A STUDY EXAMINING DIVISIONS IN THE VALUE OF EDUCATIONAL TECHNOLOGY BETWEEN STUDENTS IN ISOLATED COMMUNITIES OF NEWFOUNDLAND AND LABRADOR

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A Study Examining Divisions in the Value of

Educational Technology Between Students

in Isolated Communities of

Newfoundland and Labrador.

by

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Introduction to the Study

For a secondary education system to function effectively, it must satisfy the needs of the students who are the major stakeholders. This would require equality of services for students across districts and within schools. The Newfoundland education system is no exception to this rule. If the Newfoundland and Labrador education system is to function effectively it should equally satisfy the needs of the students (Government of Newfoundland and Labrador, 1989).

For years, educational inequality has been an area of great interest to many researchers (Angus, 1993). Education systems are not always designed to ensure equality of services to students, especially those in remote, isolated communities. According to Craig (1994), the more remote an area, the less chance students have to avail themselves of educational opportunities accessible to students in urban areas. Isolation has always posed a problem for students in many of the small communities of Newfoundland and Labrador. "The reality is that isolated rural areas have fewer services" (Department of Education, 1991). The two isolated communities in this study are located in Newfoundland and Labrador. To protect their identity they have been given the pseudonyms, South Community and North Community. It is recognized that the delivery of educational services in isolated communities such as these, has not been up to par with the more urban areas of the province (Fizzard, 1991, Department of Education, 1990 and Department of Education, 1991).

The Government of Newfoundland and Labrador realizes that isolation has caused

an inequality in educational services for students in isolated areas such as North Community and South Community. (Department of Education, 1990 and Department of Education, 1991). As Hatton (1994) writes the outcome of schooling for isolated children should not be an educational disadvantage. To help conquer this problem of inequality in educational services in isolated areas, distance education courses were offered to students in many such communities including those in North Community and South Community (Department of Education, 1990). It is believed that distance education has helped narrow the gap between students in rural areas and those in urban areas with regard to accessibility of educational services (James, 1987, Barker, 1990, Barker and Taylor, 1993 and Barker and Dickson, 1996). Today, distance education in the form of current technologies such as computers, electronic mail and faxes is believed to be proficient in the delivery of education to rural, isolated areas (Lundin, 1994, Hughes, 1993, Barker and Hall, 1995, Barker, Hall and Wood, 1995, and Stevens, 1994). However, many rural schools do not have the funding to supply large numbers of computers or tele-conferencing equipment for their students (Government of Newfoundland and Labrador, 1989). There also appears to be a disparity of access to these educational tools between students in schools (Sutton, 1991). Schools in North Community and South Community may be no different. It is possible that only a particular group of students have access to current technologies. It might be that only a few rural students value the usage of current technologies in their education. If this is so, then the Department of Education might be failing to meet the needs of most students in some rural communities. All students might not be benefiting from current educational technology; all students might not have access

to it. Current education technology could be elitist and may only be meeting the needs of a particular group of students while having no value for the mainstream student.

To allow all students in isolated communities equal access to current educational technology, we may have to consider changing the technology program. If changes are not made, it may be that only a small percentage of students in isolated communities, such as North Community and South Community, will value educational technology as it is available in their schools. Changes may have to be made to allow equality of opportunity for all students in isolated regions to utilize and value current educational technology.

A Statement of the Problem

The formal high-school educational program of Newfoundland and Labrador is designed to allow students options in course selections (Department of Education, 1991). In spite of this, course options are less numerous in many isolated areas of Newfoundland and Labrador (Department of Education, 1990). Geographic isolation has been perceived as a major impediment to the formal education of young people in isolated parts of the province (Department of Education, 1991). Present day educational technology, in many ways, has been designed to help overcome such a problem (Barker and Taylor, 1993, Department of Education, 1991 and Barker, 1990). However, current technology is rather expensive and may not be available for all students (Gillespie, 1994). If this is so, it may be that educational technology, as it is presently available to the student population in isolated communities of Newfoundland and Labrador, is more divisive than it is inclusive. The question that needs asking is whether or not current educational

technology is meeting the needs of all students in these communities, or is it inherently elitist. In other words, is educational technology meeting some of the needs of a particular group of students, while at the same time having little or no impact on the majority?

This study is being done because technology, as it is currently available in the Newfoundland and Labrador education system, may be failing to meet its objectives. Access to technology appears to be elitist having little or no value for the mainstream student. If technology in our education system is working for the benefit of all students, then all should value technology equally and have access to it. Should this prove not to be the case, then this study may demonstrate that in rural Newfoundland and Labrador there is a division in the access of technology to our students. Thus, a revision of this aspect of our educational program may be required.

A comparison of students who have greater access to current technology with students who have less access to current technology, in isolated communities of Newfoundland, may shed some light on the issue. It should identify existing problems with educational technology for rural students and provide some suggestions on how to deal with these problems.

The study aims to achieve the following five objectives:

(1) Determine if there are differences in the perceived value of current educational technology among students in isolated communities of Newfoundland and Labrador.

(2) Identify whether there is a sociological division between students who have

greater access to technology and students who have less access.

(3)   Identify whether or not the career choices of students who have greater access to current educational technology differs in terms of the amount of time required in a post secondary institution as opposed to students who have less access to current educational technology.

(4)   Identify whether or not current educational technology has expanded the career options of students in isolated communities of Newfoundland and Labrador.

(5)   Elicit, from students, ideas that may lead to a technological program that optimizes student involvement.

Location of the Study

This study is located in Newfoundland and Labrador which is a province on the east coast of Canada (Refer to Figure 1.1). The two isolated communities, North Community and South Community, are located in Labrador which is part of the province of Newfoundland and Labrador (Refer to Figure 1.2).

North Community is located in the North of Labrador and has a population of 1,069 people (Encyclopedia of Newfoundland and Labrador,1993). It is located on the north side of a small inlet and is well-protected by numerous islands (Refer to Figure 1.2). It is inhabited predominately by native peoples. The summers at North Community are quite short and cool whereas the winters are long and very cold.

