as creating a contradiction to the traditional, Inuit way of life and as advancing too rapidly for the Inuktitut language to keep pace with new technological terms and concepts.

CHAPTER 3

METHODOLOGY

Theoretical Perspective

Qualitative methodology was used to gather data in this study. "Qualitative research views experiences holistically, as researchers explore all aspects of an experience" (Kincheloe, 1991, p. 144). This statement corresponded to the nature of the research questions posed in this study as they sought to explore all aspects of social interaction. It was the researcher's view that the nature of intricate social interactions, in culturally divergent classrooms where computers were used extensively, provided an opportunity to utilize a qualitative approach.

In particular, a case study analysis was utilized for an intensive examination of the research questions. The case study emphasized in-depth analysis and was a way of organizing social data for the purpose of viewing social reality (Best & Kahn, 1998). As Rothe (1993) stated, "It is process-oriented whereby the results of early analyses may be used to direct further data-gathering operations" (p. 85). In this case, an isolated, predominantly Inuit school on the northern Labrador coast of Canada was studied in-depth. The case study researcher probed deeply into the characteristics of the individual unit with a view to establishing generalizations about the wider population to which that unit belonged (Cohen & Manion, 1990).

Population and Sample

Population Background

Canadian Inuit have lived predominantly in Nunavut, the Northwest Territories, arctic Quebec, and Labrador. The school in this study was located in an Inuit community in coastal, northern Labrador. This isolated community was one of six located along the subarctic coastline north of Hamilton Inlet. There were no roads connecting this community to others in the area. It was accessible by boat from mid-July to mid-November and by air, year round.

The majority of the population of the community were members of the Labrador Inuit Association (LIA), a regional affiliate of the Inuit Tapirisat of Canada (ITC). Of the 194 children attending school, only five were non-LIA members. LIA members included Inuit, those of Inuit ancestry, and settlers who were long term residents of the Labrador Inuit Settlement Area. In 1989, two-thirds of the community's permanent population identified themselves as Inuit (Richling, 1989). While Inuktitut was the traditional language of the community, most of the people, excluding certain elders, spoke predominantly in English. Of the approximately 620 inhabitants in 1997, 304, almost one-half, were aged 20 and below.

Rationale for Sample Selection

The school selected for this study, as opposed to other predominantly Inuit schools in the area, was convenient and accessible to the researcher who was employed there as a

teacher. Glesne and Peshkin (1992) stated, "Previous experiences with settings or people can set up expectations for certain types of interactions that will constrain effective data collection" (p. 22). However, the potential for bias attributable to the dual, teacher-researcher role may not have been as apparent in this study when compared to a setting in which a teacher was studying his own classroom.

"Selecting respondents on the basis of what they can contribute to the researcher's understanding of the phenomenon under study means engaging in purposive or theoretical sampling. . ." (Merriam, 1988, p. 76). Following this rationale, the older students, who were in the junior and senior high school classes, made up the sample for this study since the majority of computer usage in the school was confined to these groups. While primary and elementary students may have provided a broader representation of social interaction patterns as a whole, computers were not used extensively with younger students in the school for reasons unexplored at the time of this study. The exception to this trend was the grade six class whose students regularly used computers. This class was selected to participate in a pilot study before the actual study began. This was done to gain prior understanding of the topic and research methodology, that would be used later to conduct the actual study, with a similar sample.

Sample Size

All 66 students and all five home room teachers, from grades seven through twelve, agreed to participate in this study. The five teachers ranged in teaching experience

from three to ten years and taught a variety of courses to five groups of students in grades seven, eight, nine, ten and eleven combined, and twelve. These participants along with the Labrador Inuit Association Education Advisor, Director of the Labrador School Board, school principal, and a parent or guardian of all students involved in the study were provided with a consent form (see Appendix A). Parent/guardian consent forms were available in both English and Inuktitut.

Data Collection

This study utilized classroom observations, personal interviews, and document analysis as the main methods of data collection. The use of all three of these methods of data collection as a means of triangulation helped to confirm the validity of the process (Tellis, 1997). Students and teachers were observed during six, 60 minute observation sessions in each of five purposively selected high school classes. There were two, approximately 30 minute, interviews of all teachers and randomly selected students. As well, all participants completed a brief, semi-structured journal, which took approximately 30 minutes to complete.

Recording devices included field notes for observations and visible audiotape for interviews. Participants had the right to request erasure of these recordings once their participation was complete. Recordings were not disclosed to persons other than the immediate researcher and research assistant, who was briefed by the researcher on the duty to observe the rules of anonymity and confidentiality. Participants were at no risk of

any kind, at any time, during or subsequent to this study. All information gathered in this study was strictly confidential. Participant anonymity was preserved throughout this study. Participants were only identified by use of an alphanumeric code. Participation was completely voluntary and participants had the right to withdraw from this study without prejudice at any time. They could also refrain from answering any questions which they preferred to omit. Background information about this study was given to all participants and all those whose consent was required. Furthermore, the non-evaluative nature of data collection was explained to all participants.

Observations

Observations made it possible to record data as it was happening (Merriam, 1988). Observations were carried out during six, 60 minute observation sessions in each of five purposively selected high school classes: three sessions each in which computers were used extensively and three sessions each in which they were not used extensively. In total, observations in 15 classes where computers were used extensively in the school's main computer area were compared to 15 regular classroom sessions where computers were not used extensively. Comparisons and contrasts were made between social interaction patterns in both areas.

Data were collected by the researcher in the classrooms of others as a passive observer with no participation in classroom activities, thus minimizing interruptions of naturally occurring social interaction patterns. The researcher attempted to be unobtrusive

by arriving to class early and observing and recording data while sitting in the same seat at the back of the room during all classes. The switch from teacher to researcher may have proven confusing to some participants (Glesne & Peshkin, 1992). However, in this instance, the passive observer role was undertaken to decrease interference and issues of power and control. Having experience in the school setting allowed the teacher-researcher to view activities with meaning and coherence understood to insiders (Anderson, Herr, & Nihlen, 1994). Also, normal student social interaction may have been facilitated by an observer with whom the students had experience and a level of rapport, as opposed to an outsider. As Kincheloe (1991) stated, "Teacher researchers can revolutionize professional practice by viewing themselves as potentially the most sophisticated research instruments available" (p. 30).

"When observation is used in qualitative research, it usually consists of *detailed notation* of behaviors, events, and the contexts surrounding the events and behaviors" (Best & Kahn, 1998, p.253). Therefore, the researcher constructed a detailed observation instrument to record the data (see Appendix B). As Taylor and Bogdan (1984) stated, "You will find that a detailed description of the setting and people's positions within it will give you important insights into the nature of participants' activities, interaction patterns, perspectives, and ways of presenting themselves to others" (p. 62).

The observation instrument was based on criterion items listed in the research methodology literature. It consisted of a title page, spatial map, checklist of elements likely to be present in an observation, field notes, relevant observational questions for

educational settings, research questions, and miscellaneous notes. The title page included a reference number and a title phrase to aid in memory recall; the grade, date, time, and place of the observation session; and the time when the notes were recorded in the instrument (Bogdan & Biklen, 1992).

Mapping, the making of an exact map to scale of the scene in question (Anderson et al., 1994), was employed to chart movements in the classroom as part of social interactions, as well as to organize events in the field and convey the field site to others (Neuman, 1994). A spatial map was used to locate people in terms of geographical physical space (Neuman, 1994; Merriam, 1988).

The checklist of elements likely to be present in an observation included those under the categories of setting, participants, activities and interactions, frequency and duration, as well as subtle factors (Merriam, 1988).

Field notes were constructed to detail the many aspects of the situation and to analyze observations for meaning. This study utilized four types of field notes: direct observation notes; inference notes, which allowed multiple meanings to arise from observations and were keyed to the direct observation notes; analytic, theoretical notes which expanded on ideas while still in the field through methodological ideas, plans, tactics, links between ideas, concepts, and hypotheses; and personal notes which were designed to provide a source of data about personal reactions and allowed the researcher to evaluate direct observation or inference notes upon analysis (Neuman, 1994).

Relevant observational questions for educational settings included those under the

headings of school environment, human environment, and learning environment (Bogdan & Biklen, 1992).

Research questions investigated were those posed in the initial research proposal and stated in the first chapter of this document. They included questions related to Taha and Caldwell's (1993) description of variables which influenced the degree of social interaction, as well as a question related to the patterns of social interaction which were present in classrooms where computers were used extensively.

Miscellaneous notes described other observations not included in the aforementioned categories, as well as items that the researcher wished to explore with teachers and students during subsequent interviews.

Originally, videotaping was to be utilized in the observations. Videotape provided a record that was reliable, accurate, and could be viewed and analyzed later (Anderson, et al., 1994). However, the pilot study revealed many differences in social interaction patterns when classes were videotaped as compared to when they were not, including students looking into, and putting on exhibitions for, the camera. Therefore, videotaping was not utilized after the effect of recording on informants was understood (Taylor & Bogdan, 1984).

Interviews

Interviews offered the advantage of being able to probe with in-depth inquiry (Jeffery, Haché, & Lehr, 1995). All teachers and selected students were interviewed

twice. A random sample of four students in each of grades seven, eight, nine, and twelve were selected along with five students from the combined grades ten and eleven class. Therefore, 21 of the 66 high school students, 31.8%, were randomly sampled for two interviews, each of approximately 30 minutes duration.

Taylor and Bogdan (1984) stated, "The hallmark of in-depth qualitative interviewing is learning about what is important in the minds of the informants: *their* meanings, perspectives, and definitions; how *they* view, categorize, and experience the world" (p.88). Therefore, the researcher attempted to exhibit openness to new and unexpected phenomena. The researcher also attempted to be neutral in the interview situation by listening, being sympathetic and interested, rephrasing, reflecting back, and summarizing (Merriam, 1988).

Respondents were briefed before the interview regarding the situation, the purpose of the interview, the use of the tape recorder, and asked if they had any questions before the interview started (Kvale, 1996). Questions deemed by the researcher to be relevant to the study were chosen from readings, discussions, and personal experiences (Rothe, 1993), as well as emerging themes from observation sessions and initial research questions. A large number of interview questions explored many issues dealing directly and indirectly with social interaction patterns. These questions were grouped into a number of emerging categories. Kvale (1996) stated, "A good interview question should contribute thematically to knowledge production and dynamically to promoting a good interview interaction" (p. 129). Questions were short, easy to understand, and devoid of

vernacular unfamiliar to respondents. A semi-structured interview style was used in which the researcher conducted each session using an interview guide (see Appendix C). This semi-structured interview style allowed the researcher to respond to situations at hand (Merriam, 1988) and, at times, stray from the guidelines to develop emergent themes and ideas. Debriefing after the interview included mentioning some of the main points identified by the researcher, giving the interviewee a chance to comment on this feedback, and asking if there were any questions before the interview ended (Kvale, 1996).

Interviews were audio recorded. As Best and Kahn (1998) stated, "The preferred method for data collection is to tape record the interview if the respondent is willing" (p. 255). The researcher used a small tape recorder for recording purposes, placed out of sight, yet revealed at first to the participant (Taylor & Bogdan, 1984) in the Distance Education Room of the school. This was a room with little or no background noise and free from interruptions. All interviews started with the researcher speaking into the microphone, giving his name, the participant's alphanumeric code, the date and location of the interview, and receiving a short statement from the participant. The tape was stopped, rewound, and checked to see that both voices were heard (Anderson, et al., 1994).

Audio recordings of interviews were transcribed. Merriam (1988) commented that, "Ideally, verbatim transcription of recorded interviews provides the best data base for analysis" (p.82). Therefore, transcriptions were made verbatim, word by word, yet in a fluid style without including repetitive utterances in the speech, such as "ah. . ." Emotional expressions, such as laughter, were included in the transcriptions.

Interview transcripts included a face sheet, a page at the beginning of the notes which included the date, place, characteristics of interviewee, and content of interview (Neuman, 1994); a reference number; a title phrase to aid in memory recall; the time of the interview; and the time when the transcripts were transcribed from tape to written text. A new paragraph was initiated in the transcripts each time a different person spoke (Bogdan & Biklen, 1992) and also when the speech shifted focus.

Document Analysis

Documents served to make the findings more trustworthy because they were expected to corroborate interviews and observations (Glesne & Peshkin, 1992).

Document analysis was used to analyze textual items in this study. One of the main advantages of such analysis was its unobtrusiveness (Rothe, 1993). As Merriam (1988) stated with regard to document analysis, "Unlike interviewing and observation, the investigator does not alter what is being studied by his or her presence" (p. 109).

Documents have been specifically requested of participants by researchers in the past (Bogdan & Biklen, 1992; Merriam, 1988). In this study, samples of teachers' notes and handouts were compiled by the researcher as background information for the lessons which were observed. As well, teachers and students were asked to write a journal which was specifically analyzed by the researcher. As Anderson et al. (1994) explained, "Journals are personal documents that can also be used as a research tool to capture reflections and encounters" (p. 153). The journal entry allowed teachers and students to

compare and contrast elements of social interaction in settings where computers were and were not used extensively (see Appendix D). It took approximately 30 minutes to complete.

Internal Validity

Merriam (1988) stated, "One of the assumptions underlying qualitative research is that reality is holistic, multidimensional, and ever-changing; it is not a single, fixed, objective phenomenon waiting to be discovered, observed, and measured" (p. 167). Therefore, internal validity, the degree to which the findings matched reality, must have been assessed in terms of interpreting the investigator's experience, rather than in terms of reality itself which could never be grasped (Merriam, 1988). Qualitative case studies have usually had high levels of internal validity because in this type of research it has been important to understand the perspectives of those involved in the phenomenon of interest (Merriam, 1988). Judging the validity of this study relied on the researcher adequately representing multiple realities to the constructors of the multiple realities, the participants. as Neuman (1994) stated:

Instead of assuming one single, objective truth, field researchers hold that members subjectively interpret experiences within a social context. What a member takes to be true results from social interaction and interpretation. Thus, high quality field data capture such processes and provide an understanding of the member's viewpoint. (p. 355)

Internal validity was sought according to basic strategies proposed by Merriam (1988): triangulation, member checks of data back to the people from whom the data were

derived, long-term observation, and clarification of the researcher's biases at the outset of the study. Triangulation utilized multiple data collection techniques (Best & Kahn, 1998). As Merriam (1988) stated, "Methodological triangulation combines dissimilar methods such as interviews, observations, and physical evidence to study the same unit" (p. 69). The researcher utilized all three of these methods in this study. Checking the data with the people from whom the data were derived, such as the researcher summarizing main interview points to the participants, attempted to portray the reality of the situation as it existed for those in it. Long term observation was conducted over the course of ten weeks (see Appendix E). The researcher's potential biases, which included being a non-Inuk and a teacher in the case study school, were stated as limitations at the beginning of this document.

Reliability

Traditionally, reliability referred to the extent in which one's findings could be replicated to yield the same results. Merriam (1988) believed that reliability defined in the traditional sense did not accurately apply to qualitative case study research. As she stated, "Reliability is problematic in the social sciences as a whole simply because human behavior is never static" (Merriam, 1988, p. 170). Replication of a qualitative case study would not yield the same results, as Merriam (1988) stated, "... because the emergent design of a qualitative case study precludes a priori controls, achieving reliability in the traditional sense is not only fanciful but impossible" (p. 171). Therefore, in qualitative research,

accuracy and comprehensiveness of data have been important. Reliability was a fit between what was recorded as data and what actually occurred in the setting under study (Bogden & Biklen, 1992).

Reliability, the extent of consistency of the findings, was sought by explaining the investigator's position, leaving an audit trail, and triangulating the data (Merriam, 1988). The researcher's position, that of a non-Inuk, teacher-researcher, was already stated. An audit trail, a detailed description of how this study was conducted and how the findings were derived from the data, was described in the data collection and data analysis sections of this document. Triangulation was confirmed by utilizing observations, interviews, and document analysis, as Taylor and Bogdan (1984) stated:

Triangulation is often thought of as a way of guarding against research bias and checking out accounts from different informants. By drawing on other types and sources of data, observers also gain a deeper and clearer understanding of the setting and people being studied. (p. 68)

Furthermore, the reliability of transcription from tape to written text was measured in a quantified manner. The researcher and research assistant typed the same, one page, passage of a taped interview and then counted the number of words that differed between the two transcriptions (Kvale, 1996). The reliability of transcription was determined to be approximately 94%.

External Validity

Merriam (1988) stated, "One selects a case study approach because one wishes to

understand the particular in depth, not because one wants to know what is generally true of many” (p. 173). Therefore, generalizing the results of this single study did not make a great deal of sense if one viewed external validity in the traditional sense. A reconceptualization, known as reader generalizability, was offered by the researcher to reflect the underlying assumptions of qualitative research. In reader generalizability, the readers of the study determined the extent to which a study’s findings were applied to their own particular situations (Merriam, 1988). Therefore, external validity, the extent to which the findings of this study could be applied to other situations, was sought by providing detailed, thick descriptions of study design and setting for those readers who wished to generalize and establish the typicality of the case with other situations (Merriam, 1988).

Data Analysis

Data analysis involved organizing, dividing, and synthesizing data, as well as searching for patterns, discovering what was important, and deciding what to tell others (Bogdan & Biklen, 1992). As Taylor and Bogdan (1984) stated, “. . . data analysis is an ongoing process in qualitative research” (p. 128). A certain degree of analysis was carried out during the data collection phase of this study, despite the fact that data analysis was described in this document separately from data collection. Analysis of the data occurred at that time to establish points of interest after reviewing classroom observations, notes, and audiotaped interviews. Merriam (1988) advocated doing collection and analysis

simultaneously to direct the data collection phase more productively.

Data were coded in three phases according to Neuman's (1994) method of coding qualitative data. In the first pass through the data, open coding was undertaken to locate themes and assign initial labels to condense the mass of data into categories. This was used to bring themes to the surface from deep inside the data. The second phase, axial coding, focused on the initial coded themes from the first pass. Themes and ideas were organized around main concepts and subcategories. They were also linked and reexamined. As well, new ideas which emerged were noted. During the last pass, selective coding, data and previous codes were scanned to organize the analysis around several core generalizations. Specific cases were selected which illustrated themes and exemplified comparisons and contrasts. Concepts were modified over and over again to become successively more accurate. Overall, this type of data analysis was an iterative process in which change occurred with each passing cycle (Palys, 1997). As well, research questions from the initial proposal were reviewed because they formed the basis for inquiry.

Data were textually presented under major categories. Quotes were utilized from field notes, interviews, and journal entries. Since concepts were generated from these three data collection procedures as a whole, quotes were not differentiated within the data analysis text of this document as being taken specifically from the field notes, interviews, or journal entries. Concepts were generated from all three of these data collection procedures collectively, not as separate entities. Visual presentation of the data was

attained through the use of tables and figures which served as major means to validate the qualitative analysis (Merriam, 1988).

Summary

The extensive nature of social interactions in classrooms where computers were used extensively provided an opportunity to access data utilizing a qualitative approach. This qualitative case study examined five high school teachers and their students, in-depth, over a ten-week period in a predominantly Inuit school on the north coast of Labrador, Canada.

Qualitative data collection procedures in the forms of classroom observations, semi-structured interviews, and document analysis were utilized to gather data involving teachers and students. Observations were carried out during six, 60 minute sessions in each of five purposively selected high school classes: three sessions each in which computers were used extensively and three sessions each in which they were not used extensively. In total, observations in 15 classes where computers were used extensively in the school's main computer area were compared to 15 regular classroom sessions where computers were not used extensively. All teachers and randomly selected students were each interviewed over two, approximately 30 minute sessions. Interviews were audio recorded and transcribed. As well, document analysis was used to investigate specifically requested journals. These journals took approximately 30 minutes to complete and dealt with elements of social interaction in settings where computers were and were not used

extensively.

The use of all three of these methods of data collection as a means of triangulation helped to confirm the internal validity of this study, as did long term observation, member checks of data back to the participants from whom they were derived, and clarification of the researcher's biases at the beginning of this document. Triangulating the data also helped to establish reliability, as did explaining the researcher's position, and leaving an audit trail. External validity, or a reconceptualization for this study known as reader generalizability, was sought by providing detailed, thick descriptions of study design and setting for those readers who wished to establish the typicality of this case with other settings.

All data were coded and analyzed according to Neuman's (1994) method of coding qualitative data. Data were textually presented under major categories and visually presented through the use of tables and figures.

CHAPTER 4

ANALYSIS OF DATA

Overview

This chapter is divided into four sections based on the themes which emerged from the data analysis. The first section, the local context, is an example of a relevant, yet unanticipated, theme which emerged from the data analysis. This section provides a discussion of the unique circumstances which influenced social interaction patterns in classrooms where computers were used extensively in this predominantly Inuit school. The next section describes the five variables known to have influenced the degree of social interaction, as given by Taha and Caldwell (1993), which formed the basis for the initial research questions. The third section presents other variables found by the researcher which influenced the degree of social interaction in classrooms where computers were used extensively. Finally, the fourth section of this chapter culminates in a discussion of the two general patterns of social interaction which emerged from the data analysis.

The Local Context

Education and the New School

Schooling in this Inuit community was a mixture of the provincial curriculum and the local culture. Students completed courses in subjects such as mathematics, biology, and physics, as well as classes in learning the Inuktitut language and Inuit lifeskills, such as soapstone carving, sewing, and making komatik sleds. As F5TC (an example of an

alphanumeric code utilized to identify individuals and insure anonymity in this study)

stated:

The key thing here I think is children have to be prepared in terms of education for two worlds. They have to be prepared for their own cultural experience, their own cultural traditions, and at the same time they have to take who they are, what they are, and what they have grown up in and learn how to use it in a world that non-Native people have become accustomed to. So, I guess it comes down to case in point of, yes, education is important. It's just a matter of taking traditional knowledge, traditional culture, traditional ways of believing, behaving, and learning how to adapt that into a non-Native world.

Students and teachers began the academic year in the old school. It was a two-story building in which classrooms were built as the student population increased. The age of the facility, structural concerns, and a lack of space were some of the factors that mandated the construction of a new building. The transition into the new school occurred approximately two months before this study began.

The new school was adorned with carvings and paintings by local artists and students. It had modern gymnasium, science, music, and workshop facilities. Generally, students and teachers seemed pleased with the new facility. M5TA and M6TDE were two teachers who exemplified guarded optimism with regard to the new school:

M5TA: I find for me, in my classroom and the group that I've got this year, lateness doesn't seem to be a problem. Down in the old school I had a few students who were always late, but up here it seems like they're always on time. And I find students getting their work done faster. I guess it's the new atmosphere and it sets a new attitude probably. Students that weren't working so well down in the old school seem to be working a little harder in this school. Whether that continues or not I don't know. It might be just the change, right, but I can see a positive.

M6TDE: I think the new school has improved interaction. It has made students

and teachers more positive. It has made the relationship between teachers and teachers positive, teachers and students more positive. Will that translate into better academic results down the road? I don't know. Your guess is as good as mine. I have a tendency to think that you can have a very friendly school but, you know, there's larger issues outside this school that must be addressed before we can say that there's going to be real gains in academics down the road. I think generally this is a very positive climate in the school. Teachers like the students, students like the teachers. I think it's a good working environment, overall. You have your exceptions, as you have everywhere, but overall it's a very good, friendly climate and atmosphere to work in, but again I have to wonder is that going to translate into academic success in the future?

Few classrooms in the old school contained computers. The old computer room was a small area that housed older Pentium computers and 486s. In the later stages, the old school was networked for printing and a satellite Internet connection was installed. Laser printers, digital still and video cameras, a liquid crystal display projector, and a scanner were later additions to the school, as well.

Upon moving to the new school, up-to-date technology from the old school was utilized along with newer Pentium computers. Classrooms had at least one computer (see Figures 1-6). The main concentration of computers was within an adjoining two room area (see Figure 7). The computer room and library had six and eight computers, respectively, and were joined by a door and double, glass window. All computers in the regular classrooms and computer area (computer room and library) were networked.

Approximate Scale
1:55

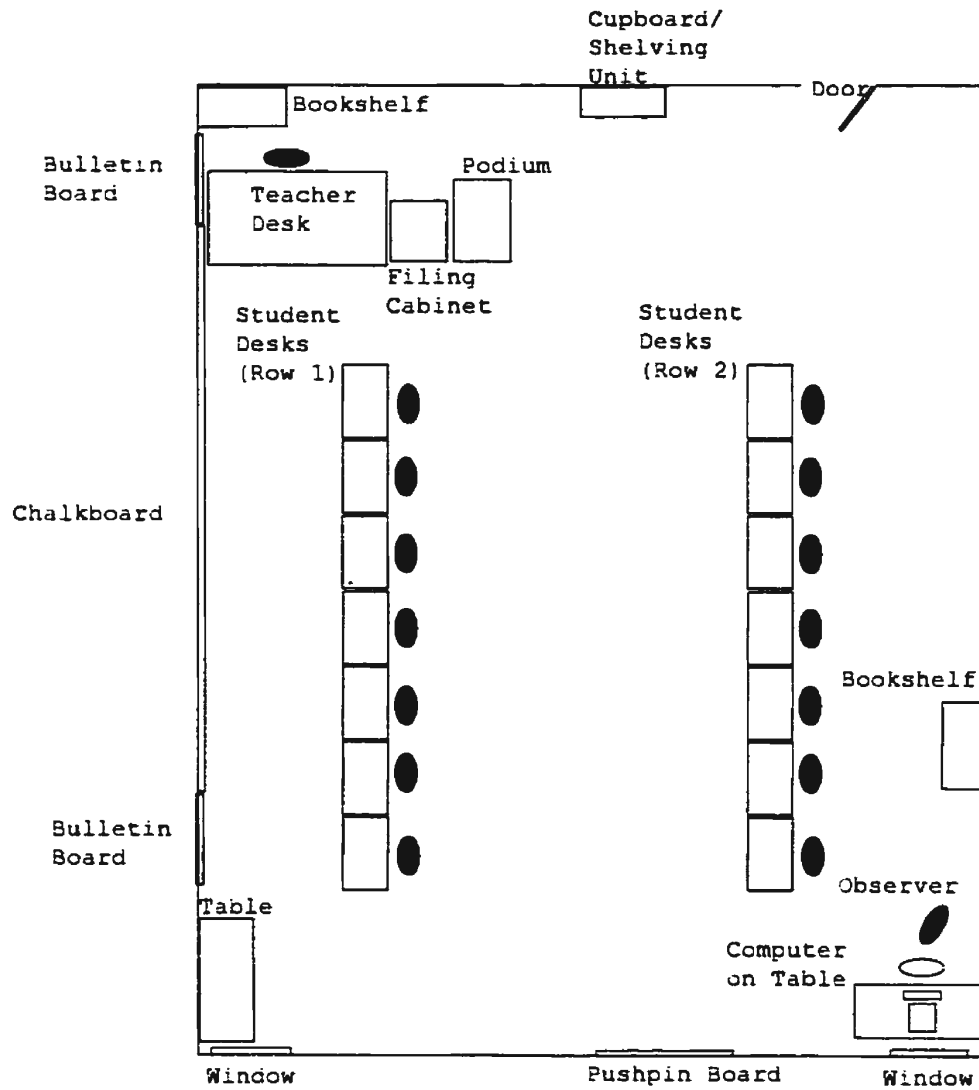


Figure 1. Grade 7 classroom - room 114.

Approximate Scale
1:55

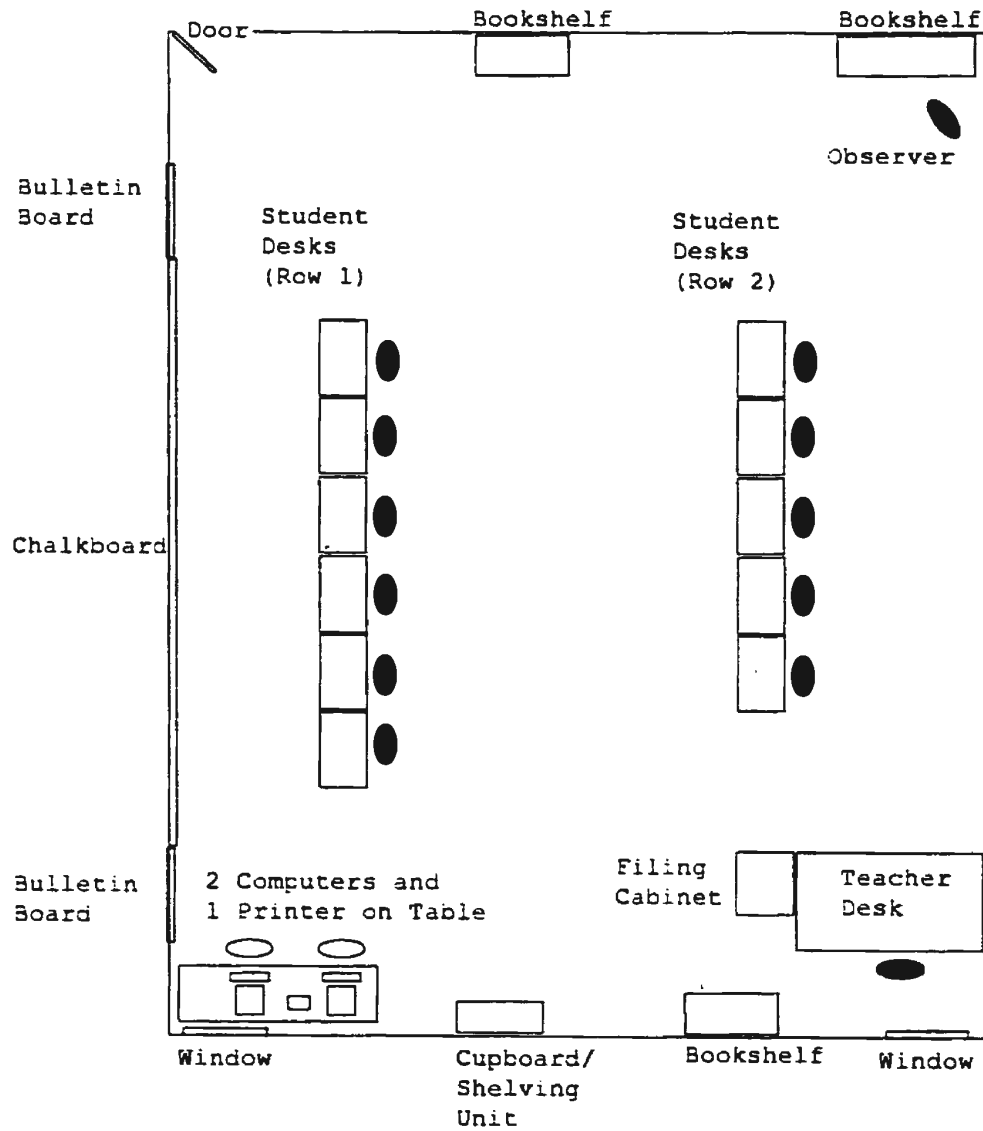


Figure 2. Grade 8 classroom - room 115.

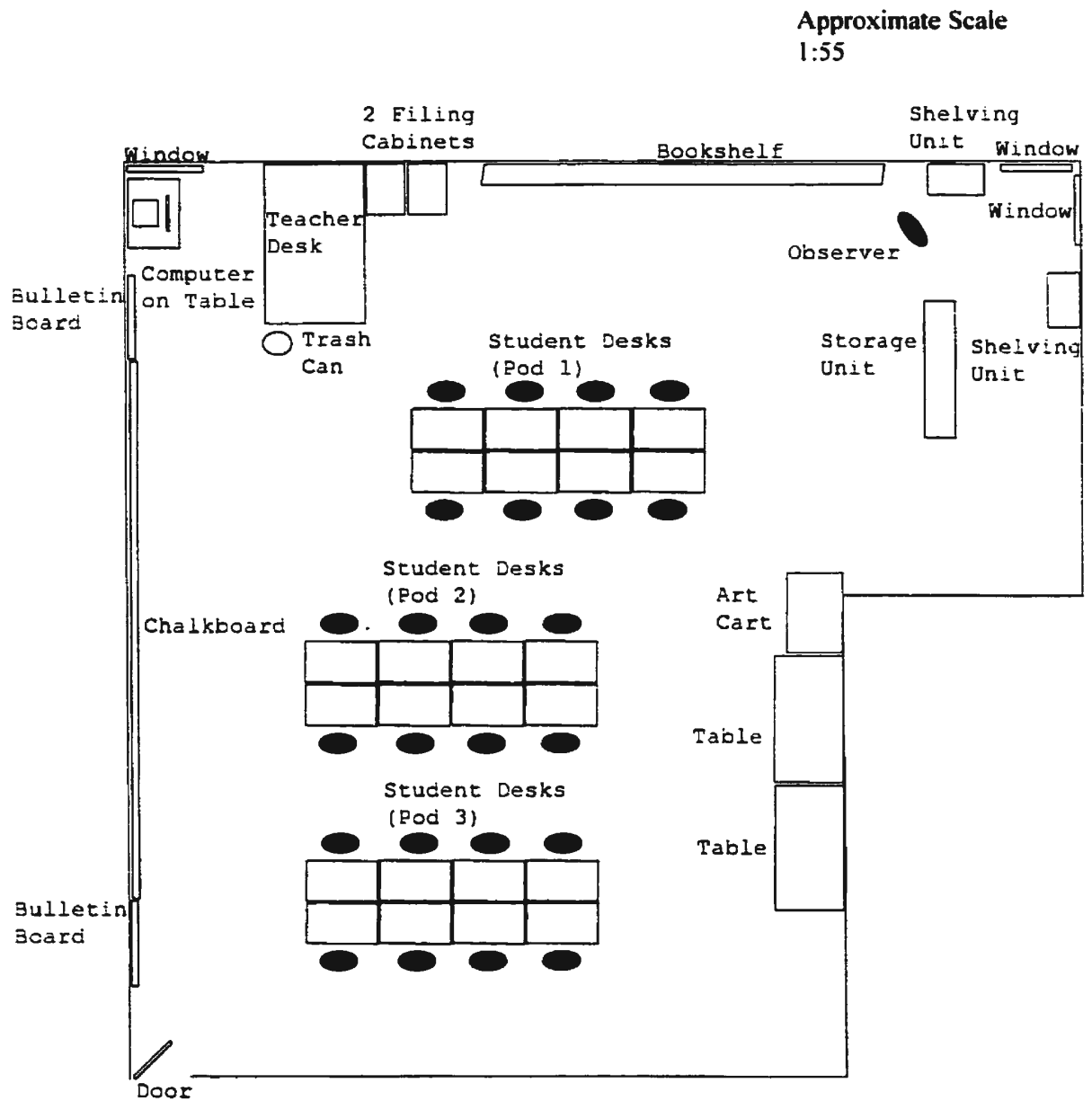
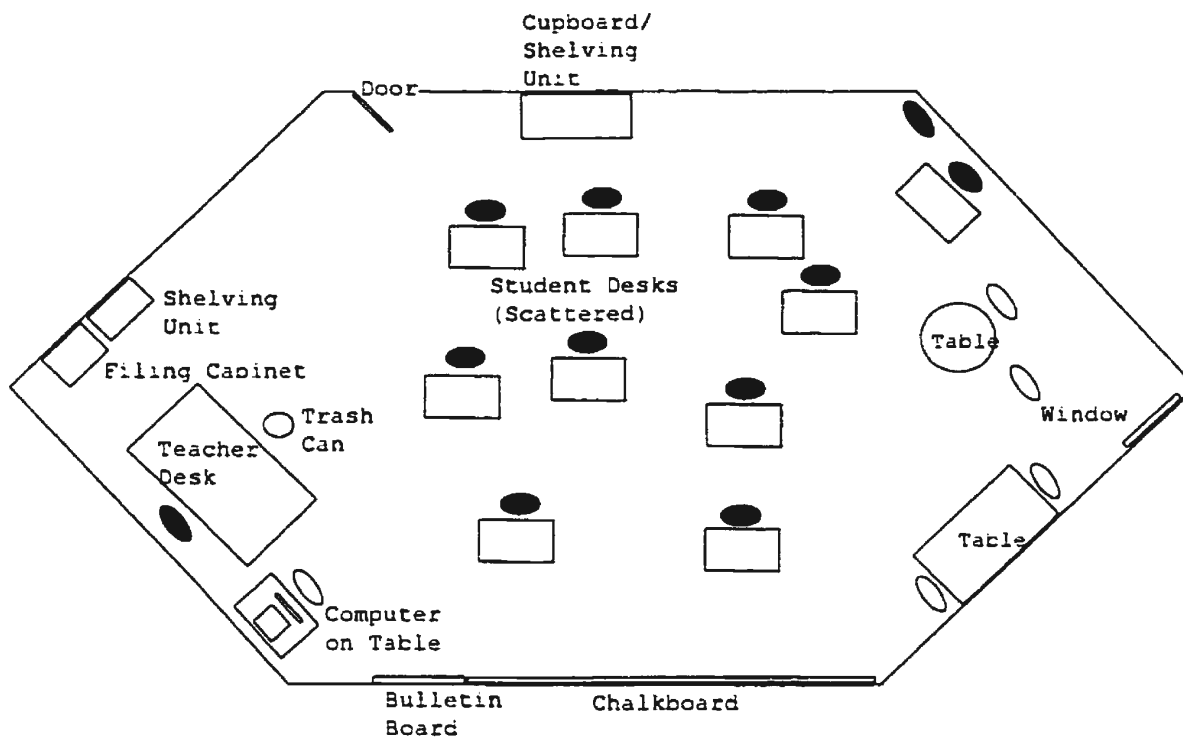


Figure 3. Grade 9 and 10 classroom - room 126.

Approximate Scale
1:55



Note. Due to scheduling, no classes were observed in this classroom. It was included here for comprehensiveness because students did move to this classroom during observation sessions.

Figure 4. Grade 11 classroom - room 116.

Approximate Scale
1:55

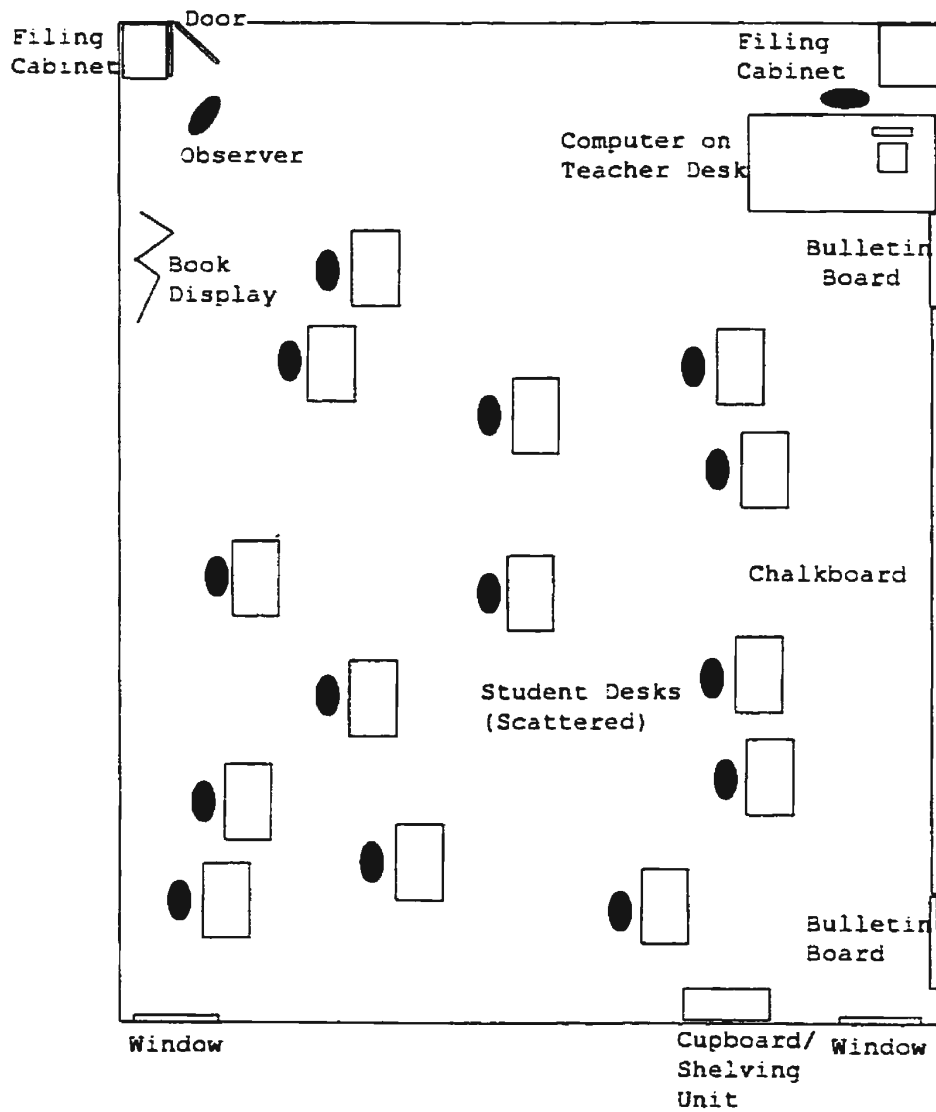


Figure 5. Grade 12 classroom - room 121.