North Community was established in the late 1700's. Moravian missionaries built a church, a trading post and a mission home. The first school was built in 1791. Most of the inhabitants did not live in North Community year round. Instead, they moved

FIGURE 1.1

CANADA

NEWFOUNDLAND
& LABRADOR

FIGURE 1.2

14

NEWFOUNDLAND & LABRADOR

NORTH COMMUNITY
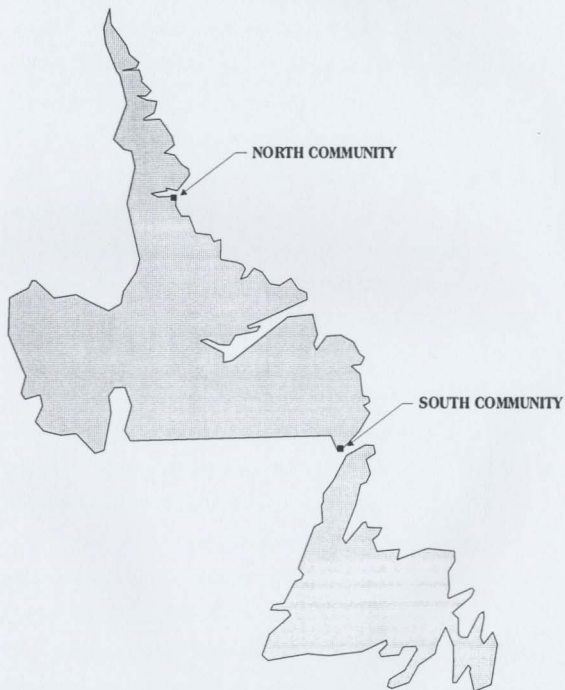
SOUTH COMMUNITY

seasonally to surrounding communities to hunt, fish and trap (Encyclopedia of Newfoundland and Labrador, 1993).

In 1991, North Community was described as the centre of government services to the North Coast of Labrador. North Community has several federal and provincial agencies. The mainstay of the community is Arctic Char fishing, Scallop fishing, and mining exploration.

The all-grade school at North Community has a population of approximately 400 students. It has a staff of thirty teachers. Instruction is provided in both English and Inukitut. Enrollment has remained stable.

South Community is located in the South of Labrador and has a population of approximately 520 people (Encyclopedia of Newfoundland and Labrador, 1993). It is located on the north shore of the Strait of Belle Isle (Refer to Figure 1.2). The climate consists of short, cool summers and long, cold winters.

In the early 1700's, South Community was established as a fishing village. It was thought to have one of the best fishing ship harbours. South Community was first settled by the French. By the 1800's, however, it was the largest British settlement on the Labrador Straits (W.B.Titford Ltd.,1988).

Today, South Community can be described as the administrative centre for communities of the Labrador Straits area. South Community has several federal and provincial agencies. The mainstay of the community is fishing and tourism.

The school at South Community serves students from two other surrounding communities. This all-grade school has a population of approximately 200 students. It

has a teaching staff of thirteen teachers. Enrollment has been slowly decreasing.

Limitations of the Study

The validity and reliability of this study was limited by several factors. There are limitations to using either questionnaires or to using interviews or to using both questionnaires and interviews. LeCompte and Preissle (1993) observe that self-reports of behaviour elicited through a survey, whether it is a questionnaire or an interview, does not always depict the actual feelings and behaviours of the participant. Some participants may have a reason for withholding the truth (Marshall and Rossman, 1995).

The data were collected through just one interview and one questionnaire per student. It is possible that these methods did not expose all of the salient factors that might have been apparent if the study had fewer subjects, and if the plan had been to study the participants for longer periods of time with more in-depth interviewing and questioning.

Marshall and Rossman (1995) note that questionnaires cannot assure that the results can be applied universally. In this particular study, two isolated communities in Labrador, North Community and South Community, were the areas of research. The data that was found was probably representative of most isolated Newfoundland and Labrador communities but may not necessarily be representative of other isolated communities in the country.

Every effort was made to convey accurately the findings from the questionnaires and from the interviews. However, some of the responses might have been open to some interpretation on the part of the researcher.

Definition of Key Terms

For the purpose of this study educational technology refers to computers and teleconferencing equipment. These are the most recent technologies available to the students in North and South Community.

The terms rural, isolated and remote are all characteristic of North and South Communities. For the purposes of this study, rural refers to small towns that are not considered urban. In the province of Newfoundland and Labrador, most of the communities are rural. The major urban centres are St. John's, Mount Pearl and Corner Brook. Isolated and remote are used synonymously to describe towns that are not accessible by road all year around..

Chapter 2

Review of Related Literature and Research

The Department of Education of Newfoundland and Labrador (1991) point out that "equity of educational opportunity is a very troubling issue" (p.2). Many students in isolated communities do not have access to educational services being offered in urban schools (Griffith, 1994, Fizzard, 1991, Department of Education, 1990 and Department of Education, 1991). Rural education has been at a disadvantage in many areas (Bell and Sigsworth, 1987). According to Karmel (as cited in Stevens, 1995) rural communities in Australia have had to contend with educational disadvantage for many years. However, in recent years, current educational technology has allowed for greater access to more courses for students in isolated communities (James, 1987, Barker, 1990, Howley and Howley, 1995 and Barker and Dickson, 1996).

It would be fair to expect that if current educational technology is advantageous for students and if it were available in a school, then all students would have access to it. Carol Hughes (1993) writes that in Queensland, Australia, schools are expected to equip students with skills in the use of information technologies. Holmes and Wynne (1989), in their proposed set of educational goals for elementary and secondary schools, maintain that all students should learn how to properly use and operate a computer for the purposes of word processing, learning and other everyday applications. Students benefit from advanced learning technologies (Barker et al., 1995, Nevens, 1995, Barker and Hall, 1993, Hill, 1992 and Lundin, 1990). The Illinois State Board of Education has called for using technology as a resource to support student learning (Barker et al., 1995). However, in some cases, current educational technology is available in schools, but is

only available to some students. Many educators are concerned that unequal access to computers at schools is causing disparities (Jones and Malloy, 1996). A study conducted by Arias (as cited in Sutton, 1991) reveals that high-achieving students had greater access to the new technologies in the school. If current educational technology is only available to particular students in some rural community schools in Newfoundland and Labrador, then all are not receiving equal educational opportunity.