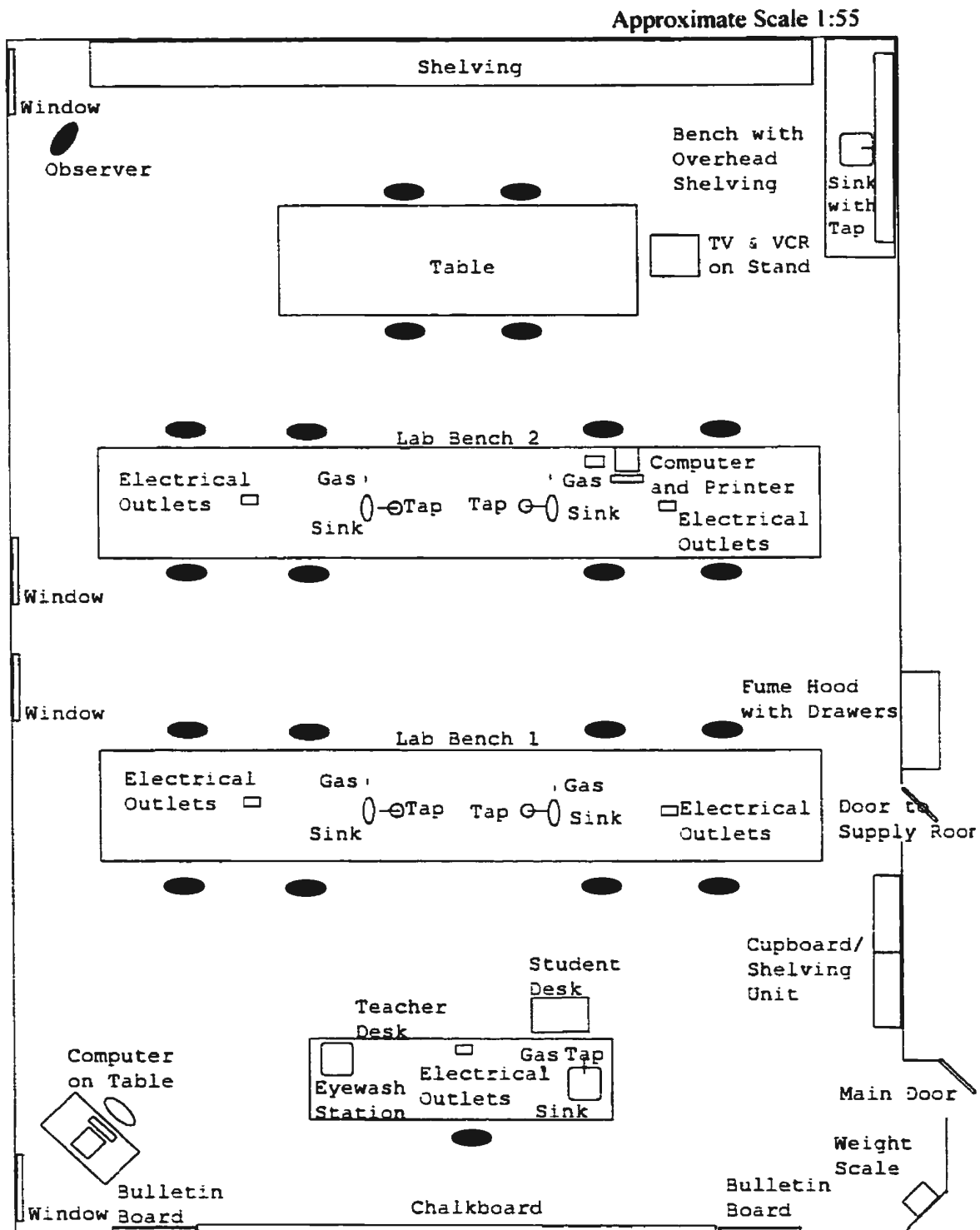


Figure 6. Science laboratory - room 131.

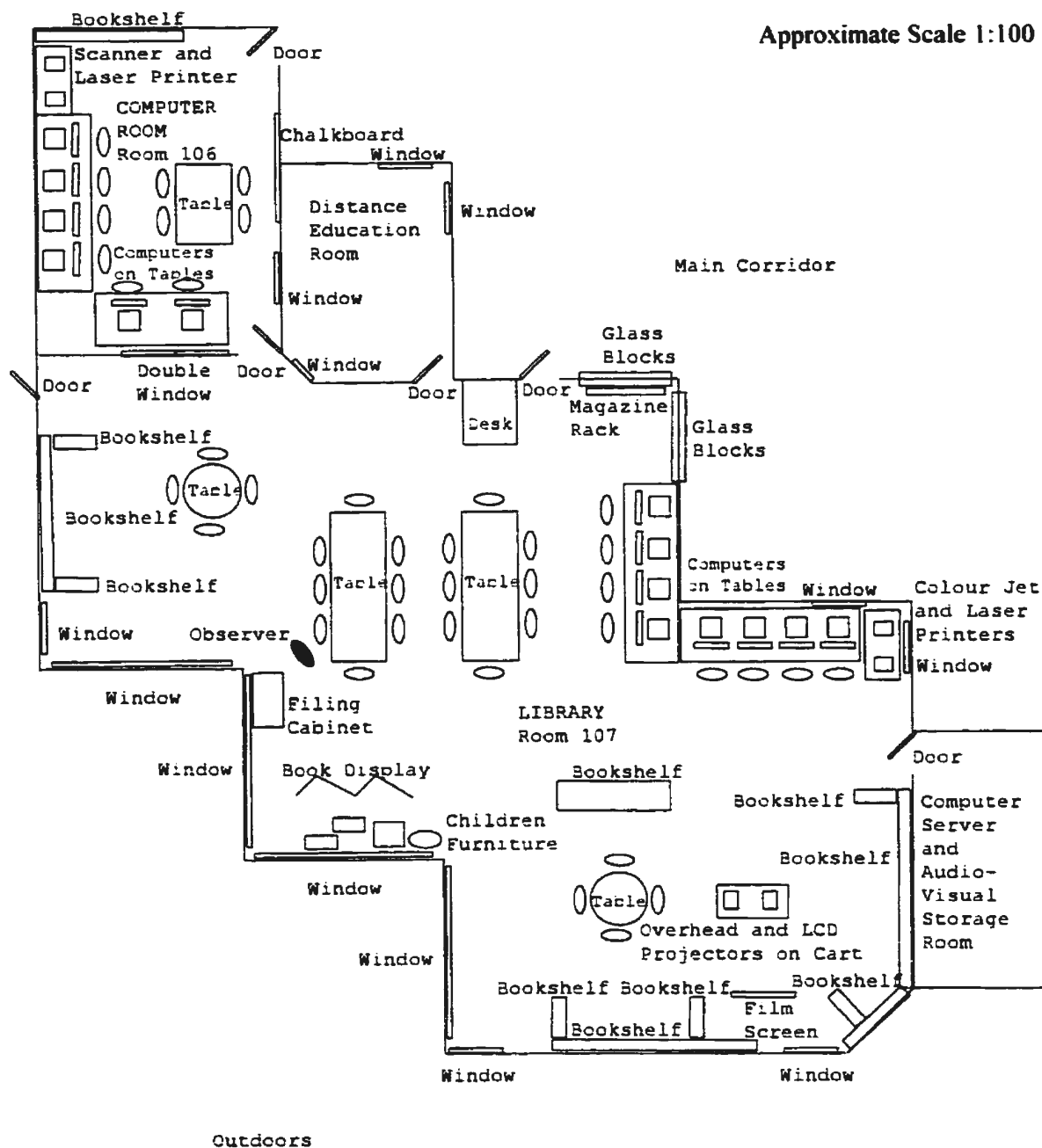


Figure 7. Computer area - rooms 106 and 107.

Implications of Computers in Predominantly Inuit Classrooms

Outside of school, students had relatively limited access to computers. Few students, or immediate family members, owned a computer. However, some students accessed a computer at a friend's or a relative's house where they used it to play games or browse the Internet.

Within the school, computers were easily accessible and had a number of specific implications for students. The Internet was one computer application, in particular, that held many advantages for students. As F3SF exemplified, "Because sometimes we got to look for information on different subjects like the Voisey's Bay issues and stuff and we go on the Internet and look for it." F5SDE was one student who enjoyed keeping up with current events via the Internet:

Yeah, where you're isolated and you get to know what's going on in the outside world and what the news is on the Internet. Get on the news and see all the latest things that's going on, the new music and stuff. Here in (community's name) you don't get much music and stuff like that.

The benefits of E-mail excited students. M2SB revealed his excitement during the following exchange:

M2SB: Sir, do you have to use your Hotmail on one computer?

M5TB: No. You can use it anywhere in the world.

M2SB: Cool! I'm going to use it in Goose Bay.

Teachers in this study also espoused the advantages of the Internet. The following two teachers spoke of their experiences with students learning on the Internet:

F5TF: I believe I've mentioned this to you just before the interview with relation to the tragedy at Columbine High in Colorado. One of my students for a language assignment now is, taking the task on herself and is very happy about doing it. E-mailing students from the States and everywhere about a questionnaire why boys don't deal with their feelings in a constructive way. So, that's great. She's going outside (community's name), outside the country to find out information. So, to me, that's what computers are all about and that's something I would never be able to do for her in the regular classroom.

F5TC: It's very hard for them to imagine when they get on the Internet. sometimes it blows their mind, that they can hook into any website, any situation, any place. anywhere over the world to find out what's going on somewhere else and it breaks down not only geographic isolation but it also, to a certain extent, breaks down cultural isolation because they can communicate and certainly if they have Internet access it just makes the whole world that much smaller to them.

Computers were also viewed as having disadvantageous implications, especially with regard to adapting to the Inuktitut language. M4SC made the following observation.

"I don't think computers have any Inuktitut words and that on there because every time you try to spell something it has a red line under it. English is the main language now."

F5SDE made a similar point, "Computer is modern day and our language goes way back when. So, I don't think there's any words for computers."

M6TDE gave his opinion on why most computer software is not written in Inuktitut:

So far right now there's nil because computer programs haven't been developed with Native education in mind. There hasn't been enough work done in this area. The Department of Education doesn't even recognize Inuktitut as an official second language. . . . I think that may change with time as more Inuit people become familiar with technology and so on and that may come down, come on down the line, but right now, no. I think that the problem is that a lot of new technology is changing so fast, changing so rapidly, that the Inuit Language, Native languages, can hardly incorporate what currently exists. I mean there's a lot of words in English that don't have an Inuktitut or Innu Eimun translation I'm

sure. There's a lot of concepts that Native languages haven't even incorporated yet, current concepts. So, with technology changing so fast, computer technology changing so fast, I don't think the language and the culture can keep pace with making it current, let alone things happening in the future or happening on the cutting edge.

Despite the drawbacks, many students believed that computers were important to their future. F3SDE viewed the value of computers for post-secondary studies, "Inuit people need to know how to work them as well as anyone else so when they go to the outside world to university they'll know how to use them." The occupational benefits of computers were often verbalized. As M3JD stated, "I think computers are very important to us because they can get you a very good job." F4SF summarized the views of gaining computer knowledge for the future, "We are entering the twenty-first century and computers are a big part of it and without basic knowledge of the computer, how to work the computer, we will not be successful."

General Perceptions of Computers

Students and teachers indicated a wide range of perceptions with regard to computers in the school. Most students enjoyed using computers. Positive feelings were often revealed as M1JA described, "The way I feel in the computer room is happy because I get to go on computers and get on the Internet, or have a piece of paper and print it on the computer." M2JA revealed the outward expression of such emotions, "When we get into the computer lab everybody is smiling. Even (M5JA's name) smiles." One student believed that these pleasurable feelings should lead to increased usage of the computer

facilities. F1JF wrote, "I think we should spend more time in the computer room because a lot of people enjoy working with computers. If a person enjoys doing something he/she will be more interested in the work he/she is working on."

There were many reasons given by students for liking computers including playing games, listening to music, recording audio, creating pictures and drawings, as well as typing as opposed to writing until one's hand hurt. However, the best part of using the computer, for most students, was using the Internet. M3JA wrote, "I like the computers because we look up some games, movies, and photos. On the Internet we could look at anything. On the Internet is more fun cause we all look up more cool stuff." F1JF wrote about a practical application of the Internet, "Also, the computers allows students and/or teachers to connect with the outside world (with the Internet). It gives them a chance to find things on their own without any help." For F2JF, "It is more interesting to log on the Internet and communicate through the computer than it is to read a 1970s encyclopedia."

Teachers revealed reasons why they believed their students enjoyed using computers. M6TDE stated his personal opinions with regard to the relationship between contemporary students and computers:

In my opinion the computer is a wonderful medium to offer curriculum instruction because students naturally find it appealing. I don't know the reasons why exactly but there are some. I have done some course work in that. I think it's just new. It's a medium children today are comfortable with because they were brought up in a media age. Chalk and talk is not something they relate to. It's not something they'd enjoy as much as sitting down in front of a video screen. Now again, you know, there is maybe a variety of reasons why that is. I guess it's the video age, the TV age, the Nintendo age, the entertainment age. If you have something like that box, a child will sit down and spend more attentive time on that box and may

get more out of it than if you stand in front of a class with a piece of chalk and chalkboard.

M6TDE also stated:

The funny thing is that many students don't perceive it as real work, but that's the paradox of computer courses. They often go in there entering with the feeling it's play and they inadvertently and sometimes unconsciously learn something and that's the beauty of computers.

F5TC spoke of the entertainment value of computers as well as students' comfort levels:

I think the kids look at a computer screen and see it as a source of entertainment. I think probably they don't see it as threatening as a textbook. I don't think they see it as a set of rules, or a paragraph to memorize, or a piece of literature to paraphrase. It's something that they can manipulate, something that probably they can, I don't know, they just seem to feel a lot more comfortable with a screen and a keyboard than they do with books and notes and pens and paper.

Teachers were aware of the possible benefits of students using computer technology. Teachers observed that students increased their focus, utilized different learning styles, and produced neater and more attractive assignments. M5TA discovered an additional reason for his class to use the computer facilities:

Well, the great realization that I came to, a couple of my kids that don't do so well academically, they try hard but they're not over achievers, they're just struggling to get through, are the top computer kids in the class. If there is a problem with the printer, if there is a problem with printing something out, if there is a problem with getting on, I got a couple of students who can go in there and bang, bang, but if you put them in a class and say, "Open a book, get an encyclopedia," they can't do it. And that kind of gives me the idea that I should be utilizing the computers more. I should be utilizing the computers more.

Despite the fact that many students and teachers had mostly positive perceptions of computers, there were adverse views, as well. Some students preferred the comfort and

security of the regular classroom as compared to the computer area, as they described in their journal writings:

M1JDE: The feeling you get when you're in the classroom is a feeling of security because you don't have to save your paper on hard drive and worry about it getting erased. All that I have to say in this journal is that being in the classroom is much more enjoyable than being in the computer lab.

F3JF: My thoughts about a classroom and a computer room is a classroom is much more comfortable because there are less people to bug you. For instance there are friends trying to talk to you in a library but you are doing your work on computer. No hassle!

Feelings of frustration were prevalent when technological problems occurred.

F1JB explained her feelings:

When I am in computer room I gets mad sometimes because I don't know how to use the computer or when I am on the Internet and I wants to see the Backstreet Boys it don't come on, or if there aren't any more computers left and we signed it up and there is another class in there.

The loss of data, software freezing, problems establishing and maintaining an Internet connection, and printer network problems led to much of the frustration. **F2S12** shared one of her stories. "I lost all my paper that I was doing for (**F5SF's** name) and the second time it was the same one, my major paper from last year and my paper was two months late." **F3JF** shared another experience:

There is also one thing that I do not like about computers. I do not like it when they freeze up on me. That really gets on my nerves. One day I was there typing and I tried to print but it would not, the computer just froze. I could not get my file back because the whole program was gone.

Sighing and exasperated comments were heard during many of the observations.

F2SB stated, "How big! God! It just went like that again on its own (referring to the

computer). Sir, look, look. Gee, I quit.” Teachers also spoke of this frustration, as exemplified by M5TA, “If I get one more, ‘Sir, this cannot print.’ I don’t deserve this punishment!” He goes on to ask in a later observation session, “Does everyone know now why we don’t come out here very often?”

Summary and Discussion of the Local Context

The shift to the new school was perceived by teachers to have improved interactions and decreased student lateness. Outside of this modern facility, students had very little access to computers in the community. School computers were viewed as having many positive implications. Teachers noted the inherent qualities of computers to captivate students’ attention and motivate students who were performing below average academically.

The Internet, in particular, was viewed as having positive implications. It provided an electronic means to bridge the isolation gap to the outside world. By utilizing E-mail, students conducted surveys and communicated with peers far beyond the boundaries of their local community. These observations validated the finding of Haugland and Wright (1997) that there were as many social interactions around the computer as in other activities. The data indicated that there were not only opportunities for social interactions around the computer but also through the computer via the Internet. The fear stated by Fish and Feldmann (1990) that computers would deprive students of social interaction was not supported by the data. In fact, computer activities were shown to increase peer

interactions when students extended their knowledge base to the outside world.

There were, however, adverse perceptions of computers. Some students felt more secure in their regular classrooms. There was a great deal of frustration with technological problems which influenced decisions not to utilize the computer area. Computers were not seen as adapting to the Inuktitut language. Furthermore, some teachers were skeptical about whether computers would translate into better academic results in the future and whether the positive perceptions of computers could be attributed to the novelty effect of the new school and its related technology.

Overall, the local context provided a broader view of social interaction patterns in classrooms where computers were used extensively. The new school structure, as well as general implications and perceptions of computers, provided a frame of reference by which to interpret social interaction patterns and the variables which influenced these patterns. The unique circumstances of this school and its surrounding community environment may have influenced the social interaction patterns which prevailed in classrooms where computers were used extensively.

Variables Known to Have Influenced the Degree of Social Interaction

Taha and Caldwell (1993) classified five types of variables which influenced the degree of social interaction. These included situational determinants of the organizational environment, such as regulations; group environment characteristics, such as group size, social norms, and leadership; task characteristics, such as ambiguity, structure, and

duration; technology of the medium, such as ease of use, and speed of access; and individual characteristics, such as personality types. Each of these were found to have influenced social interactions in this study to varying degrees.

Situational Determinants of the Organizational Environment

Social interaction patterns were controlled by regulations in place at the school, regular classroom, and computer area levels. Teachers were seen as the rule makers. Some students expressed concern over the enforcement of rules in the new school as compared to the old school. F1SB stated, "Can't do anything like we did in the old school." M2SA expressed a rationale for this behaviour, "Seems like they are a lot stricter about things up here cause the old one got all beat up."

Classroom rules varied among the different grades. Some teachers did not permit chewing gum, wearing hats or outdoor clothing, or frequently going to the washrooms. Other teachers permitted such behaviours. Students were rarely required to raise their hands to give answers, especially in the computer area. Most times, in the regular classrooms, students responded individually or as part of a group response. All teachers, however, seemed to enforce class length regulations. As M3SC stated, "Some teachers in the old school used to let us go early. Now they waits for the bell."

With regard to computers, students were told not to go eating or drinking around the computer equipment, nor access Internet sites that were deemed as inappropriate by the teachers. Students were not allowed to play most of the games on the classroom

computer(s) and the computer area computers. F5TF stated her rationale for enforcing this rule:

That's one rule I'm pretty strict with. I don't allow games there because, like I said, I find that students often tend to abuse them and they'd rather do games than work. Being human you're tempted to play the games while you have the freedom to do so and it's not that I'm against games but when you're assigned work I'd rather take that distraction away and I've never had students disobey. They've been excellent with it. Excellent.

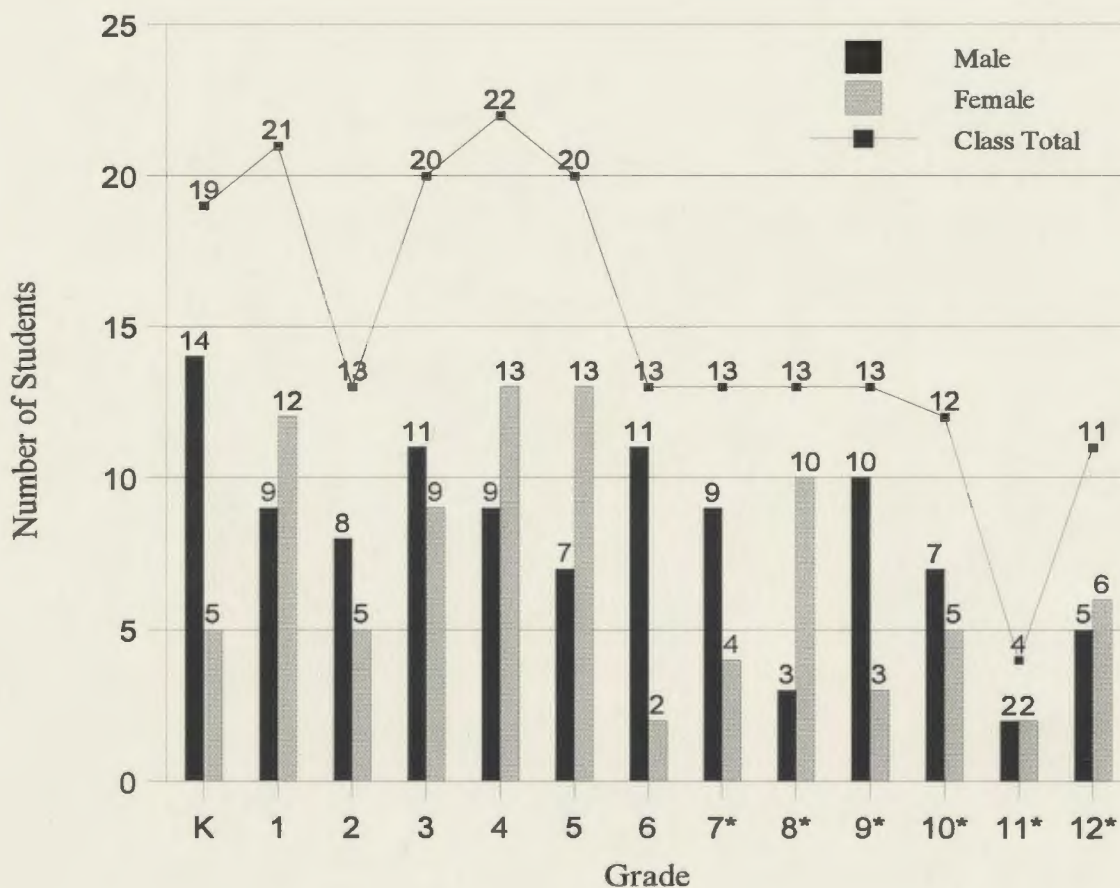
Group Environment Characteristics

Leadership was one element of the group environment characteristics that did not significantly influence social interactions. Most students were quite reserved when it came to taking or initiating a leadership role. As a group, students were perceived to be quiet, as M5TA stated:

I find they're quieter. They're harder to get to know. They're not as outspoken in general. We always get one or two that are. A lot of them speak when spoken to. They don't volunteer information even though they know it. Like, I've got boys in my room right now and unless I said, "(MISA's name), what's the answer?" MISA doesn't say the answer. None of this raised hands and volunteering type thing.

Friends tended to interact with each other more than those who were not friends. As well, senior high class divisions along school club or team lines were also observed. Members of drama groups and sports teams, in particular, chose to sit by and talk to same group members. Students not in such clubs tended to group together or, in certain instances, remain alone.

Divisions along gender lines were evident. There existed a disproportionate number of one gender in comparison to the other in all three junior high classes (see Figure 8). Members of the same gender tended to sit together and share work and resources in the regular classroom. In the computer area, however, seating arrangements were mixed, as F1JDE noted, “In the computer class all genders sit together, in the regular class except for one all boys are on one side and the girls on the other.”



Note. *represents grades included in the study.

Figure 8. School enrolment at time of study.

The mixing of males and females was found to be the result of competition, upon entering the computer area, for working computers deemed to have the best hardware and software. Students hurried to the computers that they liked best with little regard for who was sitting beside them. An exception to this tendency occurred when group size was small and there were many computers, perceived as good, from which to choose. In such cases, with little competition for resources, most students chose to sit as they would in the regular classroom, next to friends, school group members, or those of the same gender.

Task Characteristics

Task ambiguity was not observed to have influenced social interactions. Tasks were often structured and clearly described. When told to begin tasks, students initiated the required actions with few or no questions, pauses, or signs of misunderstanding. A number of tasks were usually initiated in the 60 minute period. There was no clear consensus on whether or not the 60 minute period, another new adjustment for students and staff, was more advantageous for learning than the 40 minute periods of the previous years.

There was a clear difference between student activities in the computer area and the regular classrooms once assigned tasks were completed. In the computer area, students would find their own way to occupy free time. Teachers did not have to prepare extra tasks for students to complete. Computers served as sources of entertainment and as occupiers of free time. Students experimented with screen savers, background settings,

paint programs, word processing software, and, most of all, the Internet. Sound and video clips, as well as picture files were frequently downloaded from the Internet after students' work was completed. With only one computer in most classrooms, students' opportunities to use the technology during regular class free time was dramatically decreased. Teachers assigned extra work or handouts to students in the regular classrooms after initial tasks were completed. As F3SF stated, "In the computer room we could do anything, I suppose, in our free time. If we are in the regular classroom we got to do work, do questions."

Technology of the Medium

Since Taha and Caldwell's (1993) phrase, "technology of the medium" (p. 278), conveyed possible ambiguity, in the sense that the technology might be viewed as the medium, the researcher in this study interpreted the phrase to refer to technological concerns. While computer technology was up-to-date and prevalent throughout the school, technological concerns were found to be the dominant variables which influenced social interaction patterns in the computer area. Students and teachers sought and gave more assistance when problems occurred than when they did not. Problems with the technology included trouble printing, getting online, and using certain types of software.

M5TA viewed technological problems as major obstacles to using the computer area. He explained the problems that he and his class experienced printing a document:

Well, something so simple as a printer. I came in here, well in our last observation

session, got online, got the kids to go onto a site. They done their work alright and everybody was going to print it out. This printer didn't print. Alright, we'll go to the next one and we went in and got our other printer. The first kid printed out a paper, then I seen a second one come, and a third one come. Perfect. I'm going to get them all. So, I went back outside in the main area of the library. When I came back in the lab I had 25 to 30 printouts. So, I figured I had one for every kid. What I did, I had 25 of the same paper! I couldn't get on to kid number two and that's what I left with.

M5TA also stated:

I've got a curriculum to cover and I've got certain objectives to meet, which I don't when it comes to computers as such, but I was using this as part of language. I can't spend two weeks in here trying to get my printouts.

Printing problems were attributed to network speed and hardware, printer settings on the operating systems, and print quality. Students were often told to send only one print job at a time to the printer so that the network would not become overloaded. The speed of the network thereby influenced the speed of task completion. Problems with network cards in several computers resulted in many students and teachers wondering why their computers would not print. Having several of the same type of laser jet printer on the network often resulted in the incorrect destination being chosen for a print job. Students would check both printers in the computer area, as well as the one in the general office, to find printouts. Furthermore, print quality influenced the speed of task completion. As M1JDE stated, "The printers are bad too because one of them may not print or may be low on toner then we have to log on to another printer. That slows down our working time too."

Downtime on the Internet was a recurring concern despite the school having a high

speed, satellite connection. Establishing the connection often took many minutes and the speed, once connected, often decreased due to poor weather conditions, the time of day, and the number of users browsing the Internet. M1JDE noted student dissatisfaction with the Internet. "We also get Internet access. One thing that I don't like about computers is when the Internet is loading. Sometimes it can take one minute and other times it takes about ten to fifteen minutes." Similarly, teachers were also dissatisfied. M5TA and F5TC made remarks during observation sessions. M5T7: "That's twelve minutes and we've got one machine going." F5T9: "Don't be surprised if it takes a while to load up everybody. It is a long, long process."

Software problems were another technological concern. Illegal operation error messages and missing program files were two of the most common problems. In the entrepreneurship class, a MS-Dos based program, which was used to enter data from ledger sheets, was prone to many errors. As well, certain pieces of software were not installed on all computers. Students would often have to search the program listing on many computers to find the correct program, or settle for a program with fewer features that could still accomplish basic tasks, such as word processing. Students and teachers spent much time talking about, and moving to, different computers to find appropriate software.

Individual Characteristics

Student personality types influenced social interaction patterns in a number of

ways. Students who misbehaved garnered more attention from their teachers than students who behaved in a manner acceptable to their teachers. Overall, however, from the perspectives of teachers, students were seen to be cooperative and helpful. F5TC shared her perceptions of the students after nine years of teaching in the community:

Children here are, how can I say, children here look out for one another more. They are not as consumed with, "I have this. I have that." Materialism does not seem to be as big a factor with these kids as some of the kids who I have taught in larger centres and towns. Other children that I've taught they measure, I don't know. I guess you can say they measure their work or their status within the school by the clothes that they might wear or the kind of home that they live in.

F5TC also referred to the manner in which isolation influenced relationships in the community:

When we're into a social situation when we go into a store they never think about themselves first. They'll always go find something for sister or brother to take back home and that's one of the things that I find unique and I think that's probably a function of where these children are. The isolation brings them closer to their friends, their peers, and also their family.

M6TDE talked about socioeconomic background and compared students in this school to students in an urban centre:

Now in my experience in (name of other school) you got different cliques, different groups based on not so much culture because of course they're all, they're all the same culture. There's no difference culturally but socioeconomically there are differences because you have the rich kids and you have the middle income kids and so on. So, there may be differences in larger urban centres because of economics but I find in this community the kids interact more or less similarly because there's not a whole lot of differences between them.

Individual relationships, outside of the school, influenced social interactions inside the school. M6TDE believed that the school and the community were extensions of each

other, as he stated:

The relationships outside the school do have an impact on how they interact in the classroom. It's no doubt about it. People that engage or interact outside the classroom will do it in inside the classroom. It's just an extension of what they are doing in the hallway or what they are doing outside the classroom in the community. So, whatever interaction patterns are outside of the classroom generally are brought into the classroom and the only thing you do as a teacher is try to minimize that or use it to your advantage. You could use that. For example, you know that a couple of individuals are friends outside regular hours in the community you can maybe buddy them up to do an assignment or a task. If you find that there are individuals who interact negatively or have disagreements, disputes outside the school maybe you need to avoid pairing up students like that. So, yeah, outside interaction has a big influence on what goes on in the classroom.

Teacher characteristics also influenced social interactions. While teachers in this study each had ten or less years of teaching experience (see Table 1), they differed in many areas including computer experience and teaching style. M5TA desired to have more computer expertise, as he stated:

Right now I'm not coming out of my classroom because that's the only place I'm comfortable in teaching but I would like to have the expertise to get in the computer lab because there are so many opportunities there for the kids. They can go in there and in ten minutes get more information than we can in the 60 minutes in the classroom when it comes to resources and gathering information, doing projects, but right now I just don't have the expertise to be in there.

Table 1
Teaching Experience

Teacher	Number of Years Teaching in the Community	Total Number of Years Teaching
M5TA	8	8
M5TB	1	3
F5TC	9	9.3
M6TDE	9	10
F5TF	4	4

F5TC contrasted individual characteristics and preferences with regard to teaching in the regular classroom versus the computer area, as she wrote:

I guess I could characterize my classroom environment as one with order and structure, where there is a well defined relationship between teacher and student. This may sound “old fashioned” and “outdated” but I do believe in maintaining a professional distance between myself and the students I teach. In the computer room, at times I feel incompetent. This is certainly the case when technical “glitches” such as power failures occur, machines/programs lock up or the entire machine crashes. When I am unable to provide assistance to my students, I feel incompetent and at a loss. However, the students I teach are very knowledgeable and when problems do arise they do not appear to be bothered by it as much as I do. . . .

Furthermore, F5TC summarized the different feelings that she experienced in these two areas:

From a teacher’s standpoint, yes there is a definite difference between the computer room and classroom setting. In the classroom setting I feel confident and in control. In the computer room I feel as though I am walking on thin ice, ready to fall in at any time.

Summary and Discussion of Variables Known to Have Influenced the Degree of Social Interaction

The data supported Taha and Caldwell's (1993) classification of the five types of variables which influenced the degree of social interaction, which included situational determinants of the organizational environment; group environment characteristics; task characteristics; technology of the medium; and individual characteristics. Each of these were found to have influenced social interactions in this study to varying degrees.

With regard to situational determinants of the organizational environment, the new school was viewed by students as more regulated than the old school. However, in the computer area, more so than in the regular classrooms, students were permitted to respond to questions without raising their hands. This supported Kern's (1995) assessment that the normal pattern of classroom discourse, which included a teacher-initiated topic, student reply, and teacher evaluation of the reply was subverted in classrooms where computers were used. Regulations, with regard to students raising their hands and moving out of their desks, seemed to differ between the computer area and the regular classroom because the organization of classroom discourse changed. Despite having specific rules regarding the computers, the computer area was a much less regulated environment. As well, the organization of Inuit classroom discourse which shifted the focus of classroom interactions to the peer group and away from individual group members, as described by Eriks-Brophy and Crago (1993), was exemplified in classrooms where computers were used extensively. Students functioned in collaboration

with one another. They assisted each other in technical and subject-related problem solving. This more peer-directed, less regulated, structure of the computer area was more consistent with the organization of documented Inuit classroom discourse. It followed that social interactions in classrooms where computers were used extensively were consistent with those social interactions found in the organization of Inuit classroom discourse.

One feature of group environment characteristics was that teachers generally perceived students in this school to be a quiet group. In the regular classrooms, another characteristic included students grouping together according to friendships, participation in clubs, and along gender lines. The same grouping arrangements were observed in the computer area only when the group size was small and there were many computers. perceived as good by the students, from which to choose. Competition for resources, when there were many students in the computer area, resulted in seating arrangements that were mixed. While there was a large amount of intergroup interaction in the computer area between individuals who would not normally interact in the regular classrooms, the data indicated that this interaction was due to chance because students quickly seated themselves in front of computers with little regard for who was sitting next to them. This implied that it was not the presence of computers that facilitated intergroup contact, rather, it was the competition for resources. Therefore, teachers who had planned computer activities with peer interaction as a primary goal should have considered that, as evidenced by classroom observations in this study, peer interaction may not have been

attributable to anything inherent in computer use. In accordance with Schofield's (1997) review of the literature on computers and classroom social processes, it might have been that the scarcity of computers necessitated pairing or grouping arrangements.

No differences were observed in the levels of interaction between varying numbers of students who worked together during computer activities. As well, there was no evidence of grouping arrangements which separated Inuit and non-Inuit students. This was consistent with Ben-Dor's (1977) finding that a great deal of intergroup contact was present within the adolescent population.

With reference to task characteristics, the data indicated that computers were occupiers of free time. In the computer area, students found their own ways to occupy free time including browsing the Internet and playing with multimedia applications. Teachers did not have to prepare extra tasks, as they did in the regular classrooms, for those students who finished their assignments early. In this regard, computers were viewed as time savers for teachers.

Technological concerns influenced social interaction patterns in the computer area. Problems associated with printing, getting online, and using certain types of software resulted in students and teachers who sought and gave more assistance when problems occurred than when they did not. Many more interactions resulted when students and teachers moved to other people to seek remedies for technological problems. Not all of these interactions were positive. Students became frustrated with these problems, as did certain teachers who worried about not being able to meet course objectives because of

downtime. Problems with the technology were viewed by teachers and students as the biggest deterrent to using the computer area. According to participants, some means of addressing the relative instability of the technology was necessary.

Teachers' perceptions of individual student characteristics were varied. Whereas some students misbehaved, most students were viewed by teachers as helpful. Teachers were viewed by students and other teachers as helpful. Teachers in this study were similar in that they had ten or less years of teaching experience but they differed in many areas including computer experience and teaching style. The data indicated that the less computer experience that a teacher possessed, the more that social interactions were influenced by technical problems in the computer area, and the less likely the teacher was to subsequently bring their class into the computer area. It followed that teacher computer training may have decreased problems with the technology, and thereby increased computer utilization. This was consistent with the finding of Maddux et al. (1997) that the teacher was the critical factor in determining the degree to which human interaction would prevail in classrooms where computers were utilized.

Variables Found to Have Influenced the Degree of Social Interaction

Aside from Taha and Caldwell's (1993) five types of variables which were known to have influenced the degree of social interaction, this study revealed a number of other variables which did not fit into the aforementioned categories. These included classroom layout, movement, time, and terminology. Each of these were found to have influenced

social interaction in this study to varying degrees.

Classroom Layout

Classroom layout influenced social interactions in the regular classrooms and computer area. In the regular classrooms, different seating arrangements were utilized by teachers to control certain types of interactions. F5TF gave her rationale for using a certain type of arrangement:

I wanted to go with a U-shaped structure, but they didn't want that and I told them they could have pods or whatever. No, they wanted their desks separated. Yeah, separated, each desk separated and in a sense I found that it worked really well because one of the classes I have has a lot of boys and they are really, some are, somewhat talkative and putting them together in groups, it would probably take them longer to settle down.

All regular classrooms, including the science laboratory, contained at least one networked computer. Regular classroom computers were used for a variety of purposes including playing games, typing assignments, browsing the Internet, and, in certain instances, to play music on compact disk. Students either followed a predetermined schedule or used the classroom computer(s) on a first come, first serve basis.

In two of the regular classrooms, the classroom computer was placed in an area near or on the teacher's desk. This created a situation in which the computer was viewed by students as the teacher's property, as F5TC stated:

It has a lot to do with where the computer is situated right behind my desk and they see that as the teachers domain and you don't go near miss's desk or you don't go up there, and they see it as this sort of off limits place but that has to do with the fact that the outlets are there and the network lines are there as well. So.

that was the only place I thought fit to situate it.

Students F1JF and M1JF agreed with the analysis by F5TC that the classroom computer belonged primarily to the teacher.

F1JF: In the regular classroom, we have a computer. It is not very often we get to get on it. Sometimes at recess time we might want to play around on it, but we just don't use it very often. It just stays on the teacher's desk. The teacher is always the one who uses it because she/he needs to use it.

M1JF: We have a computer in our classroom. Only the teacher can use it unless students have work to finish on the computer. This computer is not used for games and the Internet. It is used for work only.

Unlike the regular classrooms, the computer area was viewed as a school resource. Teachers and students accessed this room at all times of the day. They obtained reference, multimedia, and audiovisual material, as well as accessed the network server and printers, and utilized computers that were not being used. Whereas all teachers in this study periodically signed out the computer area for their classes, rarely did others in the school ask to gain access to this area while a lesson was in progress. One teacher described his feelings regarding others who used the computer area while he taught a class:

M5TA: It seems in this computer lab we got here, there is always people coming and going. Not even so much as a knock or, "Are you busy?" They would come in and there would be four or five kids on a machine doing things unrelated say to their school work. I have to ask them, "Can we get on there? We have a class." "Oh, but I've got a free period now." So, if it's a free period then the computer room is the place to be.

F5TC described the distractions that occurred and her attempts to keep others from entering her class in the computer area:

F5TC: I find that too distracting for my own self anyway. Distracting for both the

kids and myself and I like to have, when I'm in the computer room/library, certainly in that particular section where the computer program is, the software is. I like to have their full attention and I'd like them to know they have mine. I don't want to have to worry about somebody getting a book or carrying on in one part of the other section of the room.

INTERVIEWER: Do they try to come in? Do you get students trying to come in at certain times?

F5TC: Yes, but I make sure before I go in that the schedule on the outside is clearly marked and I do close the doors as well. I don't keep the computer room door open when I'm in there. It's different in my classroom. I like teaching with the door open and I mean it's more obvious for people to see that I'm there teaching a class when I'm in front of the board, but the computer, the computer component or the library here, seems to be more open and since it's more known as a high traffic, as a high traffic sort of public place when I am in there, in a class. I would like people to know right off the bat that there's a class going on. So. I do shut the door.

M5TB believed that others had the right to access library resources, but he also recognized the rights of his students to be undisturbed while they utilized the area for a lesson.

M5TB: I've been in other schools and the computer room is an actual classroom. It's a bit different where we're in the resource centre. Here people are coming and going and we can't really close down the library/resource centre and say, "Okay it's mine. Everyone get out." If there's a couple of computers free, I think, you know, it's good to have them in use as long as they're not disturbing my students.

Having the main computer area spread over two rooms, the library and computer room, significantly influenced interactions. Teachers were limited in the amount of communication that they had with students who were in the other room. Students became frustrated by not always having their teacher in the same room as themselves when they required assistance, as F3JDE wrote:

There is only one thing wrong with the computer room. I don't like the way it has been laid out into two rooms. I hate having to run back and forth to both of the rooms looking for my teacher to help me. In a classroom you don't have to do this.

M1JDE felt that such an arrangement may have caused students to fall behind in their work:

I find that the computers are far apart because when we're in there doing work our teacher may be in the computer room part and we may be in the library part and she tells us what to do on the computer and we may not hear her talking then we get left behind with our work or may slow down the class where she is going back and forth.

Teachers also found that they were constantly moving between both rooms to teach a single lesson. M5TB stated, "I found that if you planned out a lesson you've got to do it twice basically for two groups." While the computer room and library were joined by a door and double glass window, sight lines made it nearly impossible for teachers to control both areas at once. F5TC stated her displeasure with the two room arrangement:

I don't like it. I don't like it. I like that computer room where you have the six machines together and I can be in the middle of the room and look over each child's shoulder. I do not like it out here where I have, where there are four computers on one side and three on the other and I have to be going back and forth and especially at times when, for example, I had a grade nine class and we were on the Internet a couple of days ago, three kids were out here, two were in there. One would call out, "Miss, this closed down, that closed down." I was running back and forth, bing, bing, bing. That I don't like. It may be just me being a control freak but I like being in a position where I can see all kids from one vantage point.

M6TDE concurred with F5TC:

Well, I don't particularly like that arrangement. I would like for all the computers, whether they are in the library or in one designated room, to be in one room. If you're going to have a computer room or computer lab, whatever you want to call

it, for the sake of supervision and that's all, it's just a preference for supervision, it really should be in one room. It makes it more difficult for the teacher when they have to, you know, go back and forth between the two rooms. Now, it's not a real big inconvenience for me but if you had a real large group of students it would be an inconvenience. It would be nice if you had them all in one central location.

While F5TF also experienced the disadvantages of the two room layout in terms of control and supervision, she did describe one advantageous situation in which her group of four students were placed in the smaller computer room and another class went to the library. She stated, "So, we had the room to separate from one another and one class didn't interfere with the other. So, it has it's advantages as well."