> The equality of educational opportunity is not a new concept.
> The issue of equality of education has exercised the thought and imagination of policy makers since the beginning of public administration (Margolis and Moses, 1992).

If one were to study the educational history of Newfoundland and Labrador, inequalities in education would be quite prominent. According to Noel's interpretation of Newfoundland and Labrador history, (as cited in Singh, 1990), the following points should be taken into consideration:

(1) In the past, class composition in Newfoundland and Labrador was quite unique because it consisted only of rich and poor people.
(2) Most families in Newfoundland depended on the fishery and belonged to the poorer class.
(3) Education was directly related to socio-economic status in that children of the rich citizens were well educated and children of the poorer families were not well educated.
(4) Social mobility through the education system and through adequate schooling could only be attained by the rich people's children. Those who were poor remained poor and could not expect upward social mobility via an education.
(5) Since 1949, Newfoundland and Labrador society has become more aware of educational problems and efforts are being made for improvement (p.15).

If the above characteristics of "old" Newfoundland and Labrador still exist today then the educational system of the province will require some revamping. Fagan (1995) states that performance and accountability in education are very high on the public agenda

today. If only some students have access to learning technologies in our schools in Newfoundland and Labrador, then some of the historical educational problems still remain. All students do not have the opportunity to benefit. If this is so, then there may be a division among students. To ensure equality, this division will have to be eliminated. A restructuring of the educational system may be required to amend this situation. According to Newell (1986) schools cannot correct all personal and social inequalities but they can offer equality of opportunity to pursue educational goals. To meet such a goal in isolated communities in Newfoundland and Labrador, all students must have equal access to current educational technology. Equality of access to this new technology is of the utmost importance (Webster and Connolly, 1993).

To ensure a quality education for all students in a particular school, there must be availability of resources (Margolis and Moses, 1992). Hawkes (1995) found that rural teachers believed that a problem with educational technology dissemination was due to the lack of resources. Darnell and Higgins (1983), Nachtigal (1992) and Tweeten (as cited in Hobbs, 1992) all agree that rural education requires special attention and numerous resources. The Report of Task Force on Educational Finance (Dixon, et.al, 1989) writes that the 1990's will demand more funding for schools as our educational system becomes adapted to changing technologies. Gaines, Johnson and King (1996) argue that to secure the education of each student, adequate resources have to be provided. Even when the Newfoundland and Labrador Government are experiencing a time of fiscal restraint, monies may have to be allocated to rural areas if it is found that there is a division in the availability of current educational technology to students due to

lack of resources. According to the Report of the Task Force on Educational Finance (1989) prepared for the Newfoundland and Labrador educational system, greater equity can be built into the grants allotted to individual school boards. It states that smaller schools would probably require higher expenditure costs per student in order to provide programs similar to those provided to students in the larger centres of the province. According to this Task Force, the following six principles are normally adhered to when plans for educational finance are being devised:

(1) Every student in a province should have access to quality educational programs and services that reasonably respond to his or her individual needs, regardless of that student's interests and abilities, regardless of where that student lives, regardless of that student's cultural and socio-economic environment.

(2) Every school board in a province should have access to sufficient revenues to provide quality educational programs and services that meet the needs of its students.

(3) The plan of financial support should ensure reasonable equity for all tax payers.

(4) Within general provincial guidelines, the financing plan should provide maximum opportunity and encouragement for the development and exercise of local autonomy and leadership in education.

(5) The financial provisions of a grant system should encourage sound and efficient organization, administration, and the operation of local school districts and schools.

(6) The financing plan should emphasize continuous evaluation, long-range planning, and overall accountability for the expenditure of public funds (p.29-30).

If the above guidelines are being adhered to in the financial planning for the education system of Newfoundland and Labrador, then it would appear that educational inequalities would be quite limited. However, if it is found there are inequalities in the accessibility of educational technology between students in isolated communities of Newfoundland and Labrador and that these guidelines are not being strictly followed, then changes in the education system will have to be implemented.

Jones and Malloy (1996) insist that a democratic society should guarantee that schools offer every child the opportunity to become a productive member of society. They say schooling must be made equal for all students regardless of their race, class or socio-economic status. They contend that in many areas low achieving students and low income schools do not receive adequate resources. If the current resources for educational technology are not available to all students in a particular school in some rural communities in Newfoundland and Labrador, then educational services have to be adequately provided to these children to entitle them to a brighter future. Jones and Malloy believe that in our society low income and low grades are often attributed to failure and to personal shortcomings. They note that even though equal academic achievement will probably not reduce the problem of income inequalities, it will represent a step to greater social justice.

Arnstine (1995) says that most people believe that "individuals should not be preserved intact from their heirs" (p.35). He says that wealthy people pass on the wealth to their heirs but poorer people are fighting for equality and do not wish to pass on poverty to their heirs. Bell et al. (1993) also agree with this functionalist view when they say that there has to be growth in educational systems to allow for equal educational opportunity. McCarthy and Webb (1990) and Rodriquez (1990) believe that to obtain educational excellence, there must be equity.

Morgan (1977) explains that children must be given equal opportunity within the school and within the classroom. If not, he believes, there will be class differences or social gaps between groups of students. He theorizes that many of the present school

systems have serious flaws whereby students are classed according to differences. Those students at the top, with all the advantages, will be winners in society. Those students in the middle will become the hardworking middle level of society. Those at the bottom are destined to become society's losers. Equal opportunity, he contends, would result in the redistribution of students among school levels and would give all students an opportunity for a brighter future. Morgan argues that educational equality and equal opportunity must begin at the primary stages of learning and continue throughout the school years.

McCune and Wilbur (as cited in Rodriquez, 1990) have identified several relevant efforts which will reduce inequalities in opportunities to education:

(1) Equal access - once students have gained equal access to educational materials, the next step will require equal treatment.

(2) Equal treatment - the concepts of bias, stereotyping and discrimination have to be eliminated. Being aware of the different needs of students will lead to equal outcomes.

(3) Equal outcomes - Each person has to be treated according to his/her needs. Different people have to be given different opportunities so they can have equal chances to pursue their potential.

(4) Quality outcomes - the educational culture should be restructured to allow student achievements that reflect the skills required by the information society. This will allow students equal opportunity in today's society.