The combination of the computer room and the library in one area may have influenced social interactions in another manner. Despite having been a school resource area with lots of movement and activity, the perception of the library as a low noise area remained with F3SB. "You have to be quiet because it's a library." Whereas verbal communications were frequent when students and teachers were using the computers, these communicative interactions may have been hampered as a result of computers being situated in the low noise, library area.

Movement

Students' and teachers' movements influenced their proximity to others and thereby influenced social interactions. More interactions were observed when there was significant movement. Conversely, fewer interactions were observed when there was less movement.

The continual nature of teachers' movements made mapping them too difficult. However, students' movements were mapped. Students' movements were grouped into a number of categories and tabulated (see Table 2). Since students were not confined to neither the computer area nor the regular classrooms, at times migrating between them, the same categories were used for both places. *Outside Stations* included the washroom, water fountain, locker, other classrooms or computer room (when in a regular classroom), general office, and home. *Printers* referred to the printers in the computer area only. Students who retrieved a print job from the printer in the general office were counted as moving to an outside station. *Class Stations* included the trash can, sharpener, teacher's desk, activity stations, maps and other material attached to the wall, chalkboard, thermostat, and sink (in the science laboratory), as well as other physical structures, not related to computers, in the classrooms. *Class Computer* referred to the computer or computers in the regular classrooms. *Other Seat/Computer* referred to seats in either room, moving to another computer in the computer area, as well as moving within the personal space of another student or teacher. The total number of movements were added for each observation session and a movement per student average was calculated. It was noted that teachers and students who moved into the computer area were mapped but not categorized as their movement totals would have influenced the class movements per student average.

Table 2
Students' Movements

Observation #	Period	Place	Grade	Subject	# of Students	Movement to:					Total Movements	Movements/Student
						Outside Station	Printers	Class Stations	Class Computer	Other Seat/Computer		
1	3	Gr.7 room	7	Science	13	0	0	0	0	8	8	0.62
2	3	Gr.8 room	8	Science	9	0	0	4	5	0	9	1
3	3	Gr.12 room	9	Literature	10	2	0	6	0	2	10	1
4	2	Gr.9 room	10-11	Entrepreneurship	15	19	0	2	4	3	28	1.87
5	3	Library	8	Science	11	13	5	3	0	4	25	2.27
6	1	Gr.12 room	12	Literature	6	2	0	0	0	0	2	0.33
7	5	Science lab	9	Science	11	2	0	33	0	4	39	3.55
8	2	Library/Comp.	12	Geography	6	2	0	0	0	9	11	1.83
9	5	Library/Comp	7	Language	12	0	18	1	0	3	22	1.83
10	2	Library/Comp	10-11	Entrepreneurship	11	5	0	0	0	18	23	2.09
11	1	Library/Comp	7	Science	12	0	1	2	0	13	16	1.33
12	3	Library/Comp	8	Religion	7	3	2	0	0	9	14	2
13	3	Library/Comp	9	Language	9	1	3	0	0	14	18	2
14	2	Comp.	10-11	Entrepreneurship	11	2	0	0	0	7	9	0.82
15	3	Science lab	8	Science	7	4	0	20	0	2	26	3.71
16	1	Library/Comp	12	Literature	7	2	5	0	0	12	19	2.71
17	5	Comp.	9	Science	6	1	7	0	0	5	13	2.17
18	2	Gr.9-10 room	12	Geography	6	1	0	5	0	0	6	1
19	5	Gr.9-10 room	10-11	Entrepreneurship	13	4	0	5	0	0	9	0.69
20	5	Gr.7 room	7	Art	9	13	0	10	0	12	35	3.89
21	3	Gr.7 room	7	Art	12	14	0	13	4	5	36	3
22	3	Gr.8 room	8	Religion	8	2	0	6	2	0	10	1.25
23	3	Library/Comp	9	Language	9	4	0	0	0	2	6	0.66
24	2	Gr.9-10 room	10-11	Entrepreneurship	13	4	0	9	2	1	16	1.23
25	3	Library	8	Computers	10	5	0	0	0	19	24	2.4
26	1	Gr.12 room	12	Literature	9	10	0	1	0	6	17	1.89
27	5	Science lab	9	Math	6	0	0	0	0	1	1	0.17
28	2	Library	12	Geography	8	0	2	0	0	11	13	1.63
29	5	Library/Comp	10-11	Entrepreneurship	8	2	0	0	0	13	15	1.88
30	5	Library/Comp	7	Language	12	1	8	5	0	5	19	1.58

A comparison of students' movements in the computer area versus the regular classrooms revealed that the average number of students' movements per observation, over the 15 sessions in each place, was greater in the computer area by a margin of .13 movements per student (see Table 3).

Table 3
Comparison of Students' Movements in Library/Computer Room Versus Regular Classrooms

Place	Number of Observations in Each Place	Total Number of Movements/Student	Average Number of Movements/Student
Library/Computer Room*	15	27.2	1.81
Regular Classrooms and Science Lab	15	25.2	1.68

Note. *Library/Computer Room represents both the library and the computer room as one combined area, as well as two distinct areas.

When science and art were excluded from the calculations in both places, the average number of students' movements per observation was substantially greater in the computer area by a margin of .74 movements per student (see Table 4). Movements and, subsequently, interactions were much more frequent in science and art classes than any other subjects in the regular classrooms.

Table 4
Comparison of Students' Movements in Library/Computer Room Versus Regular Classrooms Excluding Science and Art

Place	Number of Observations in Each Place	Total Number of Movements/Student	Average Number of Movements/Student
Library/Computer Room*	12	21.43	1.79
Regular Classrooms	9	9.43	1.05

Note. *Library/Computer Room represents both the library and the computer room as one combined area, as well as two distinct areas.

Besides the school subject, in the regular classrooms, the teaching method influenced movements. Classes that were dominated by lecture, reading, and writing resulted in very little mobility. Students often sat still in their seats and interacted only with those in close proximity to them. If there were few students in attendance, the proximity between them usually increased, and interactions decreased.

In the computer area, the teaching method did not influence movements as much as it did in the regular classrooms. Teachers consistently answered questions and performed technical troubleshooting in the computer area. Very little lecturing was observed. Students did, however, move less frequently during data entry and word processing lessons, except for retrieving print jobs, than they did during activities that

involved the Internet. Students seemed very interested in viewing the computer screens of classmates while they browsed the Internet and read E-mail.

Movement patterns in the computer area were predominantly influenced by technological problems. Students moved to computers that were operating effectively. The data indicated that students perceived each computer as having unique characteristics. Subsequently, attempts to find better computers resulted in increased student movements. As F2SDE stated, "If the computer I'm on don't get through to the Internet very fast I'm going to go to another computer and try that computer." The greater the number of students in attendance, the more competitive the search for computers that students perceived as good.

Computer problems experienced by students also resulted in resource sharing and, therefore, various grouping arrangements emerged among students. Such grouping seemed to be a type of forced interaction because students would not have cooperated otherwise. This was exemplified by M5TB's statement during a computer area observation. "If you have trouble with your machine try loading the page again. If it still doesn't work go pair up with a neighbour." The length of time in which a student sought to find a working computer for their individual use was often quite long, as revealed by M5TA. "(M4SA's name), this is two days in a row that you've been running around and can't get a machine. You're not having much luck. Go to another computer with a partner."

While teachers' movements proved too difficult to monitor, interviews with

teachers and students, as well as observational data, indicated that teachers also moved much more in the computer area than in the regular classrooms. Students frequently requested teacher assistance with computer problems. F5SDE noticed the increased pace of her teacher in attempting to help students with individual concerns, as she stated:

She's hurrying around more in the computer room because there is only one of her and there is all of us and we sometimes don't know how to do it and then she has to show us and then we have to wait longer for her to explain everything because it has to be done individually.

Movements as a result of the added role of troubleshooter tended to make teaching in the computer area quite hectic, as F5TF wrote. "Thus in those computer classes I am usually moving about directed by 'Miss' or the flag of the hand, and by the end of class I almost need a minute to relax again."

Time

Time influenced social interactions with regard to student and teacher energy levels. At certain times, students and teachers were more energetic, resulting in more interactions. Conversely, times of general lethargy were associated with fewer interactions. No differences were observed with regard to the manner in which time seemed to influence social interactions in the computer area versus the regular classrooms.

The school schedule followed a 14 day cycle comprised of five, 60 minute periods each day. The day was broken into three sections: the first two periods from 8:40 AM to 10:40 AM; one period after recess from 11 AM to 12 PM; and the final two periods from

1:10 PM to 3:10 PM. Observation sessions were conducted during all five periods with the exception of period number four, immediately following lunch, due to scheduling conflicts. Interactions were observed to be fewer and less emphatic during the first period of the morning as many students remarked that they were, "still asleep." The last period of the day was observed to have opposite types of interactions, greater and more emphatic. Many students enjoyed the only stand alone period from 11 AM to 12 PM because they believed that the time seemed to go faster, as F4SB remarked, "I love the period before dinner. It's right short."

The days of the week followed a pattern similar to that of the daily periods. The first day of the week, Monday, had fewer and less emphatic interactions than the last day of the week, Friday, in which student excitement grew in anticipation of the oncoming weekend. M5TA gave a rationale for this increased enthusiasm:

TGIF I guess [laughter]. Right, now Monday. Monday is very, very mellow. Tuesday they come around. By Wednesday they've started to bloom. . . and that could be a reflection of the teacher too. I know come Monday and Tuesday I'm usually pretty low key too.

Other times were also associated with various levels of student interaction. Special days, such as the grand opening of the new school, the drama festival, and the days leading up to graduation, witnessed increased interactions, not all of which were on task. Days such as those immediately following the Victoria Day long weekend and the graduation weekend experienced fewer interactions, especially with regard to the movement variable.

Terminology

Local terminology influenced communication, an element of social interaction. Specific terms heard during the observation sessions often had local meanings (see Table 5). Added to these local terms were words spoken from the Inuktitut language, such as “Nakomek” (thank you), as well as phrases that some of the teachers used from their original communities in Newfoundland, such as “Oh sonny boy!” Also, nonverbal communication was observed. For example, raised eyebrows with eyelids opened wide meant “Yes.”

Unfamiliarity with such patterns of communication on the part of students and teachers who were new to the community was observed to lead to confusing interactions, as the following exchange exemplified:

F2S8: Sir, it's right lot!

M5T8: It's hot. I'll turn down the heat for you (walks toward thermostat).

F2S8: No. I said it's right lot (referring to assigned questions)!

M5T8: Oh [laughter]!

Table 5
Examples of Local Terminology

Term(s)	*Inferred Meaning or Use	Examples Heard During Observation Sessions
ol'	Unfavourable/unsatisfactory	"Ugly ol' smell!"
right lot	Many	"Sir, it's right lot!"
or wha?	Words often used to end a question	"Print it out, or wha?"
Holy mack!	Word used to express excitement or heightened emotion	"Holy mack! 11:59 already!"
Chrii!		"Chrii, I wasn't that loud!"
How. . .	Very/extremely	"How big!"
nah boy	No (used to refer to previous statement in a humorous sense)	"Cleopatra knew Jesus, nah boy!"

Note. *Meanings were inferred by the researcher. It was possible that different meanings could have been inferred by others.

Summary and Discussion of Variables Found to Have Influenced the Degree of Social Interaction

Classroom layout was found to influence social interactions in the regular classrooms and the computer area. Teachers adjusted seating arrangements in the regular classrooms to alter social interactions, such as overtalkativeness on the part of certain students. In some regular classrooms, where the classroom computer was placed in an area near or on the teacher's desk, students believed that the computer was the property

of the teacher. Students were found to stay away from the classroom computer in such instances. This was in contrast to the computer area, where teachers and students assumed ownership of the library and computer room, as well as the computers therein. The unique layout of the computer area resulted in it being viewed as a school resource. People obtained reference, multimedia, and audiovisual material, as well as accessed the network server and printers, and utilized computers that were not being used.

The two room layout had many negative implications. It limited the amount of communication and supervision that a teacher had with students who were in the room in which that teacher was not currently present. Teachers had to teach the same lesson twice, once each to students in both rooms. The layout also influenced the nature of communicative interactions because students indicated that they were supposed to be quiet in the library. Consistent with the research of Smith and Zimmerman (as cited in Bracey, 1988), students felt that they received more individual attention in the computer area than in the regular classrooms. However, the data indicated that this attention diminished when the teacher could not attend to their queries. Having the main concentration of computers spread over two separate rooms resulted in frustration. For most students and teachers, a one room structure separated from the library was a preferred alternative.

With regard to the movement variable, increased movement resulted in a larger number of social interactions. Students were found to have moved more in the computer area than in the regular classrooms. This difference was even more accentuated when

science and art classes were excluded from the calculations. As well, lessons in the regular classrooms, dominated by lecture, reading, and writing, resulted in very little mobility. However, the teaching method did not seem to matter as much in the computer area because teachers consistently took on the roles of question answerers and technical troubleshooters. Students moved more when there were technical problems. They received assistance or moved to computers that were operating more effectively. Teachers also moved more in the computer area than in the regular classrooms. although this could not be concluded with certainty because their movements were too frequent to map.

These movements were indicative of the new social relationships that Chen and Paisley (1985) referred to as a result of children turning to each other for help with computer work. Instead of sitting in their seats and waiting for the teacher to assist them with a problem. as they did in the regular classrooms. students moved to other students for assistance, especially when the teacher was not available. Students viewed certain other students as having expertise in computer-related activities and moved to them for assistance. The learning environment in the computer area was different from that of the regular classrooms because in the computer area students increased their roles as teachers. and teachers increased their roles as learners. In order to learn how to help other students. teachers often moved to students with computer expertise to find out how those students solved a problem. Mapping the movement patterns of students revealed this reversed student-teacher relationship.

Time was found to have been a minor variable which influenced the degree of social interaction. The earlier in the day and the week that students were observed, the less frequent and emphatic their interactions. Students seemed more energetic as the day and week progressed, as well as on special days such as the grand opening of the new school and the drama festival. No differences were observed with regard to the manner in which time seemed to influence social interactions in the computer area versus the regular classrooms.

Local terminology influenced communication, an element of social interaction, because specific words often had local meanings. As well, words from the Inuktitut language and Newfoundland communities, along with nonverbal communication, such as communicating with one's eyes, led to confusing interactions at times. McAlpine and Taylor (1993) stated that the interactions required of the aboriginal child in the classroom as opposed to the interactions required of the aboriginal child in the home and community culture were discontinuous. This was evident within the communication patterns of teachers and students in this study. Not only was the verbal communication of teachers and students different, so too was the nonverbal communication. The data indicated that teachers in this study with the most experience teaching in the community had fewer instances in which communication led to confusion. Less adjustment was required of students and teachers when the teacher was familiar with local words and expressions. This was evident in the regular classrooms and in the computer area.

McAlpine and Taylor (1993) also indicated that discontinuous interactions could

have been a factor in the perceived systemic school failure of aboriginal communities. Therefore, minimizing the amount of adjustment required of students was advisable. Maintaining experienced teachers who have demonstrated familiarity with local words, expressions, and culture could be a worthwhile goal for stakeholders in education concerned with minimizing the adjustments of aboriginal children and the associated confusion within social interactions.

General Patterns of Social Interaction: Cooperation and Competition

Both sets of variables which influenced social interaction, those classified by Taha and Caldwell (1993) and the additional variables found in this study, combined to reveal two general patterns of social interaction: cooperation and competition.

Cooperation

Cooperation was evident in both the regular classrooms and the computer area. Some students liked the privacy of the regular classrooms and believed that they were much more cooperative with teachers and classmates in this environment, as F4SF wrote:

The teachers are also great. They help us learn and make us happy. The homeroom teacher is the best because he/she own us for the year. He/she teaches us the things we need to know. In the computer room they also teach us, but we like it more in the homeroom. We have our privacy here and we like it here. It is spacious and comfortable. We interact better here and we always do what we are told. The computers and the computer room helps us learn a lot and we need to use these sources to learn, but the regular classroom is where we learn more. It's where we want to be with our teachers and our friends.

A large majority of students and teachers, however, indicated that levels of cooperation were much higher in the computer area. Cooperation between students and teachers increased in the computer area. As M5TA explained, "I find the interactions in the computer lab are more on a positive note. I don't get the friction in the computer lab that I usually get in the classroom. . ." Students concurred, as F4JB wrote. "In the computer room with the teacher I get along pretty good but in the regular class I talk back and don't do my work. In regular classroom with students I talk, ignores the teacher etc." M3JC stated a possible reason for this behaviour:

I feel that we have more freedom in the computer room. I feel that way because when students need help in the computer room the teachers speak or help the student individually. But when we are in a regular classroom the teacher speaks out loudly. When we get taught by the teacher speaking out loudly we don't learn as much because the students don't pay attention to the teacher. When they speak to them individually the student got to pay attention.

Increased individual attention given by teachers to students in the computer area led to increased comradery, as noted by F4SDE:

In regular classes our teacher is found at her desk doing work but at the computer room she is sitting with us. That makes me feel comfortable because she seems like a student sitting with us and not like our teacher.

The teacher-learner relationship was, at times, found to be reversed in the computer area. Teachers became the learners and students became the teachers. As one of the students, F3SF, noted, "We have had to offer much advise to teachers on how to operate computers. With a teacher/student or student/student relationship the environment is much more educational with computers than it is in a regular classroom."

The data indicated that many teachers enjoyed and welcomed this role reversal as was exemplified in the following quotations:

F5TC: I think it wouldn't hurt if the kids educated the teachers because I have learned just as much from the kids that I have from picking up things on my own as I had from people who actually came in from board office and gave us an in-service.

F5TF: I am very comfortable with expressing the fact that I don't know something or I would like to know something. I've even gone to some of my grade twelve students and said, "You know, sometime after school you should show me how to do that." And they'll sing out to me in the nighttime and show me how to do whatever. So, it's kind of like cooperative learning with the teacher being the learner as well.

Student to student cooperation was also evident in the computer area. Students assisted each other mainly in technical, troubleshooting roles. As F5JB wrote, "In the computer room I help other people by telling them where to go for the Internet address or some other stuff." Some students believed that classmates were more talkative in the computer area. F4JDE explained, "I would still recommend the computer room because the temperature is fine and everyone helps each other there. In the classroom my classmates seem to be too shy to speak or scared to help someone else." Even though students received assistance from their peers, they were not observed to have asked for this assistance. Students helped their fellow students without assistance being actively sought.

While student to student cooperation in the computer area was evident, the extent to which students would give assistance beyond their own computer was limited.

Students' advice to others was observed to have been limited to partners using the same

computer as they were, or the one directly next to them. Students rarely offered assistance to those students who sat more than two to three computers in distance away from their own computer. M5TB noticed this pattern:

The interactions among students also seem to change between the regular classroom and the computer room. The regular classroom is more open to discussion between students even if they are across the room. In the computer room the students will usually only talk to their immediate neighbours and will not talk to someone more than a couple of computers away.

Peer interaction was not limited to students. Given the open nature of the computer area, more than one teacher was often available to provide technical assistance. Teachers with technical expertise, when available, assisted other teachers. M5TA's comments to M6TDE, during one observation, highlighted this point. "If you weren't here today I would have been in trouble." Students asked for assistance from the teacher with the most technical expertise even if this person was not their homeroom teacher.

While this study concentrated on social interactions between people, computers also provided a social element. Computers were personified on a number of occasions. While talking to her class, F5TC described computers as being capable of thought, "Be very careful with your spelling. The computer may think that an improperly spelled word is a glitch." An exchange between M5TA and one of his students exemplified the passing of responsibility to the computer. M6SA: "Sir, it's telling me to do something." M5TA: "No sirs. Do whatever it tells you to do." Students and teachers often cooperated with computers as if the machines were living entities. As F2SC stated, "A computer is almost like another person."

Competition

In the regular classrooms, competition over the computer(s) was evident.

Teachers implemented a schedule for computer use in a number of classes, as F6SB wrote:

When we get in class we wait 'til someone is done playing with the computers. We have two computers in our class so two people can go on. When we get time to go on the computers we take turns and we'd be about five minutes on at a time. Our teacher splits us up into twos so that we don't have to argue about it when it is our day.

Despite the schedule, students still tried to take advantage of the times when somebody else was using the computer(s), as F4SB commented:

I get along fine with my classmates when we're all in the computer room but when it's my turn to use the computer in the class and people are always asking to try, they start to get on my nerves. When I say no they get mad. I really don't care though because they don't let me try when it's their turn so I don't have to let them try.

While the computer area was predominantly viewed as a cooperative place, it was also observed to be quite competitive at times. In classes with larger enrolments, students often ran into the computer area at the beginning of class and sat in front of the computers that they perceived as the best. Certain students, such as M4SDE, wished that there were more computers in the school to prevent this competition, "Everybody in school should have a computer because people always fight over the computers and you can't do any work." M1SF agreed, "Everyone is fighting over the computers cause you got to do work on them and there's not enough to go around."