Some researchers maintain that inequalities in educational outcomes are often related to one's socio-economic status (Brown and Madhere, 1996 and Berne and Picus,

1994). They contend that overcoming a low socio-economic status may be quite difficult.

Rodriquez (1990) says that research indicates that teachers are often guilty of labelling

students from lower socio-economic classes as low achievers. Teachers often interact

more with the high achievers and demand more work and effort from them. To avoid

such discrepancies, Rodriquez recommends the following strategies to classroom

teachers:

(1) Hold all students equally accountable for classroom participation.
(2) Avoid the use of stereotypes in the assessment of student achievement.
(3) Instructional strategies should relate to individual learning styles.
(4) Suggest that all students can improve.
(5) Written and verbal evaluation should be related to academic skills (p.78).

Social variables are strongly related to student achievement (Stockard and

Mayberry, 1992). Lawton (as cited in Dixon, et al., 1989)) states that it seems unfair for

one student to have access to a better public education and thus achieve higher because of

chance. In their study, Brown and Madhere (1996) ascertain that a relatively high socio-

economic status is characteristic of students who are more inclined to be academically

successful. A low socio-economic status is often characteristic of students who are

academically unsuccessful.

Brown and Madhere (1996) claim that students who come from a family with a

higher socio-economic status are more likely to attend college. Singh (1990) contends

that observing the students who attend post-secondary institutions is an adequate measure

of equality of educational opportunity. This research, he claims can reveal if there are

social and psychological barriers to equal educational opportunity in Newfoundland and

Labrador. Singh points out that the Committee on 1973 Enrollment of students in post-

secondary institutions in Newfoundland discovered the following:

(1)   Students from low income families experienced difficulty in attending post-secondary institutions of any type.

(2)   Those graduating high school students whose parents had experienced some unemployment over the past two or three years did not have opportunities to attend university or other post-secondary schools comparable with those of students whose fathers had experienced full employment.

(3)   There was a wide discrepancy between the post-secondary education choices of students whose parents had a high level of education (grade nine and beyond) and those whose parents had a lower level of education (below grade nine). Students whose parents had a lower level of education perceived that they knew very little about entrance requirements to and courses of study at the various post-secondary schools, especially Memorial University, as compared with students whose parents had a higher level of education.

(4)   Students from larger families had much less chance of attending post-secondary schools, especially Memorial University, than did students from small families.

(5)   There were wide disparities of educational opportunities among students in various regions and between urban and rural areas.

      (a)   A much larger percentage of the students from urban areas attended Memorial University and the College of Trades and Technology than from rural areas.

      (b)   A much larger percentage of the students from rural areas attended vocational schools and nursing schools than from urban areas.

      (c)   The percentage of students on the Avalon Peninsula who attended Memorial University was twice the percentage of the students outside the Avalon Peninsula who attend Memorial University.

      (d)   The proportion of the students outside the Avalon Peninsula who attended vocational schools was twice that of those on the Avalon Peninsula.

      (e)   Labrador had the highest percentage of students who did not attend post-secondary schools of any kind (pp. 15-16).

If any of the above problems are still in existence today then it would be quite evident

that there are social and psychological barriers to equal educational opportunity in Newfoundland and Labrador. Changes in the present educational system would have to be implemented.

Lodge and Blackstone (1982) assert that social democracy has failed us because it has not found ways of giving all children an equal education. They argue that many members of society view this inequality as unjust. These authors contend that changes have to be brought about to make this society more equal. Educational institutions, they say, are where the inequalities in society should be non-existent. Parents, local educational authorities and teachers should ensure that all children have equal educational opportunity. These people have to be part of the change process.

Bastian et al. (1986) believe that inequalities in schooling may diminish more rapidly if parents are empowered to take part in the change process. They do, however, note that there are some barriers to parental involvement in education matters:

(1)   Many parents are limited in their ability to participate in their child's education
        due to the fact that both parents have to work and time becomes a factor. This
        problem is more pronounced in lower income families where the pressures on
        time are multiplied by pressures of income. Many parents cannot afford the
        expense of child care and travel to and from school meetings.

(2)   Many parents, especially those who are uneducated, feel intimidated by
        professional teachers and thus avoid becoming involved in their child's education.

(3)   Parents often blame teachers and administrators for school failure. Teachers,
        often blame parents for the failure of a child. This blame may result in strained

relationships between parents and teachers.

(4)   Parents often do not know what solutions will best improve education for their

child, thus they are reluctant to speak out.

(5)   Parents are often shut out of the decision-making processes within schools. They

often have no say in matters of budgeting and spending.

Bastian et al. contend that these barriers have to be broken down in order to have parents

involved in the educational process. They discuss many examples of successful programs

that have helped parents become more involved in education. The Philadelphia Parents'

Union has organized a workshop program to ensure changes that will promote

educational equity and parent participation. Another program called Head Start was

formed to mandate parental involvement in local school councils. Parents gained some

authority over budget and policy decisions. These are just two of the many examples of

how parents have become involved in educational matters. According to these writers,

equality in educational opportunity is more attainable through parental involvement.

Parents have to work together to overcome the barriers to involvement, thus leading to

more positive changes.

Empowering teachers to make decisions regarding educational change will also

lead to greater equity in educational opportunity (Bastian et al. 1986). These writers

insist that the educational system has to respect the professional integrity of teachers and

teachers have to be given decision-making power. They believe that there are many

avenues to improving teacher involvement in education:

(1)   Group work through correspondence, publications and workshops will help

teachers learn more about problems and issues in other schools and classrooms.

(2)   Professional development will provide teachers with the skills and with the

confidence to implement new programs and to revamp old ones.

(3)   Teachers must participate in school management and governance. Power sharing

will create an environment of collective support.

(4)   Teachers should have input in decision-making regarding the use of time and

space within the school, the purchase of supplies, and priorities of the school

program.

The notion that secondary education is valued differently between students and

the notion that there are sociological divisions amongst them supports some of the current

research in education.   As noted in much of the literature cited in this study, modern

educational theory centres around the idea of equal educational opportunity for all

students. This theoretical consideration and the pragmatic dilemmas that it poses in

education form the basis of the research questions that guided this study.