Students did not want to share computers. Certain students were observed trying to fix computers with serious technical problems rather than having shared a computer

with a partner. Group cooperation at a single computer was often due to necessity instead of altruism. M6TDE commented on this forced grouping:

So, they're forced to cooperate by virtue of the fact that there's only one box per two people or something like that. So, I think the computer environment, it forces students to be a little more cooperative than maybe what they normally would be in a regular classroom.

M6TDE also believed that cooperation within groups would possibly decrease if every student had their own computer:

I think if every student had individual machines, I think cooperation would probably go down because again there's something about the technology, with the media, that's so captivating that they would be sucked into that box and maybe they would get so absorbed in it that they would probably lose sight of cooperating or sharing. Now I'm not saying that it would disappear. What I'm saying is that it's not always a bad thing that you have to share a computer. It forces the students to cooperate and share the resource. If every student had a separate machine, I think maybe things would become too individualistic and maybe wouldn't be as much cooperation.

This point was exemplified in one observation session in which a small number of students had access to the whole computer area. Despite being grouped into pairs by their teachers for the purposes of their assignment, the students chose to work on separate computers. With no competition over resources, students worked individually at a computer and did not group together as the teacher suggested that they should.

Summary and Discussion of General Patterns of Social Interaction: Cooperation and Competition

Two general patterns of social interaction, cooperation and competition, were revealed in this study. The data indicated that levels of cooperation were much higher in the computer area. Cooperation between students and students, students and teachers, and teachers and teachers increased in the computer area. Students cooperated with other students in troubleshooting roles in the computer area. However, the extent to which students would give assistance beyond their own computer was normally limited to partners using the same computer as they were, or the one directly next to them. Teachers reported that they had fewer discipline problems in the computer area than in the regular classrooms. Students took the role of teachers and provided technical assistance and tutoring without being prompted by the teachers to do so, as was consistent with Ringstaff et al.'s (1994) study. As well, teachers cooperated with other teachers. Those with technical expertise, when available, often assisted other teachers. Furthermore, computers were personified. Computers were viewed as capable of giving assistance and telling students and teachers what to do, as would another person.

These findings supported Vygotsky's social constructivist theory in which cognitive growth occurred in the resolution of cognitive conflicts from interaction (Clements & Nastasi, 1988). In classrooms where computers were used extensively, in this case study, cooperative social interactions prevailed when students and teachers sought answers to specific problems from other students, teachers, and computers. In the

computer area, more capable others allowed students and teachers to reach the zone of proximal development, the region beyond an individual's reach when operating alone but capable of being mastered with outside help.

While the data indicated that the computer area was more cooperative than the regular classrooms, the computer area was also much more competitive than the regular classrooms. This observation contradicted Smith and Zimmerman's (as cited in Bracey, 1988) findings that the regular classrooms were more competitive. At the beginning of each computer area lesson, students competed for the computers that they perceived as being the best. Students cooperated as they assisted other students with technical problems but did not share their computers with others unless told to do so by the teacher. In situations where students were grouped into pairs for an assignment, and there was an abundance of available computers, students chose to work on separate computers despite being paired with other students by their teacher. Therefore, friction over control of the machines, as indicated by Schofield (1997), was evident in this study. However, other concerns were not revealed, such as: the fear that computers deprived students of social interactions thereby leaving them friendless and isolated (Fish & Feldmann, 1990); the computer having functioned as a place to hide from difficult social interactions (Collis, Knezek, Lai, et al., 1996); and the diminished role of the teacher (Fish & Feldmann, 1990; Nastasi & Clements, 1993).

Analysis of the two general patterns of social interaction, cooperation and competition, revealed a paradox. As Schofield (1997) summarized, and the data in this

study suggested, interactions of a cooperative nature increased in classrooms where computers were used extensively; however, competition over resources was also quite prevalent. It was a contradiction for cooperation and competition to have existed simultaneously in classrooms where computers were used extensively. However, a consideration of the manner in which these two opposite, general patterns of social interaction coincided suggested how this paradox could have existed.

Overall, classrooms where computers were used extensively were cooperative in nature. There was less teacher-student friction; more individual, teacher attention for students; students helped students, as well as their teachers; teachers helped other teachers; and computers were personified as assistants. All of these cooperative social interactions were based on the underlying premise that somebody was in need of assistance. People helped others who required help. Conversely, competition was present because there were too few computers for the number of students present. Although students competed for computers that they perceived as being the best, they still provided assistance to other students once possession of their own computer was secured. Therefore, cooperation and competition existed simultaneously in a single period. Students cooperated with others after they had competed for a computer.

While cooperating and competing existed simultaneously, sharing and competing did not. One did not share a computer and try to secure a computer for their sole utilization, at the same time, which would have been a contradiction. Sharing a computer could be viewed as a part of cooperation. In this study, however, cooperation involved

many more aspects than sharing a computer. Thus as the data suggested, and was evidenced in Schofield's (1997) review of the literature, it was possible for competitive and cooperative patterns of social interaction, excluding sharing, to have existed in classrooms where computers were used extensively.

The emphasis on peer interaction in the computer area had implications for education in this predominantly Inuit school. From the data, while there was competition for computers, the computer area was generally described as a place where there was a great deal of peer exchange, cooperation, and flexibility. Students and teachers adapted to new challenges and reversed teacher-learner relationships. Similarly, with regard to Inuit social interactions, Erik-Brophy and Crago (1994) found that the facilitation of peer exchanges was one of the most important roles for a teacher in the Inuit classroom and that cooperation was an important Inuit value. As well, Lange (1977) listed Inuit social interactions as having included flexibility and creative actions. Therefore, the data in this study indicated that the interactions observed when computers were being utilized extensively were consistent with those described in the research literature as having been characteristic of Inuit social interactions in general.

In reference to cultural minority and low income children in the United States, Mehan (1993) revealed that the organization of discourse in the homes of minority youth was unlike that found in the school environment. According to Mehan (1993), regular classroom lessons were usually organized into a three-part sequence which included a teacher's initiation act such as a question, a student's reply, and a teacher's evaluation of

the reply. This regular classroom sequence promoted teacher control of classroom discourse and tested knowledge rather than sought new information. Mehan (1993) stated that the source of school difficulties, “. . . is to be found in the relationship between the social organization of the family and the social organization of the school” (p. 98).

The organization of discourse, and subsequent social interactions, when computers were used extensively in this study, however, did not seem to follow the regular pattern of classroom organization as described by Mehan (1993). Activities in the computer area often produced rather than tested knowledge and were grounded in peer interaction rather than teacher control. Such interaction was analogous to the facilitation of peer exchanges in Inuit classrooms as indicated by Erik-Brophy and Crago (1994). If social interactions in the computer area were similar to those perceived as having been indicative of the Inuit, it followed that computer-related activities in this study could have been a means of addressing what McAlpine and Taylor (1993) referred to as the discontinuous nature of interactions required of the aboriginal child in school as opposed to those interactions learned in the home and community.

New computer technology could be utilized as a means of bridging the gap to traditional Inuit social interactions and adapting to Inuit society in a reciprocating manner to that described by Crago (1992) in which Inuit caregivers changed their interactions to conform to contemporary schooling. Therefore, the extensive use of computers could have possibly been utilized to decrease the significant adjustment in social interactions that Inuit students have had to make in schools as they have recently existed.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to examine the nature of social interaction patterns that emerged where there was a predominance of Inuit learners and computers were used extensively. The school in this case study investigation was located in a predominantly Inuit community in coastal, northern Labrador, Canada.

Qualitative data collection procedures in the forms of classroom observations, semi-structured interviews, and document analysis were utilized to gather data from teachers and students. Observations were carried out in six, 60 minute observation sessions in each of five purposively selected high school classes: three sessions each in which computers were used extensively and three sessions each in which they were not used extensively. In total, observations in 15 classes where computers were used extensively in the school's main computer area were compared to 15 regular classroom sessions where computers were not used extensively. All teachers and a sample of randomly selected students were each interviewed over two, approximately 30 minute sessions. Interviews were audio recorded and transcribed. As well, document analysis was used to investigate journals that were specifically requested by the researcher. The journals took approximately 30 minutes to complete and dealt with elements of social interaction in settings where computers were and were not used extensively. All data were coded and analyzed.

Two sets of variables influenced social interaction patterns, those classified by Taha and Caldwell (1993) that formed the basis for the initial research questions, as well as additional variables found by the researcher in this study. These were all combined to reveal two general patterns of social interaction: cooperation and competition.

Conclusions

This study sought to collect and analyze data to answer a number of questions which queried social interaction patterns in predominantly Inuit classrooms where computers were used extensively. Questions numbered one through five were posed in relation to Taha and Caldwell's (1993) description of variables which were found to influence the degree of social interaction. The following conclusions were based on these research questions.

The first research question related to how situational determinants of the organizational environment, such as rules and regulations, influenced social interaction patterns. The data provided evidence that the new school was viewed by students as more regulated than the old school. In the new school's computer area, more so than in the regular classrooms, the normal pattern of classroom discourse was subverted. Students were permitted to respond to questions without raising their hands. Students functioned in collaboration with one another and assisted each other in technical and subject-related problem solving. This more peer-directed, less regulated, structure of the computer area was more consistent with the organization of documented Inuit classroom discourse.

The second research question related to how group environment characteristics, such as group size, social norms, and leadership, influenced social interaction patterns. The data provided no evidence to suggest that grouping arrangements existed which separated Inuit and non-Inuit students. As a group, students were perceived by teachers as quiet. As well, students did not often volunteer for leadership roles. In the regular classrooms, students grouped together according to friendships, participation in clubs, and along gender lines. Only when the group size was small and there were many computers, perceived as good by the students, to choose from were similar grouping arrangements observed in the computer area. Competition for resources, when there were many students in the computer area, resulted in seating arrangements that were mixed. While there was a great deal of intergroup interaction in the computer area between individuals who would not normally interact in the regular classrooms, the data indicated that this interaction was due to chance because students quickly seated themselves in front of computers with little regard for who was sitting next to them. The scarcity of computers in the computer area necessitated pairing or grouping arrangements.

The third research question related to how task characteristics, such as ambiguity, structure, and duration, influenced social interaction patterns. The data indicated that task ambiguity did not influence social interactions. Tasks were structured and clearly described. However, in the computer area, it was found that computers were occupiers of free time as students browsed the Internet and played with multimedia applications once their work was completed. Teachers did not prepare extra tasks, as they did in the regular

classroom, for those students who finished their assignments before the rest of their classmates.

The fourth research question related to how the technology of the medium, such as ease of use and speed of access, influenced social interaction patterns. The researcher interpreted technology of the medium to refer to technological concerns. The data suggested that technological concerns influenced social interaction patterns in the computer area to a considerable extent. Problems associated with printing, getting online, and using certain types of software resulted in students and teachers who sought and gave more assistance when problems occurred than when they did not. Many more interactions occurred when students and teachers moved to other people and sought assistance. However, not all of these interactions were positive. Many students were frustrated with technological problems, as were certain teachers who worried about unmet course objectives due to downtime and were therefore deterred from using the computer area.

The fifth research question related to how individual characteristics, such as personality types, influenced social interaction patterns. The data provided evidence to suggest that individual characteristics of students were varied. Most individual students were viewed by teachers as helpful. Teachers were viewed by students and other teachers as helpful. All teachers in this study had ten or less years of teaching experience but they differed in many areas including computer experience and teaching style. The data indicated that the less computer experience that a teacher possessed, the more that social interactions were influenced by technological problems in the computer area, and the less

likely the teacher was to subsequently bring their class into the computer area.

Aside from these variables, however, this study revealed a number of other variables which did not fit into the aforementioned categories. Classroom layout, movement, time, and terminology were variables found by the researcher which influenced social interactions in this study.

The data indicated that the classroom layout influenced social interactions in the regular classrooms and the computer area. In some regular classrooms, the classroom computer was placed in an area near or on the teacher's desk. Students in these classes believed that the computer was the property of the teacher and, therefore, stayed away from it. The two room layout of the computer area, which consisted of the computer room and the library, had many negative implications. This layout limited the amount of communication and supervision that teachers had with students who were in the room in which they were not currently present. Teachers had to teach the same lesson twice, once each to students in both rooms. Students were frustrated by not always having their teacher present in the same room to help them. Social interactions were also influenced in this area because students believed that they were supposed to be quiet in the library.

With regard to the movement variable, the data suggested that increased movement resulted in a larger number of social interactions. Students were observed to have moved more frequently in the computer area than in the regular classrooms, especially when there were technical problems. Students moved to get assistance or to go to computers that operated more effectively. Lessons in the regular classroom, dominated

by lecture, reading, and writing, resulted in very little mobility. However, the teaching method did not matter as much in the computer area because teachers were consistent in their roles as question answerers and technical troubleshooters.

The data indicated that time was a minor variable which influenced the degree of social interaction. Students' interactions were less frequent and emphatic early in the day and at the beginning of the week. Students were more energetic as the day and week progressed. Students also seemed to have more social interactions on special days such as the grand opening of the new school and the drama festival. No differences were observed with regard to the manner in which time influenced social interactions in the computer area versus the regular classroom.

Local terminology influenced communication, an element of social interaction, because specific words often had local meanings. Words from the Inuktitut language and Newfoundland communities, along with nonverbal communication, such as communicating with one's eyes, led to confusing interactions at times. Less adjustment was required by students and teachers when the teacher was familiar with local words and expressions. This was evident in the regular classrooms as well as in the computer area.

The sixth research question was which patterns of social interaction were present in classrooms where computers were used extensively in a predominantly Inuit school? In response to this question, the data provided evidence that the two sets of variables which influenced social interaction patterns, those classified by Taha and Caldwell (1993) which formed the basis for the initial research questions, as well as additional variables found in

this study, combined to reveal two general patterns of social interaction: cooperation and competition (see Figure 9).

The data indicated that classrooms where computers were used extensively were cooperative in nature. There was less teacher-student friction; more individual, teacher attention for students; students helped students, as well as their teachers; teachers helped other teachers; and computers were personified as assistants. However, the sharing of computers was found to be due to necessity. Competition was present because there were too few computers for the number of students present. Therefore, competition and cooperation existed simultaneously within the same class period. As students entered the computer area, they competed for the computer that they perceived as the best. After this competition, students cooperated with each other and their teachers to find solutions to technical and subject-related problems.

Analysis and discussion of the results of this study supported the research literature in a number of areas, which included the findings of: Haugland and Wright (1997) that there were as many social interactions around the computer as in other activities; Kern (1995) that the normal pattern of classroom discourse, which included a teacher-initiated topic, student reply, and teacher evaluation of the reply was subverted in classrooms where computers were used; Eriks-Brophy and Crago (1993) that the organization of Inuit classroom discourse shifted the focus of classroom interactions to the peer group and away from individual group members; Ben-Dor (1977) that a great deal of intergroup contact occurred between Inuit and non-Inuit students within the adolescent population;

Maddux et al. (1997) that the teacher was the critical factor in determining the degree to which human interaction would prevail in classrooms where computers were utilized; Smith and Zimmerman (as cited in Bracey, 1988) that students felt that they received more individual attention in the computer area than in regular classrooms; Chen and Paisley (1985) that new social relationships formed as a result of children having turned to each other for help with computer work; McAlpine and Taylor (1993) that the interactions required of the aboriginal child in the classroom as opposed to the interactions required of the aboriginal child in the home and community culture were discontinuous; Ringstaff et al. (1994) that students took the roles of teachers without being prompted by the teachers to do so; and Schofield (1997) that there was friction over control of the machines, that the scarcity of computers necessitated pairing or grouping arrangements, and that interactions of a cooperative nature increased in classrooms where computers were used extensively.

Analysis and discussion of the results of this study did not support the findings of: Fish and Feldmann (1990) that computers would deprive students of social interaction; Smith and Zimmerman (as cited in Bracey, 1988) that regular classrooms were more competitive than computer rooms; Collis, Knezek, Lai, et al., (1996) that computers functioned as a place to hide from difficult social interactions; and Fish and Feldmann (1990), as well as Nastasi and Clements (1993) that the role of the teacher was diminished in classrooms where computers were used extensively.

Variables known to influence the degree of social interaction:

Situational determinants of the organizational environment
 -Enforcement of rules in new school
 -Variations in classroom rules
 -Specific computer rules

Group environment characteristics
 -Quiet demeanor of students
 -Friendship groupings
 -Club divisions
 -Gender separation

Task characteristics
 -Computers as entertainment
 -Computers as occupiers of free time

Technology of the medium
 -Impact of technological problems

Individual characteristics
 -Students perceived as mainly helpful
 -Outside of school relationships
 -Range of teacher experience

Variables found to influence the degree of social interaction:

Classroom layout
 -Variable seating arrangements
 -Ownership of classroom computer
 -Computer area as school resource
 -Physical division of computer area

Movement
 -Increased in computer area
 -Influenced by subject, teaching method, and technological problems

Time
 -Energy levels influenced by time of day and week, and special days

Terminology
 -Unique, local terminology
 -Use of nonverbal communication

Degree of Social Interaction

(Two general patterns of social interaction)

Cooperation
 -Less teacher-student friction
 -More individual, teacher attention for students
 -Students helped students
 -Reversed teacher-learner relationship
 -Teachers helped teachers
 -Computers personified

Competition
 -Friction over control of computers
 -Sharing due to necessity

Figure 9. Social interaction model in a predominantly Inuit school where computers were used extensively.

Recommendations

Based on the social interaction patterns and associated variables which were analyzed in this study, the following recommendations are proposed in order to give stakeholders in education an opportunity to facilitate more effective computer utilization in predominantly Inuit schools. However, because this study involved one school, the reader is cautioned against making broad generalizations from the findings. Therefore, based on the findings of this study, it is recommended that further research be conducted into a number of areas.

1. The data indicated that the number of movements and social interactions was related to the teaching method and type of subject. Fewer movements and social interactions were observed during classes taught by lecture. A large number of movements and social interactions were observed in science and art classes. It is therefore recommended that further inquiry be conducted into the relationships between teaching method and social interaction, as well as between school subject and social interaction.
2. The data indicated that technological concerns influenced social interaction patterns in the computer area. Problems associated with printing, getting online, and using certain types of software resulted in frustration, as well students and teachers moved to other people to seek remedies for technological problems. These movements and social interactions may not

have been evident without the large number of computer-related problems that existed in the computer area. It is therefore recommended that further inquiry be conducted into social interaction patterns in school settings where technological problems are less frequent.

3. The data indicated that the unique two room layout of the computer area limited the amount of communication and supervision that a teacher had with students who were in the room in which that teacher was not currently present. Teachers had to teach the same lesson twice, once each to students in both rooms. The layout also influenced the nature of communicative interactions because students indicated that they were supposed to be quiet in the library. These interactions may have differed if the computer area was a one room setting which was separated from the library, school resource area. It is therefore recommended that further inquiry be conducted into social interaction patterns that exist in schools where the main concentration of computers is contained within a single room separated from other school resource areas such as libraries.
4. The data indicated that dissimilar communication patterns between students and teachers in this study led to confusing teacher-student interactions at times. Teachers in this case study were not raised in the same community and culture as were their students. The social interaction patterns indicated in the findings may have been different if both teachers and students were

of Inuit ancestry. It is therefore recommended that further inquiry be conducted into social interactions between Inuit teachers and Inuit students in classrooms where computers are used extensively.

5. The data indicated that intergroup interaction and competitive interactions, such as friction over control of the computers, were common features of the computer area. Competition and the subsequent sharing of computers were necessitated by a scarcity of resources in relation to the number of students present in the classrooms. Intergroup interaction and competition may not have been as prevalent in this study if there were enough working computers for all students to utilize. It is therefore recommended that further inquiry be conducted into social interaction patterns which exist in settings where students have a sufficient number of computers to avoid sharing due to necessity.
6. The data indicated that competition and cooperation existed simultaneously within the same classrooms where computers were used extensively. As students entered the computer area, they competed for computers that they perceived as the best. After this competition, increased teacher-student, student-student, and teacher-teacher cooperation, as well as reversed teacher-student learning relationships were evident. However, contemporary classrooms often extend beyond the physical boundaries of the school. It is therefore recommended that further inquiry be conducted

into social interaction patterns that exist between students and teachers who interact electronically via the Internet with other students and teachers outside of their classroom environment.

7. Despite the current emphasis on Native students speaking their traditional languages, a large part of social interaction, the data indicated that students did not use the Inuktitut language when utilizing computers. Inuktitut translations for computer terminology were not evident during the study. It is therefore recommended that further inquiry be conducted by Inuit stakeholders in education to develop computer terminology to incorporate into the Inuktitut language and, conversely, for software developers to incorporate Inuktitut terminology into computer software.

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Appendices

Appendix A
Consent Forms

Box 7
(Name of Community). Labrador, NF
(Community's Postal Code)

September 1, 1998

Dr. Timothy Seifert
Chairperson: Ethics Review Committee
Faculty of Education
Memorial University of Newfoundland
St. John's, NF
A1B 3X8

Dear Dr. Seifert:

Subject: Request for Ethics Committee Approval

My name is Duane Smith. I am currently working on the research component of my thesis as part of the requirements for the degree of Master of Education in Teaching and Learning at Memorial University of Newfoundland. The purpose of my research is to determine social interaction patterns in classrooms where computers are used extensively. It is intended to be a qualitative case study in a predominantly Inuit school.

I have completed my thesis proposal in accordance with the *Faculty of Education's Handbook for Graduate Students*. My thesis supervisor, Dr. George Haché, has approved this enclosed proposal. Given the emergent nature of this qualitative study, interview questions cannot be provided at this time.

If you would like additional information or have any questions, please feel free to call me at 933-3672 or 548-2710. You can also E-mail me at dcsmith@calvin.stemnet.nf.ca.

I thank you for your consideration of this request and look forward to your response.

Sincerely,

Duane Smith

Duane Smith
 Box 7
 (Name of Community), Labrador
 (Community's Postal Code)

January 6, 1999

Mr. Calvin Patey
 District Director: Labrador School District
 P.O. Box 1810, Station 'B'
 Happy Valley-Goose Bay, Labrador
 A0P 1E0

Dear Mr. Patey:

My name is Duane Smith. As you already know, I have been employed as a teacher in (name of community), Labrador since 1995. I am currently working on the research component of my thesis as part of the requirements for the degree of Master of Education in Teaching and Learning at Memorial University of Newfoundland. The purpose of my research is to determine social interaction patterns in classrooms where computers are used extensively. It is intended to be a qualitative case study in a predominantly Inuit school.

My purpose in writing you today is to request your permission to conduct research at (name of school). If your approval is given, a sample of the school's teachers and students will be selected to participate in this study. A letter given to participants will outline background information regarding the study, procedures, confidentiality information and will include a *Consent Form* that must be signed by teachers, students, and parents/guardians. The letter will also notify them that prior approval to conduct this study has been approved by the Faculty of Education Ethics Committee and permission to conduct the study in this district has been obtained from you.

Classroom observation, personal interviews, and document analysis are the main methods of data collection. Participation will include five, fifty minute observation sessions; two, approximately thirty minute interviews of all teachers and purposively selected students; and writing of a brief, semi-structured journal, which should take approximately thirty minutes to complete. Recording devices include unconcealed audiotape, videotape, and field notes. Participants have the right to call for erasure of these recordings once their participation is complete. Recordings will not be disclosed to persons other than the immediate researcher and research assistant, who will be briefed by the researcher on the duty to observe the rules of anonymity and confidentiality. Participants are at no risk of any kind, at any time, during this study. All information gathered in this study is strictly confidential. Participant anonymity will be preserved and will only be identified by use of a pseudonym and/or number code. Participation is completely voluntary and the participant has the right to withdraw from this study without prejudice at any time and/or refrain from answering any

questions which she prefers to omit. A copy of the research results will be made available to you, the school principal, the Labrador Inuit Association, teachers, and parents, upon request, as funding permits.

This study has received the approval of the Education Faculty and Memorial University by way of the Faculty of Education's Ethics Review Committee. If you agree to allow your district's teachers and students to participate in this study, please read and sign the *District Consent Form* attached below. Please detach the form and return it at your earliest possible convenience in the stamped envelope provided.

If you would like additional confirmation or information about this study, please contact me at 933-3672 or my supervisor, Dr. George Haché, Faculty of Education, Memorial University of Newfoundland at 737-7630. If at any time you wish to communicate with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402.

I thank you for your consideration of this request. Should you desire a copy of the results of this study, one will be forwarded to you upon completion.

Sincerely,

Duane Smith
B.P.E., B.Ed.

District Consent Form

I, _____, on behalf of the Labrador School District, declare that I understand the study outlined briefly above and hereunder signify my willingness to permit teachers and students at (name of school) to voluntarily participate in the study as described.

I understand that I have the right to refuse such permission to participate in the study or to withdraw our school from the study at any time without prejudice of any kind. It is also understood that teachers and students may refuse to participate without prejudice of any kind. I understand and agree that any information collected as a result of this study and the identity of the participants who gave it will remain confidential. It is also understood that the results of this study will be available, upon request, at the conclusion of the study to teachers who participated, the school principal, parents, the Labrador Inuit Association, and the school district, as funding permits.

Date: _____, 199__

Signature: _____

Do you desire a copy of the results of this study? _____

Duane Smith
Box 7
(Name of Community), Labrador
(Community's Postal Code)

January 6, 1999

Mr. Rick Plowman
Principal: (Name of School)
Box 105
(Name of Community), Labrador
(Community's Postal Code)

Dear Mr. Plowman:

My name is Duane Smith. As you already know, I have been employed as a teacher in (name of community), Labrador since 1995. I am currently working on the research component of my thesis as part of the requirements for the degree of Master of Education in Teaching and Learning at Memorial University of Newfoundland. The purpose of my research is to determine social interaction patterns in classrooms where computers are used extensively. It is intended to be a qualitative case study in a predominantly Inuit school.

My purpose in writing you today is to request your permission to conduct research at (name of school). If your approval is given, a sample of the school's teachers and students will be selected to participate in this study. A letter given to participants will outline background information regarding the study, procedures, confidentiality information and will include a *Consent Form* that must be signed by teachers, students, and parents/guardians. The form will also notify them that prior approval to conduct this study has been approved by the Faculty of Education Ethics Committee and permission to conduct the study in this school has been obtained from you.

Classroom observation, personal interviews, and document analysis are the main methods of data collection. Participation will include five, fifty minute observation sessions; two, approximately thirty minute interviews of all teachers and purposively selected students; and writing of a brief, semi-structured journal, which should take approximately thirty minutes to complete. Recording devices include unconcealed audiotape, videotape, and field notes. Participants have the right to call for erasure of these recordings once their participation is complete. Recordings will not be disclosed to persons other than the immediate researcher and research assistant, who will be briefed by the researcher on the duty to observe the rules of anonymity and confidentiality. Participants are at no risk of any kind, at any time, during this study. All information gathered in this study is strictly confidential. Participant anonymity will be preserved and will only be identified by use of a pseudonym and/or number code. Participation is completely voluntary and the participant has the

right to withdraw from this study without prejudice at any time and/or refrain from answering any question which she prefers to omit. A copy of the research results will be made available to you, the school district, the Labrador Inuit Association, teachers, and parents, upon request, as funding permits.

This study has received the approval of the Education Faculty and Memorial University by way of the Faculty of Education's Ethics Review Committee. If you agree to allow your school's teachers and students to participate in this study, please read and sign the *School Consent Form* attached below. Please detach the form and return it at your earliest possible convenience.

If you would like additional confirmation or information about this study, please contact me at 933-3672 or my supervisor, Dr. George Haché, Faculty of Education, Memorial University of Newfoundland at 737-7630. If at any time you wish to communicate with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402.

I thank you for your consideration of this request. Should you desire a copy of the results of this study, one will be forwarded to you upon completion.

Sincerely,

Duane Smith
B.P.E., B.Ed.

School Consent Form

I, _____, on behalf of (name of school), declare that I understand the study outlined briefly above and hereunder signify my willingness to permit teachers and students at the aforementioned school to voluntarily participate in the study as described.

I understand that I have the right to refuse such permission to participate in the study or to withdraw our school from the study at any time without prejudice of any kind. It is also understood that teachers and students may refuse to participate without prejudice of any kind. I understand and agree that any information collected as a result of this study and the identity of the participants who gave it will remain confidential. It is also understood that the results of this study will be available, upon request, at the conclusion of the study to myself, teachers who participated, parents, the Labrador Inuit Association, and the school district, as funding permits.

Date: _____, 199__ **Signature:** _____

Do you desire a copy of the results of this study? _____

Duane Smith
 Box 7
 (Name of Community), Labrador
 (Community's Postal Code)

January 6, 1999

Mr. Tim McNeill
 Education Advisor
 Labrador Inuit Association (LIA)
 Happy Valley-Goose Bay, Labrador, NF
 A0P 1E0

Dear Mr. McNeill:

My name is Duane Smith. I have been employed as a teacher in (name of community), Labrador since 1995. I am currently working on the research component of my thesis as part of the requirements for the degree of Master of Education in Teaching and Learning at Memorial University of Newfoundland. The purpose of my research is to determine social interaction patterns in classrooms where computers are used extensively. It is intended to be a qualitative case study in a predominantly Inuit school.

My purpose in writing you today is to request your permission to conduct research within the LIA Claim Area at (name of school). If your approval is given, a sample of the school's teachers and students will be selected to participate in this study. A letter given to participants will outline background information regarding the study, procedures, confidentiality information and will include a *Consent Form* that must be signed by teachers, students, and parents/guardians. The form will also notify them that prior approval to conduct this study has been approved by the Faculty of Education Ethics Committee and that permission to conduct the study in this area has been obtained from you.

Classroom observations, interviews, and document analysis are the main methods of data collection. Participation will include five, fifty minute observation sessions; two, approximately thirty minute interviews of all teachers and purposively selected students; and writing of a brief, semi-structured journal, which should take approximately thirty minutes to complete. Recording devices include unconcealed audiotape, videotape, and field notes. Participants have the right to call for erasure of these recordings once their participation is complete. Recordings will not be disclosed to persons other than the immediate researcher and research assistant, who will be briefed by the researcher on the duty to observe the rules of anonymity and confidentiality. Participants are at no risk of any kind, at any time, during this study. All information gathered in this study is strictly confidential. Participant anonymity will be preserved and will only be identified by use of a pseudonym and/or number code. Participation is completely voluntary and the participant has the right to withdraw from this study without prejudice at any time and/or refrain from answering any question which she prefers

to omit. A copy of the research results will be made available to you, the school principal, the Labrador School District, teachers, and parents, upon request, as funding permits.

This study has received the approval of the Education Faculty and Memorial University by way of the Faculty of Education's Ethics Review Committee. If you agree to allow this research to proceed in the LIA Claim Area, please read and sign the *Labrador Inuit Association Consent Form* attached below. Please detach the form and return it at your earliest possible convenience in the stamped envelope provided.

If you would like additional confirmation or information about this study, please contact me at 933-3672 or my supervisor, Dr. George Haché, Faculty of Education, Memorial University of Newfoundland at 737-7630. If at any time you wish to communicate with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402.

I thank you for your consideration of this request. Should you desire a copy of the results of this study, one will be forwarded to you upon completion of the study.

Sincerely,

Duane Smith
B.P.E., B.Ed.

Labrador Inuit Association Consent Form

I, _____, on behalf of the Labrador Inuit Association, declare that I understand the study outlined briefly above and hereunder signify my willingness to permit teachers and students at (name of school) to voluntarily participate in the study as described.

I understand that I have the right to refuse such permission to participate in the study or to withdraw the school from the study at any time without prejudice of any kind. It is also understood that the teachers and students may refuse to participate without prejudice of any kind. I understand and agree that any information collected as a result of this study and the identity of the participants who gave it will remain confidential. It is also understood that the results of this study will be available, upon request, at the conclusion of the study to the LIA, teachers who participated, parents, the school principal, and the school district, as funding permits.

Date: _____, 199__ **Signature:** _____

Do you desire a copy of the results of this study? _____

Duane Smith
Box 7
(Name of Community), Labrador
(Community's Postal Code)

March 16, 1999

Dear Colleague:

My name is Duane Smith. As you already know, I have been employed as a teacher in (name of community), Labrador since 1995. I am currently working on the research component of my thesis as part of the requirements for the degree of Master of Education in Teaching and Learning at Memorial University of Newfoundland. The purpose of my research is to determine social interaction patterns in classrooms where computers are used extensively. It is intended to be a qualitative case study in a predominantly Inuit school.

Classroom observation, personal interviews, and document analysis are the main methods of data collection, all of which are non-evaluative in nature. Participation will include as many as six, sixty minute observation sessions; two, approximately thirty minute interviews of yourself and purposively selected students; and writing of a brief, semi-structured journal, which should take approximately thirty minutes to complete. Recording devices include unconcealed audiotape, videotape, and field notes. Participants have the right to call for erasure of these recordings once their participation is complete. Recordings will not be disclosed to persons other than the immediate researcher and research assistant, who will be briefed by the researcher on the duty to observe the rules of anonymity and confidentiality. Participants have the opportunity to review the text before being anonymously quoted in any article produced by the researcher. Participants are at no risk of any kind, at any time, during this study. All information gathered in this study is strictly confidential. Participant anonymity will be preserved and will only be identified by use of a pseudonym and/or number code. Participation is completely voluntary and you have the right to withdraw from this study without prejudice at any time and/or refrain from answering any question which you prefer to omit. A copy of the research results will be made available to you, the school district, the school principal, the Labrador Inuit Association, and parents, upon request, as funding permits.

This study has received the approval of the Education Faculty and Memorial University by way of the Faculty of Education's Ethics Review Committee; Mr. Calvin Patey, Director of the Labrador School District; Mr. Rick Plowman, principal of (name of school); and Mr. Tim McNeill, Education Advisor for the Labrador Inuit Association (LIA). If you agree to participate in this study, please read and sign the *Teacher Consent Form* attached to this document. Please detach the form and return it at your earliest possible convenience.

If you would like additional confirmation or information about this study, please contact me at

933-3672 or my supervisor, Dr. George Haché, Faculty of Education, Memorial University of Newfoundland at 737-7630. If at any time you wish to communicate with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402.

I thank you for your consideration of this request. Should you desire a copy of the results of this study, one will be forwarded to you upon completion.

Sincerely,

Duane Smith
B.P.E., B.Ed.

Teacher Consent Form

I, _____, declare that I understand the study outlined briefly above and hereunder signify my willingness to voluntarily participate in the study as described.

I understand that I have the right to refuse such permission to participate in the study without prejudice of any kind. I understand and agree that my identity will remain confidential. I give permission to be anonymously quoted in any research article produced after I have had the opportunity to review the text. It is also understood that the results of this study will be available, upon request, at the conclusion of the study to teachers who participated, the school district, the school principal, parents, and the Labrador Inuit Association, as funding permits.

Date: _____, 199__

Signature: _____

Do you desire a copy of the results of this study? _____

Duane Smith
Box 7
(Name of Community), Labrador
(Community's Postal Code)

March 16, 1999

Dear Parent/Guardian:

My name is Duane Smith. As you may already know, I have been a teacher at (name of school) since 1995. I am also working on the research component of a Master of Education degree at Memorial University. Over the next few months, I will be investigating how students and teachers socially interact in classrooms where computers are used. I am requesting your permission for your child to take part in this study.

Your child's participation will include being observed in as many as six school periods with his or her classmates; writing a brief article which will take approximately thirty minutes; and, possibly, being interviewed for two, thirty minute periods. Your child may be audiotaped or videotaped. Participants have the right to call for erasure of these recordings once their participation is complete. Children are at no risk of any kind, at any time, during this study. Children usually enjoy taking part in such computer activities. Your child will be asked to participate and it will be made very clear that he or she can stop participating at any time.

All information gathered in this study is strictly confidential. At no time are individuals identified. I am interested in how students' socially interact in classrooms where computers are used and not in any child's performance. Participation is voluntary and you may withdraw your child at any time. This study has received the approval of the Faculty of Education's Ethics Review Committee; Mr. Calvin Patey, Director of the Labrador School District; Mr. Rick Plowman, principal of (name of school); and Mr. Tim McNeill, Education Advisor for the Labrador Inuit Association (LIA). The results of my study will be made available to you upon request, as funding permits.

If you agree to have your child participate in this study, please read and sign the *Parent/Guardian Consent Form* attached below. **Return one copy to your child's classroom teacher.** The other copy is for you. If you have any questions or concerns, please do not hesitate to call me at the school at 933-3815 or after hours at 933-3672. You can also call my supervisor, Dr. George Haché, at 737-7630. If at any time you wish to speak with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402.

I would appreciate it if you would return the consent form by _____.
I thank you for your time and consideration.

Sincerely,
Mr. Duane Smith

Parent/Guardian Consent Form
(*Copy #1: For you to keep)

I, _____ (parent/guardian), hereby give permission for my child,
_____, to take part in a study of how students and teachers socially
interact in classrooms where computers are used, undertaken by Duane Smith. I understand that
participation is completely voluntary and that my child and/or I can withdraw permission at any time.
All information is strictly confidential and no individual will be identified.

Date: _____, 199__

Signature: _____

-----Separate here along dotted line -----

Parent/Guardian Consent Form
(*Copy #2: To return to your child's teacher)

I, _____ (parent/guardian), hereby give permission for my child,
_____, to take part in a study of how students and teachers socially
interact in classrooms where computers are used, undertaken by Duane Smith. I understand that
participation is completely voluntary and that my child and/or I can withdraw permission at any time.
All information is strictly confidential and no individual will be identified.

Date: _____, 199__

Signature: _____

Duane Smith
 Box 7
 (Name of Community), Labrador
 (Community's Postal Code)

March 16, 1999

Naglitara Angijuk Kaugatiget.

Atiga Duane Smith. ImmaKa Kaujimaligek Kuse, ilinniatitsijiuvunga taffani (name of school) ilinniavingani 1995 vimit. SuliaKagiulla vunga Memorial Universitimi. Tagget Kaijunik kamagumavunga Kanuk soguset amma ilinniatitsijigillu pigattamangata Kagitaujannik atuligamit. Apigivunga ilitsinik soguset Kagitaujamik atutillugu kamagijaugajammagât.

Soguset sattuitutluni kamaginiattakka Kagitaujamik atutillugu ilagalluni sogusiu Katimminik, sitontiuup affaganik atullunga: immaka allât apitsutaugajattuk magguatilluni atulluga maggonik sitontiuup affaganik. Immaga allât soguset atsiliugutimmut uffalu uKala liugutimmut ilittaugajatut. Ilonnatit soguset piutsasuajut a tugiamik Kagijautannik. Sogusetapigijaulâttut pigumammagâta. ukautjausiallutik Kangatuinnak nukKagumappat nukkasok.

Takkua kamagijausimajut oKalausiuniangimagittut. Iligumavunga Kanuk soguset pigattamangata Kagitaujannik atuligamit sogusiuKatimminik ilaKattluni. Soguset pigumappat pisok, pigumangipat pigiaKangituk. Ukununga angittausimavunga taijaujut Faculty of Education's Ethics Review Committee. Mr. Calvin Patey angijuk Kasuak ilinniavinnut, Mr. Rick Plowman angijuk Kavut ilinniavimmi. amma Mr. Tim McNiell suliaKattik LIAkuni. Kaujigumaguvit Kanuk pisimammagat soguset uKautjaugajakkutit apigituaguvit kinaujaKatuappat.

Soguset pikKupat. atualauguk, atit allalugu aippangani alakkasaijaup. Atautsimik utittisillusi, aippanga tigumiasot. Kaujigiallaguma guvit phonisunguvutit uvannut nomaraga 933-3815 uffalo ainKama nomaranga 933-3672. AngajukKamma atinga Dr. George Haché nomaranga 737-7630. Uffalu Dr. Bruce Sheppard nomaranga 737-3402.

Utittigialik _____
 nakommisuak ikajugunnagavit.

AngijukKap PikKujjuk allaganga:

Uvanga _____ sogusiganik _____
 pikKujivunga. kamagijaugiamik Mr. Duane Smithimut. Kanuk piKattamangata soguset.
 ilinniatitsijingillu Kagitaujannik atulimmata. Tukisiavunga Kangatuinnak sogusiga pesok
 uffalo uvanga.

Ulluk _____ 199_ Atiga: _____

AngijukKap PikKujjuk allaganga:

Uvanga _____ sogusiganik _____
 pikKujivunga. kamagijaugiamik Mr. Duane Smithimut. Kanuk piKattamangata soguset.
 ilinniatitsijingillu Kagitaujannik atulimmata. Tukisiavunga Kangatuinnak sogusiga pesok
 uffalo uvanga.

Ulluk _____ 199_ Atiga: _____

Duane Smith
Box 7
(Name of Community), Labrador
(Community's Postal Code)

March 16, 1999

Dear Student:

My name is Duane Smith. As you already know, I am a teacher at (name of school). I am also working on the research component of a Master of Education degree at Memorial University. Over the next few months, I will be investigating how students and teachers socially interact in classrooms where computers are used.

Your participation will include being observed in as many as six school periods with your classmates; writing a brief article which will take approximately thirty minutes; and, possibly, being interviewed for two, thirty minute periods. You may be audiotaped or videotaped. You have the right to call for erasure of these recordings once your participation is complete. You are at no risk of any kind, at any time, during this study. You are free to withdraw from this study at any time without fear of penalty or prejudice.

All information gathered in this study is strictly confidential. At no time will you be identified. I am interested in how students' socially interact in classrooms where computers are used and not in your performance. This study has received the approval of the Faculty of Education's Ethics Review Committee; Mr. Calvin Patey, Director of the Labrador School District; Mr. Rick Plowman, principal of (name of school); and Mr. Tim McNeill, Education Advisor for the Labrador Inuit Association (LIA). The results of my study will be made available to you upon request, as funding permits.