Chapter 3

Major Research Questions and Methodology

The following set of research questions was designed in order to help determine the effectiveness of the present educational technology program in select, isolated communities of Newfoundland and Labrador. These questions assisted in defining any differences in the value of technology between rural students. The research questions also addressed the concept of equality as it relates to the availability of technology among students in rural areas of Newfoundland and Labrador. This section also outlines the research methodology and describes the type of analysis that was used in the research. Relevant literature is cited to support the choice of methodology and analysis employed in the study. The methodology that was used to collect data as well as the analytical tools are recognized and accepted in the research community. These are described in detail. The thesis proposal outlined the problem, reviewed relevant literature and discussed research questions and the methodology and analysis to be employed in the study. It was submitted to the Associate Dean of Graduate Studies to be reviewed and approved by the Ethics Review Committee of Memorial University of Newfoundland. The Ethics Review Committee maintained that the study was acceptable and that all guidelines for research involving human subjects were being appropriately followed.

Research Questions

It is assumed that the educational technology program is adequate if there are no major differences in the value and availability of technology between students who have greater access to current technology than with students who have less access. If major

differences are revealed through the survey data, a restructuring of the present system may be required. The following research questions should shed some light on the issue and will be the focus of the study:

(1) Is current educational technology valued differently among students in isolated communities of Newfoundland and Labrador?

(2) Is there a sociological division between students who have greater access to current educational technology and those who have less access to current educational technology?

(3) Are the career choices of students who have greater access to current technology more academic than those who have less access to current technology?

(4) Has the current technology expanded the career options of students in isolated communities of Newfoundland and Labrador?

SUBSIDIARY RESEARCH QUESTION

The following question was added to the list as a subsidiary research question. The purpose of the question was to elicit, from students, ideas that could lead to an optimal technological program.

(5) Do students have ideas that may lead to a technological program that will optimize student involvement?

Design of the Study

There was a total of 20 participants chosen for this study. Participants were selected to provide a representative sample from two Labrador communities. The group

of participants included Levels Two and Three student. Level Three students are those who are in their final year of secondary education while Level Two students are those who are in their second last year of secondary education. Permission to conduct this study was acquired from both an administrator from both the schools where the study was conducted and from the directors of the appropriate school board. Students were selected from the communities of South Community, located in Southern Labrador, and North Community, located in Northern Labrador. These communities were chosen because both are remote and isolated, and are located in different areas of Labrador. Participants were selected from all-grade schools in each of these communities. One school administrator (the vice-principal) from each of these schools was asked to assist in establishing the sample group. These administrators were asked to assist in the selection of students for the study. It was felt that in such small schools, the administrator would know the students quite well and could easily categorize the students according to their access to technology. The number of student participants was based on the relative size of the Level Two and Three populations.

The selection of students required identifying those who had great access to current technology and those who had less access to current technology. Three criteria were used to make this identification:

1. A student who had access to distance education courses, as opposed to one who did not have access to distance education courses, would be considered a student who had greater access to current technologies.

2. A student who had access to the Internet as opposed to one who did not have

access or who had very limited access to the Internet, would be considered a student with greater access to current technology.

3.   A student who had unlimited access to a computer as compared to one who could only access a computer at school in specific time periods, would be considered a student with greater access to current technology.

This identification was acquired from each school administrator who was asked to provide two lists of Levels Two and Three students as outlined above. The administrators were contacted via the telephone, and a letter (Appendix E and F) was sent requesting the same information. The administrators were asked to forward the lists of students to the researcher. The names of all suitable students were put in two boxes; one box contained the names of those who had access to current technology while the second box contained the names of those with less access to current technology. The students were then randomly selected. A sample of ten participants was drawn from each box to total twenty.

After students were selected, they were each contacted by telephone, or in person and asked to participate. A written agreement (Appendix B) to participate was signed by each. At the time, the nature and the purpose of the research were explained to all participants who agreed to take part. Each participant was then issued a questionnaire and asked to complete it (Appendix A). An interview time for each student was scheduled. An assurance of confidentiality was given to the participants both verbally and in writing.

A field worker was employed because of the difficulties presented by the large

geographic area that the study covered. There was no need to train the field worker

because he had recently conducted a qualitative questionnaire for completion of his own

thesis. Each questionnaire was administered at the respective schools of the participants.

The field worker was asked to administer the questionnaires in one of the two schools.

After responses were received, a comparative analysis of the data was conducted.

The nature of this research was qualitative. Qualitative research is an accepted

approach to the study of educational issues (Morse, 1994). Both questionnaires (See

Appendix A) and interviews were used to collect data. According to Marshall and

Rossman (as cited in Whitt, 1991), "...to make the most of strengths and to reduce the

impact of limitations, qualitative researchers typically combine data collection

techniques" (P.412). The intentions of the research were:

(1)   To generate insight and seek understanding of the value of current technology in

        our educational system to students in isolated communities of Newfoundland and

        Labrador.

(2)   To grasp if and why this technology is valuable only to a particular group of

        students.

Qualitative analysis of the data was, therefore, necessary. As Glesne and Peshkin (1992),

Whitt (1991) and Morse (1994) state, qualitative analysis explores and comes to

understand the participants' perspectives. LeCompte and Preissle (1993) define

educational ethnography as an approach to studying problems and processes in education.

Fetterman (as cited in Whitt 1991) says that qualitative research allows the researcher to

appreciate the circumstances from the perspectives of the participant, which is an

objective of this study.

<div align="center">

Questionnaires

</div>

The use of questionnaires is a very standard and accepted method of data collection (Marshall and Rossman, 1995). In designing the questionnaire, consideration was given to the work of Marshall and Rossman (1995) who state that in qualitative research, the questions should be constructed in a fashion to eliminate bias and to entail sequence, clarity and validity. As well, consideration was given to Merriam (as cited in Whitt, 1991) who says that the qualitative researcher seeks to understand the way the participants in a study make meaning of and understand their experiences. Based on this idea, the research questions were constructed to gain insight on the access and the meaning of or the value of current technology to students in isolated communities of Newfoundland and Labrador by seeing it through the eyes of the participants. Expert advice, from participating vice-principals and academics, was sought for the construction of the research questions. These questions were validated by the thesis supervisor.

The questions were mainly open-ended and broadly stated so as to obtain a diverse set of viewpoints (Marshall and Rossman, 1995). The questions did not presuppose or insinuate answers. The questionnaire elicited values, ideas and concerns of students in isolated communities of Newfoundland and Labrador on current educational technology in their schools. The questionnaire enabled the researcher to make a legitimate judgement on the value of educational technology in schools in isolated communities. It allowed the researcher to perceive any existing divisions between students who had more access to current technology as compared to those who had less

access. It is hoped that this questionnaire was a worthwhile instrument in helping provide possible solutions in the access and value of educational technology in isolated communities of Newfoundland and Labrador.

Interviews

The use of interviews is a widely accepted method of data collection (Morse, 1994, Hutchinson, 1988 and Marshall and Rossman, 1995). In developing the interview process, consideration was given to the work of Glesne and Peshkin (1992) who describe a type of interviewing which is characterized as:

(1)   Structured - there are specific questions that one knows one wants to ask.

(2)   Open - the researcher is prepared to follow unexpected leads which may come forth in the interview process .

(3)   Depth-probing - the researcher seeks to understand how the participant feels or thinks about something and how the participant explains or accounts for something.

Based on these ideas, the interviews were conducted in a fashion that elicited information from the participants which revealed how they valued educational technology in their schools. Participants were encouraged to elaborate on the differences in accessibility of technology and what accounted for this possible difference.

Interviews were conducted at the school in South Community. The same twenty students who were asked to complete the questionnaires were asked to participate in an interview. However, the field worker at North Community discovered that the students there did not wish to be interviewed. A total of twelve students agreed to be interviewed.

They were asked to participate and an interview time was selected.

        The interviewer had an interview guide which is a list of questions or issues that were to be explored (Patton as cited in Marshall and Rossman, 1995). Questions used in the questionnaires (Appendix A) served as a guide. Probing and following unexpected leads allowed the interviewer to explore the topics further. Participants were asked to begin by describing the available technology in their schools. This was then followed by questions pertaining to the accessibility of technology. The line of questioning was designed to put the participants at ease and to encourage spontaneous description. The areas addressed later became more personal.

Analysis of Data

        "Data analysis involves organizing what you have seen, heard and read so that you can make sense out of what you have learned" (Glesne and Peshkin, 1992, p.127). The following data analysis procedure as described by Marshall and Rossman (1995) was used to analyse the data in this study:

(1)   Organizing the data. Reading, reading and once more reading through the data forces the researcher to become familiar with those data in intimate ways (p.113).

(2)   Generating categories, themes and patterns. Identifying salient themes, recurring ideas or language, and patterns of belief that link people and settings together is the most intellectually challenging phase of data analysis and one that can integrate the entire endeavour (p.114).

(3)   Testing emergent hypotheses. This entails a search through the data during which one challenges the hypotheses, searches for negative instances of the patterns, and incorporates these into larger constructs if necessary (p.116).

(4)   Searching for alternative explanations. Alternative explanations always exist; the researcher must search for, identify, and describe them, and then demonstrate how the explanation offered is the most plausible of all (pp.116–117).

(5)   Writing the report. Writing about qualitative data cannot be separated
from the analytic process. In fact, it is central to that process. The
researcher is engaging in the interpretative act, lending shape and form to
massive amounts of raw data (p.117).

Organizing the Data

Both the transcripts from the audio-taped interviews and the questionnaires were

carefully read and reread again until the researcher became intimately familiar with the

data. Firstly, the written transcripts were compared to the audio-tape for accuracy.

Throughout this process, the researcher became aware of emergent themes and ideas.

Generating Categories, Themes and Patterns

To identify the salient themes, categories and patterns in the data, inductive

analysis described by Patton (as cited in Marshall and Rossman, 1995) was employed,

and "Analyst-constructed typologies"were applied to the data.

Analysts-constructed typologies are those created by the researcher as reflecting
distinct categories but not generative of separate language categories. In this case
the researcher applies a typology to naturally occurring variations in observations.
This process entails uncovering patterns, themes and categories...(Patton as cited
in Marshall and Rossman, 1995, p.114).

The researcher first studied the transcripts of interviews. Following this, a similar study

of the questionnaire was conducted. Both sets of data were then compared with respect to

categories, themes and patterns. Responses to each question were categorized into two

groups: students who had access to current technology and students who had less access

to current technologies. Answers were then processed according to their literal meaning.

This required recording the key words and phrases and organizing them on the basis of

their similarities and differences.

Testing Emergent Hypotheses

The researcher evaluated the credibility of the developing questions and tested them through the transcripts and questionnaires. The researcher searched through the data looking for negative instances of the patterns to determine plausibility.

Searching For Alternative Explanations

The researcher sought any negative instances of patterns and searched for alternative hypotheses.

Writing the Report

The researcher aimed to describe all of the major themes, categories and patterns. Care was taken to avoid redundancies in the outcomes.

Chapter 4

Results and Discussion

An Overview of the Chapter

This chapter presents the findings of twelve open-ended questions, four close-ended questions and twelve structured interviews from a total of twenty respondents. Each statement and theme relating to a particular question were examined and discussed using quotations from the student participants to provide explicit evidence of the points being made. All of the data were examined in raw form. The opinions and perceptions presented are those of the participants. Statements were edited for spelling and grammar only when cited in this thesis.

Introduction

The data analysis process entailed bringing order, structure and meaning to the survey data acquired from the questionnaire and the interviews. The responses of each participant were examined thoroughly for emergent themes and ideas. The process required that careful attention be paid to salient themes, recurring ideas and patterns of thinking revealed in the two sample groups.

Similarities and differences among the responses of the two sample groups were noted and were grouped together. A coding system was used in which dominating themes and ideas were identified according to similarities and differences. The survey data was compiled into files thus allowing for effective examination of the data for evidence of matches and mismatches between the two sample groups. As common themes and patterns emerged, they were examined in relation to established educational theory. Care was taken to seek explanations of the data other than that offered by

educational theories referred to in Chapter One and Chapter Two.

Discussing the data was the next step in the qualitative analysis. The data were summarized using the researchers own words. In some instances, the meanings to certain words and phrases in the responses had to be interpreted. However, for the most part, statements were as close to the originals as possible. To maintain the integrity of the data, wide use of quotations from the responses was made. Where appropriate, the researcher reflected upon some of these statements using personal thoughts as well as references from educational literature. To ensure confidentiality, names and places were eliminated in the written summary.