If you agree to participate in this study, please read and sign the *Student Consent Form* attached below and return it to your teacher. Your parent/guardian will receive a similar form to sign and return. If you have any questions or concerns please do not hesitate to ask me in person or call me at 933-3672. You can also call my supervisor, Dr. George Haché, at 737- 7630. If at any time you wish to speak with a resource person not associated with this study, please contact Dr. Bruce Sheppard, Associate Dean of Graduate Programs and Research, at 737-3402. I thank you for your time and consideration.

Sincerely,

Mr. Duane Smith

Student Consent Form

I. _____, agree to take part in a study of how students and teachers socially interact in classrooms where computers are used undertaken by Duane Smith. I understand that participation is completely voluntary and that I can withdraw permission at any time. All information is strictly confidential and no individual will be identified.

Date: _____, 199__

Signature: _____

Appendix B

Observation Instrument

Reference #: _____

FIELD NOTES

Title Page

Title: _____
Phrase to Aid in Memory Recall

Who: _____

Date: _____

Time: _____

Place: _____

Notes Recorded On: _____ at _____
Date *Time*

Spatial Map

(Locates people, equipment, and the like in terms of geographical physical space)

(*Refer to Neuman, 1994, p.354 & Merriam, 1988, p.99)

Place

Checklist of Elements Likely to be Present in Observation				
Setting	<u>What is physical environment like?</u>	<u>What is the context?</u>	<u>What behaviour does setting permit/prevent, encourage/discourage?</u>	<u>Other:</u>
Participants	<u>Who is in the scene?</u>	<u>How many?</u>	<u>What are their roles?</u>	<u>Other:</u>
Activities & Interactions	<u>What is going on? Is there a definable sequence of activities?</u>	<u>How do people interact with the activity and with one another?</u>	<u>How are people/activities connected (from participant's and researcher's perspectives)?</u>	<u>Other:</u>
Frequency & Duration	<u>When did situation begin & how long did it last?</u>	<u>Is situation unique or recurring (if so, how frequently)?</u>	<u>What occasions give rise to it?</u>	<u>Other:</u>
Subtle Factors	<u>Informal & unplanned activities:</u>	<u>Symbolic & connotative meanings of words:</u>	<u>Nonverbal communication such as dress & physical space. As well, unobtrusive measures-e.g. physical cues:</u>	<u>What does not happen - especially if it ought to have happened?</u>

Notes (I)			
<u>Direct Observation</u> <u>(the facts-concrete details):</u>	<u>Inference</u> <u>(infer meaning on</u> <u>the facts-may or</u> <u>may not be</u> <u>correct):</u>	<u>Analytic (attempt</u> <u>to give meaning</u> <u>& induce</u> <u>theory):</u>	<u>Personal Journal</u> <u>(feelings and</u> <u>emotions):</u>

Notes (II)

Direct Observation
(the facts-concrete details):

Inference
(infer meaning on
the facts-may or
may not be
correct):

Analytic (attempt
to give meaning
& induce
theory):

Personal Journal
(feelings and
emotions):

Notes (III)

Direct Observation
(the facts-concrete details):

Inference
(infer meaning on
the facts-may or
may not be
correct):

Analytic (attempt
to give meaning
& induce
theory):

Personal Journal
(feelings and
emotions):

Notes (IV)

Direct Observation
(the facts-concrete details):

Inference
(infer meaning on
the facts-may or
may not be
correct):

Analytic (attempt
to give meaning
& induce
theory):

Personal Journal
(feelings and
emotions):

Notes (V)			
<u>Direct Observation</u> <u>(the facts-concrete details):</u>	<u>Inference</u> <u>(infer meaning on</u> <u>the facts-may or</u> <u>may not be</u> <u>correct):</u>	<u>Analytic (attempt</u> <u>to give meaning</u> <u>& induce</u> <u>theory):</u>	<u>Personal Journal</u> <u>(feelings and</u> <u>emotions):</u>

Notes (VI)			
<u>Direct Observation</u> <u>(the facts-concrete details):</u>	<u>Inference</u> <u>(infer meaning on</u> <u>the facts-may or</u> <u>may not be</u> <u>correct):</u>	<u>Analytic (attempt</u> <u>to give meaning</u> <u>& induce</u> <u>theory):</u>	<u>Personal Journal</u> <u>(feelings and</u> <u>emotions):</u>
<div style="border-left: 1px solid black; height: 100%;"></div>			

Notes (VII)

<u>Direct Observation</u> <u>(the facts-concrete details):</u>	<u>Inference</u> <u>(infer meaning on</u> <u>the facts-may or</u> <u>may not be</u> <u>correct):</u>	<u>Analytic (attempt</u> <u>to give meaning</u> <u>& induce</u> <u>theory):</u>	<u>Personal Journal</u> <u>(feelings and</u> <u>emotions):</u>
<div style="border-left: 1px solid black; height: 670px; width: 5px; margin-left: 5px;"></div>			

Notes (VIII)

Direct Observation
(the facts-concrete details):

Inference
(infer meaning on
the facts-may or
may not be
correct):

Analytic (attempt
to give meaning
& induce
theory):

Personal Journal
(feelings and
emotions):

Notes (IX)

Direct Observation
(the facts-concrete details):

Inference
(infer meaning on
the facts-may or
may not be
correct):

Analytic (attempt
to give meaning
& induce
theory):

Personal Journal
(feelings and
emotions):

Notes (X)			
<u>Direct Observation</u> <u>(the facts-concrete details):</u>	<u>Inference</u> <u>(infer meaning on</u> <u>the facts-may or</u> <u>may not be</u> <u>correct):</u>	<u>Analytic (attempt</u> <u>to give meaning</u> <u>& induce</u> <u>theory):</u>	<u>Personal Journal</u> <u>(feelings and</u> <u>emotions):</u>

**Answers to relevant *Observational Questions for Educational Settings* (I)
(Bogdan & Biklen, 1992, p.232):**

**Answers to relevant *Observational Questions for Educational Settings* (II)
(Bogdan & Biklen, 1992, p.232):**

Partial answers to *Research Questions* stated in proposal:

1. Which patterns of social interaction are present in classrooms where computers are used extensively in a predominantly Inuit school?

2. How do situational determinants of the organizational environment, such as rules and regulations, influence social interaction patterns?

3. How do group environment characteristics, such as group size, social norms, and leadership, influence social interaction patterns?

4. How do task characteristics, such as ambiguity, influence social interaction patterns?

5. How does the technology of the medium, such as ease of use and speed of access, influence social interaction patterns?

6. How do individual characteristics, such as personality types, influence social interaction patterns?

Misc. Notes

Appendix C
Interview Guide

Interview Guide

Thesis

**April/May
1999**

Duane Smith

Briefing (*To be carried out before each interview):

- ▶ ***Chat with participant during equipment setup and tape labeling with name, date, and project title to make him or her feel at ease.**
- ▶ ***Speak into mike and state:**
 - **My name.**
 - **Participant pseudonym ["I am interviewing participant 1S6" - #: student or teacher: grade].**
 - **This is the 1st / 2nd of 2 interviews.**
 - **Date.**
 - **Time.**
 - **Location ["Room 108 - Distance Education Office"].**
 - **Get participant to say something into the tape recorder - stop tape - rewind - check.**
 - **"The purpose of this interview is to explore issues dealing with how students and teachers socially interact in regular classrooms and computer classrooms. The interview should take approximately ½ hour to complete."**
 - **"Do you have any questions before we begin?"**
 - **"Remember, if I say your name during the interview it will be deleted later so nobody will know who you are."**

Student Interview Questions

First Interview:

Personal/Computer Background:

- ▶ Which grade are you in?
- ▶ Do you like computers?
- ▶ What is the best thing about computers? What is the worst thing about computers?
- ▶ Do you feel comfortable with computers?
- ▶ How much experience have you had with computers?
- ▶ Would you say that you use computers less than your classmates, the same amount as your classmates, or more than your classmates?
- ▶ Do you have a computer at home?
- ▶ Do you ever use a computer outside of school?
- ▶ Is the computer ever frustrating? If so, when is it most so? Please elaborate.

Rules and Regulations:

- ▶ Is the duration of classes in the regular classroom too short for you, too long, or neither? Why? Is the duration of classes in the computer room too short for you, too long, or neither? Why?
- ▶ Do you get to pick where to sit in the regular classroom? How about in the computer room? How do you feel about that?
- ▶ Are there any rules about moving around in the regular classroom? How about in the computer room?
- ▶ Do you always have to raise your hand to talk? When and where do you raise it the most? The least?
- ▶ Which rules, if any, are present in the computer room that are not in the regular classroom?
- ▶ Which rules, if any, are present in the regular classroom that are not in the computer room?
- ▶ Are students from other grades allowed to come into the computer room while your class is in there? Why or why not? Are students from other grades allowed to come into your regular classroom while your class is there? Why or why not?
- ▶ Do you feel that you have more freedom in the computer room, regular classroom, or neither?

Learning:

- ▶ Do you believe that you will need to know a lot about computers to be successful in the future? Why or why not?
- ▶ Which subjects do you feel are best learned using computers? Why? Which subjects do you feel are best not learned using computers? Why not?
- ▶ Is the computer or computers in your regular classroom being put to good use? Why or why not?
- ▶ Would you rather learn in the computer room or regular classroom? Why?
- ▶ Would you rather learn by listening, touching, watching, or reading? Can computers help you do this? How?
- ▶ Do you believe that computers help students learn more? Why or why not?
- ▶ Is the computer making learning easier? Why or why not?
- ▶ Are computer activities ever corrected by your teacher? Do you consider it to be real "work"?
- ▶ *What if*, on a certain day, there were no teachers available to teach students a lesson in the computer room, do you think that students would be able to learn on their own? Why or why not?
- ▶ *What if*, on a certain day, there were no teachers available to teach students a lesson in the regular classroom, do you think that students would be able to learn on their own? Why or why not?

Teaching:

- ▶ Do you think that your teacher knows a lot about computers? Why do you say so?
- ▶ Do teachers teach differently in your regular classroom as compared to in the computer room?
- ▶ Do teachers talk more, less, or neither more nor less, in computer rooms as compared to regular classrooms? Do they talk more to individual students, pairs, groups of more than two, or neither in the computer room? How about in the regular classroom?

Second Interview:**Clarification/Expansion of Material From First Interview:**

- ▶
- ▶
- ▶

Social Interaction:

- ▶ Which time of the day, if any, are you most talkative in school - before recess, after

recess, or after lunch?

- ▶ Which day of the week, if any, are you most talkative in school - Monday, Tuesday, Wednesday, Thursday, or Friday?
- ▶ Is the computer a good place to hide away from others, make new friends, or neither?
- ▶ Do you move around more in the computer classroom than the regular classroom? If so, how so?
- ▶ Do you talk more with students who are close to you in the regular classroom? Does it matter how close they are? Do you talk more with students who are close to you in the computer room? Does it matter how close they are?
- ▶ In the regular classroom, would you rather work by yourself, in pairs, or in larger groups? Why? In the computer room, would you rather work by yourself, in pairs, or in larger groups? Why?
- ▶ When you are having difficulty with something in the computer room, do you ask anyone for help? If so, do you ask other students or the teacher for help first? What if that person cannot help you? When you are having difficulty with something in your regular classroom, do you ask anyone for help? If so, do you ask other students or the teacher for help first? What if that person cannot help you?
- ▶ Do teachers interact more with boys or girls in the regular classroom? What about in the computer room?
- ▶ Are the same students who talk more in the regular classroom the same ones who talk more in the computer room? Why do you think this is so?
- ▶ How much influence do more vocal students have on the class?
- ▶ Do quiet students talk more in computer rooms? Why or why not?
- ▶ Do most of the questions that you ask in the computer room deal with the subject, for example, in language arts what is an adverb?; or how to use the computer, for example, how do I save something on disk? Give me some examples of questions that you would ask.
- ▶ Do you ever type words on the computer that you would not write in a notebook? If so, can you give me some examples?
- ▶ Has the new school affected how students and teachers interact? If so, how? If not, why not?
- ▶ Did my presence in the room affect what was going on? If so, how? If not, why not?
- ▶ Some people would say, "Computers will decrease students' interactions (or relationships) with others and lead to students being isolated and alone." How do you react to this statement (agree/disagree; why/why not?)?
- ▶ Some people would say, "In an *ideal* school, there should be a computer for every student in their regular classroom." Would you rather have a separate room for the computers, as it is now, or enough computers for all students in the regular classroom? Why?

Inuit Culture:

- ▶ Do you know how to speak any Inuktitut? How many Inuktitut words do you know that deal with computers (e.g., do you know words for “computer,” “keyboard,” or “diskette” in Inuktitut)? Why do you think this is so? Do you think that this should change?
- ▶ Some people would say, “The future of Inuit communities lies in the education of their youth.” How do you react to this statement (agree/disagree; why/why not)? Should computers be a large part of that education? Why or why not?

Miscellaneous:

- ▶ This study was a chance to learn about how students, teachers, and computers interact in regular classrooms and the computer room? Is there anything that you believe I could improve upon in the study? If so, what?

Teacher Interview Questions

First Interview:

Personal/Computer Background:

- ▶ How long have you been teaching?
- ▶ Have you ever taught in another school as part of another teaching assignment or as part of an internship?
- ▶ How long have you been teaching at this school?
- ▶ Do you feel comfortable with computers?
- ▶ How much experience have you had with computers?
- ▶ Do you have a computer at home?
- ▶ Do you ever use a computer outside of school?
- ▶ Is the computer ever frustrating? If so, when is it most so? Please elaborate.

Rules and Regulations:

- ▶ Do you feel that you have more control in the computer room, classroom, or neither one more than the other? Why?
- ▶ When do students have to raise their hands to talk in the regular classroom? What about in the computer room?
- ▶ Are there any rules about students moving around in the regular classroom? How about in the computer room?
- ▶ Do students choose where to sit in the computer room? Does this influence their interaction patterns (e.g., to sit by friends or not)?
- ▶ Which rules, if any, are present in the computer room that are not in the regular classroom?
- ▶ Which rules, if any, are present in the regular classroom that are not in the computer room?
- ▶ Are students from other grades allowed to come into the computer room while your class is in there? Why or why not? Are students from other grades allowed to come into your regular classroom while your class is there? Why or why not?
- ▶ Is the duration of classes in the regular classroom too short for students' attention spans, too long, or neither? Why? Is the duration of classes in the computer room too short for students' attention spans, too long, or neither? Why?

Teaching and Learning:

- ▶ Is the computer or computers in your regular classroom being put to good use? Why or why not?
- ▶ Do you consider yourself to be a role model for students learning to use computers? Why or why not? How can this be changed/facilitated?

- ▶ Do you believe that computers help students learn more? Why or why not?
- ▶ Is the computer making teaching easier? Why or why not?
- ▶ Do you lecture more in the classroom, the computer room, or neither one more than the other? Why?
- ▶ Do you believe that keeping the pace of lessons brisk is a key to on task behaviour? Why or why not?
- ▶ Which subjects do you feel are best taught using computers? Why? Which subjects do you feel are best not taught using computers? Why not?
- ▶ Do you have to prepare for computer classes as much as regular classes? Why? Do you feel that most teachers do the same? Why?
- ▶ Are computer activities ever corrected by you the teacher? Do you consider it to be real “work”? Do you think that your students do?
- ▶ Is the teacher more of a question giver or question answerer in the computer classroom? What about in the regular classroom?
- ▶ What do you think about the metaphor “teacher as technician?”
- ▶ Do you believe that students cooperate more in computer classrooms than in regular classrooms? If so, do you feel it is due to something inherent in the computer itself or because there are a lack of computers available so they must share?
- ▶ Would you rather teach in the computer room or regular classroom? Why?
- ▶ What do teachers need to facilitate learning in a computer environment?
- ▶ *What if*, on a certain day, there were no teachers available to teach students a lesson in the computer room, do you think that students would be able to learn on their own? Why or why not?
- ▶ *What if*, on a certain day, there were no teachers available to teach students a lesson in the regular classroom, do you think that students would be able to learn on their own? Why or why not?

Inuit Culture:

- ▶ Based on your previous experiences in a non-Inuit school, do you believe that Inuit students in this school communicate or interact differently than students in other schools who are not Inuit? If so, how?
 - ▶ Do you feel that your background as a non-Inuit may affect classroom interaction patterns?
 - ▶ Are there as many opportunities to relate learning to the Inuit culture with the computer as with traditional teaching methods?
 - ▶ Do you believe that Inuit students benefit from computerized learning situations? Why or why not?
 - ▶ Some people would say, “The future of Inuit communities lies in the education of their youth.” How do you react to this statement (agree/disagree; why/why not)? Should computers be a large part of that education? Why or why not?
-

Second Interview:

Clarification/Expansion of Material From First Interview:

- ▶
- ▶
- ▶

Social Interaction:

- ▶ Is the computer a good place for students to hide away from others, make new friends, or neither?
- ▶ When students are having difficulty with something in the computer room, do they ask anyone for help? If so, do they ask other students or the teacher for help first? What if that person cannot help them? When they are having difficulty with something in the regular classroom, do they ask anyone for help? If so, do they ask other students or the teacher for help first? What if that person cannot help them?
- ▶ Is there more or less social interaction in computer classrooms as compared to regular classrooms? Why do you think this is so?
- ▶ Are students more cooperative or competitive, or neither, in the computer room? Why do you think this is so?
- ▶ Do you believe that computers can lead to more individualized learning (at their own pace)? Why or why not?
- ▶ Do you believe that social concerns are central or peripheral to teaching and learning? Why?
- ▶ In your opinion, how important is student-student interaction in classrooms?
- ▶ Are the same students who talk more in the regular classroom the same ones who talk more in the computer room? Why do you think this is so?
- ▶ How much influence do more vocal students have on interaction patterns?
- ▶ Do quiet children talk more in computer rooms? Why or why not?
- ▶ Do you believe that the classroom layout affects social interaction? If so, how? Why is your classroom laid out as it is? How do you feel about the layout of the computer room?
- ▶ Do you interact more with boys, girls, or neither boys nor girls?
- ▶ Do students become more mobile as classes progress? If so, how?
- ▶ Are students interaction patterns often affected by things that happen outside of the classroom or in the classrooms of others? If so, how so?
- ▶ Do students interact more with students who are in close proximity with each other?
- ▶ How does the nature of the task affect social interaction, for example students using Whacky Web Tales as compared to word processing?
- ▶ Which time of the day, if any, are students most talkative in your class - before

recess, after recess, or after lunch?

- ▶ Which day of the week, if any, are students most talkative in your class - Monday, Tuesday, Wednesday, Thursday, or Friday?
- ▶ Do most of the questions that students ask in the computer room deal with the subject, for example, in language arts what is an adverb?; or how to use the computer, for example, how do I save something on disk?
- ▶ Has the new school affected how students and teachers interact? If so, how? If not, why not?
- ▶ Do students ever type words on the computer that they would not write in a notebook? If so, can you give me some examples?
- ▶ Are students more eager to learn in the computer room as compared to the regular classroom? Why or why not?
- ▶ How would you characterize social interactions in the computer room as compared to the regular classroom? What are the similarities and differences?
- ▶ Did my presence in the rooms affect what was going on? If so, how? If not, why not?
- ▶ Some would say, "In many schools, teachers' competence is still judged primarily by their ability to manage the classroom, which means a quiet and attentive student audience." How do you react to this statement (agree/disagree; why/why not)?
- ▶ Some people would say, "In an *ideal* school, there should be a computer for every student in their regular classroom." Would you rather have a separate room for the computers, as it is now, or enough computers for all students in the regular classroom? Why?
- ▶ Some people would say, "Computers will decrease students' interactions (or relationships) with others and lead to students being isolated and alone." How do you react to this statement (agree/disagree; why/why not)?

Miscellaneous:

- ▶ This study was a chance to learn about how students, teachers, and computers interact in regular classrooms and the computer room? Is there anything that you believe I could improve upon in the study? If so, what?
-

Debriefing

(*To be carried out at the conclusion of each student and teacher interview):

- ▶ We are nearing the end of the 1st/2nd interview session, some of the main things that I have learned are. . .
- ▶ Is this accurate in your opinion?
- ▶ "I have no further questions. Do you have anything more you want to bring up, or ask about before we finish the interview?"

Miscellaneous Notes

(Gestures, Nonverbal Communications, Tone of Voice, Speed of Speaking, Things Not Understood, Possible Cultural Connotations):

- ▶
- ▶
- ▶
- ▶
- ▶
- ▶

Appendix D

Journal

Journal

Grade: _____

Gender: _____

Teacher or Student: _____

Date: _____

Instructions

The purpose of this journal is for you to write about your interactions with students, teachers, and computers both in the computer room and the regular classroom. You may write about your thoughts, feelings, actions, movements, communications, or anything else that you believe is important. Remember, however, to compare and contrast the way you interact with students, teachers, and computers in both places.

You have thirty (30) minutes to complete this journal. If you require additional space for writing, you may use the back of the paper provided. There are no right or wrong answers. Simply describe the way *you* believe things are in *your* own words.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Appendix E

Data Collection Time Line

Table 6
Data Collection Time Line

Activity	March 1999	April 1999	May 1999	June 1999
Observations	X X X X X X X X X X			
Document Collection	X X X X X X X X X X			
Interviews	X X X X			