The survey data were analysed and presented in five sections. Each section was guided by the major research question that guided the research. An analysis of the data followed each of the major headings. The sixteen questions from the survey were categorized and placed under the major research question that guided their construction. The responses to each of these sixteen questions were analysed and presented under the heading of that particular question. The references of the survey data to the theoretical construct of equality of opportunity for all students in association with the value of current educational technology is in the "Overview of Question" section for each of these sixteen questions.

In consideration of anonymity, general characteristics of both sample groups were described. The reader may find this beneficial in gaining a greater appreciation of the data. The participants in each sample group were a combination of Level Two and Level Three classes from schools in North Community and South Community. As described in

Chapter Three, all Level Two and Level Three students were identified as either having more or less access to current technologies by an administrator of each particular school.

Group One consisted of students with more access to current technologies. A student with more access to current technologies was defined as one who had access to distant education courses, one who had access to the Internet or as one who had unlimited access to a computer.

Group Two consisted of students with less access to current technology. A student with less access to current technologies was defined as one who did not have access to distant education courses, one who did not have access or who had very limited access to the Internet or as one who only had use of a computer at school in specific time periods.

The data presented in this chapter compared the results of the two sample groups and summarized, through comparison and contrast, the opinions and ideas of all the participants. All reasonable precautions were taken to ensure that the analysis of the data reflected the views of the participants as they were stated in their original form.

Research Question I

Is current educational technology valued differently among students in isolated communities of Newfoundland and Labrador?

The following four questions were designed to shed light on this issue:

1.1   What purpose does technology serve in the education system of your school?

All participants responded to this question. Their views pertained to the question and were stated very clearly.   For the most part, students from both groups recognized

the importance of technology in the educational system of their schools. Students noted

that computers in schools better prepared them for their future endeavours. As well, they

realized that technology was a key to obtaining information from the outside world.

Of the students who had more access to technology, eight mentioned that distance

education served a very useful purpose in their school. One respondent claimed:

> *This year I am in third level Chemistry at my school. This course would not normally be offered but it is through distance learning. Now I will have a better opportunity to succeed at Chemistry while pursuing secondary education.*

As well, three of these participants who had more access to technology pinpointed the

fact that not all students had an opportunity to access these distance education courses.

One student remarked:

> *This technology is limited to certain students. For example, distance education courses are only accessible by those who do advanced courses such as Chemistry 3202.*

Another pointed out:

> *Not many students use technology a lot in learning.*

Another noted that technology served only those who had higher averages.

Of the students who were characterized as having less access to technology, only

four discussed the importance of distance education. One respondent commented that

technology was only important to certain students within the school:

> *Technology does not have a great purpose or impact in our school because not everybody gets to use technology such as distance education or the Internet. For the students who get to use these programs, technology is having a great impact on their education.*

Both groups mentioned the importance of computers in the education system of their

schools. Two students with more access to technology explained that the Computer courses offered at their school were not advanced and thus were not as beneficial as they would like them to have been. Several of those students with less access to technology indicated that knowing how to use computers was very advantageous. One student wrote:

> *In computer classes, students are taught how to use and apply computers for different tasks. Students are more prepared to enter the workforce where computers are becoming more widely used.*

Another student wrote:

> *It allows teachers to make tests and worksheets for us.*

A third declared:

> *It is a fun way to learn rather than from a text book.*

A fourth respondent suggested:

> *It is a way for us students to type up assignments.*

Six students with more access to technology recognized that one major advantage of the computer system in their school was to retrieve information via the information highway. Three of the students with less access to educational technologies noted this advantage as well.

Overview of Question 1.1

Current educational technology is clearly valued differently amongst students in some isolated communities of Newfoundland and Labrador. There is a clear disjunction between what each of the two groups of participants perceived as the purpose of technology in the education system of their schools. Both groups of students indicated that technology was vital in the functioning of their schools. However, the degree of

importance of the three sources of educational technology mentioned, namely computers, the Internet and distance education, was somewhat varied.

The students with less access to technology placed more emphasis on the importance of computers and computer courses for preparing them for the workforce and in the preparation of assignments and tests within the school. Those who had more access to technology tended to identify computers with the Internet and the information highway rather than as only a tool for students and teachers to prepare assignments. Students in this group also complained that the computer courses being offered at their school would be of greater benefit if they were more advanced.

The group of students with greater access to technology placed more emphasis on the significance of distance education to the learning environment of the school. Many of these students were pleased with the fact that they had access to advanced courses via distance education. Fewer of the participants with less access to technology noted the importance of distance education. Respondents from both groups indicated that there was a problem with distance education courses because not all students had access to these courses.

The disjunction in the value of educational technology amongst students in rural high schools would be perceived as a problem by some modern educational theorists because it appears that all students might not be benefiting from the current educational technology in their schools. Students who had more access to current educational technology appeared to place more value on the technologies in their schools compared to those who had less access to educational technology. Webster and Connolly (1993),

argue that equality of access to new technology is of the utmost importance. Newell (1986) supports this when he claims that schools cannot correct all personal and social inequalities but they can offer equality of opportunity to pursue educational goals.

1.2 Is current technology in the education system valuable to you? If so, in what way? If not, why?

All twenty participants responded to this question. Their answers were precise and applied to the question being asked. Most students in each sample group felt that some aspects of the current technology in the education system was valuable to them (Refer to Tables 4.1 and 4.2). However, technology was valued in different ways and there were distinctions in the value of current technology between sample groups.

Seven of the students who had more access to technology noted that current technology was providing them with advanced courses by means of distance education. One student wrote:

I can take courses not usually offered at this school by doing distance education.

Another noted:

A class can be taught by a teacher one thousand kilometres away.

Another respondent commented:

I take distance education Chemistry which involves the use of chemistry attachments for computers using version software. This gives me practice using current Chemistry equipment.

Two of the students with less access to technology mentioned the distance education

Table 4.1   VALUE OF CURRENT TECHNOLOGY IN EDUCATION

Students	Number of students who felt that current technology in the education system was valuable to them	Number of students who felt that current technology in the education system was not valuable to them
Students who had less access to technology	16	4
Students who had greater access to technology	20	0

Table 4.2   VALUE OF PARTICULAR ASPECTS OF CURRENT TECHNOLOGY IN EDUCATION

Students	Number of students who emphasized the value of distance education	Number of students who emphasized the value of the Internet service	Number of students who emphasized the value of basic computer usage
Students who had greater access to technology	7	5	5
Students who had less access to technology	2	2	5

program in their school. These students tended to value current technology for different reasons than those who had more access to technology. Many of these students felt that technology was quite valuable because it allowed them to learn more about computers and computer applications. One student stated:

> Classes in Micro-computers and Computer Applications helped me get a grasp on the use of computers and different programs.

Another participant declared:

> Micro-computers has shown me how to use WordPerfect and other programs which are valuable.

A third participant wrote:

> Technology allows us to do projects faster and better.

Students with more access to technology focused on the value of the Internet service. One student commented:

> With the Internet open to me, research becomes a lot easier.

One of these respondents, however, recognized that the problem with the Internet service was the availability of it to students in these isolated schools:

> The only technology which is not readily available to me is the Internet. This may be because it is too expensive to supply this access to each student in the school.

Two students who had less access to technology mentioned the value of the Internet service. Four of these students commented that current educational technology was not valuable to them:

> Current technology in the education system is not valuable to me because with the technology, people who take Chemistry by distance education get a chance to use it every second day to better their know how in Chemistry. With me, I see a computer but it is not of so much importance as those students who do distance

education and learn Chemistry.

A second student wrote:

It isn't very valuable to me because I don't take many technology courses.

Overview of Question 1.2

For the most part, both groups expressed that current technology in the education system was very important. However, twenty percent of the students from the sample group that was characterized as having less access to technology bluntly stated that current technology in the education system of their school had very little value for them (Refer to Tables 4.1 and 4.2).

It appears that participants who had more access to technology highly valued the distance education services provided at their schools as well as the Internet services even though, one student did mention that the Internet services were limited. Students who had less access to technology mainly valued computer programs such as WordPerfect. Students who had greater access to educational technology valued the usage of computers but many of them also recognized the usefulness of the Internet services. Those with less access to technology did not emphasize the value of the Internet for them.

Willie (1989) would see this disjunction in the value of educational technology between the two different groups of students attending the same school as a problem. He states that education must have the purpose of being mutually fulfilling. In this case, it appears that one group, namely the sample group of students that had more access to technology, has placed more value on educational technology than those who had less access to current technology.

1.3 What do you consider to be the positive aspects of the current technology program on your education?

Twenty participants responded to this question. The answers varied considerably within each sample group but were brief and to the point. The group of students who had more access to technology indicated the following as positive aspects of the current technology program on their education:

(1) Technology allows students to feel less isolated because of the contact with the outside world.

(2) Courses offered through distance education are usually advanced thus more challenging.

(3) Distance education allows for a greater course selection.

(4) Communication with other students and the exchange of ideas and information becomes uncomplicated with new technology.

(5) Distance education courses allow students to compete with other students from all over the province.

(6) The Internet provides information that would otherwise be difficult for these students to acquire.

(7) Students are given more choice when deciding on a career.

(8) Experience with technology may help with future endeavours.

One student commented that even though he/she had limited access to the Internet service, it was still valuable:

Access to computers although limited helps us get in touch with reality. It helps us realize what is going on around us (ie.Internet). This limited access in my mind is better than none and I believe all students can benefit from it.

Students from the other sample group who had less access to current technology identified some similar impacts of the current technology program on their education. Two of these respondents stated that technology may help one when making a career choice. One of these students mentioned the impact of the Internet and how easy retrieving information had become. For the most part, the positive aspects of the current technology program identified by this particular sample group was somewhat different than the sample group who had more access to current technologies. The group of students who had less access to technology indicated the following as positive aspects of the current technology program on their education:

(1)   It familiarizes students with current technology.

(2)   It teaches students the basics of computers: How to create files, typing skills, and how to use a scanner.

(3)   Using technology is fun.

The answers given by this particular sample group were very brief. Most of these participants only had one positive point to make, whereas students who had more access to technology each listed several positive features of the current technology program on their education.

Overview of Question 1.3

These data indicate that students with more access to technology as compared to those with less access to technology were more apt to perceive the technology program as

having a positive impact on their education. As a group, those with more access to current technology listed more advantages than those who had less access to current educational technology. Students who had more access to technology emphasized the value of distance education courses and the Internet services whereas only one of the ten who had less access to current technology mentioned the value of the Internet. None of the participants from this sample group noted the value of the distance education program.

Again, there is a disparity in the value of current educational technology between the two groups. Barker et al. (1995) would see this disparity as a problem. They suggest that all students should benefit from advanced learning technologies. This does not appear to be the case in the two small, isolated communities of Labrador. The students who had more access to current technologies discovered many more positive aspects of the current technology program on their education. Current educational technology is obviously valued differently among students in isolated communities of Newfoundland and Labrador.

1.4   What do you consider to be the negative aspects of the current technology program on your education?

All participants responded to this question. The participants were quite clear as to what they perceived as the negative impacts of the current technology program. Many who listed positive impacts in the previous questions also cited negative impacts of the current technology program in this section. Nearly all of the comments regarding negative impacts centred around the lack of educational technology available at the

schools.

Students who had more access to current technologies wrote quite lengthy answers compared to the students who had less access to current technologies. These students identified many negative aspects of the current technology program on their education.

Several of the students who had more access to current technology noted that the absence of a teacher in the classroom, during distance education classes, was sometimes an inconvenience. One student claimed:

You do not see your teacher and explanations are sometimes hard to understand.

Many of the students felt that the limited access to the Internet was a negative aspect of the current technology program. One participant wrote:

A negative aspect of the current technology program on my education is that I have very little access to the Internet and therefore I will not receive the benefits of it. The Internet at my school is only viable through one computer and the students are not able to get access to it when they want.

Another student commented:

Access to the Internet is seldom available to the students. This may be because it is too expensive to supply but it is still very negative.

These respondents recognized some of the problems associated with providing all areas of the province with the Internet service. However, they also grasped how disadvantaged they were. As one student remarked:

There is a huge difference between the larger centres like St. John's and Corner Brook and places like here. In St. John's every technology or opportunity is available to the students, but here it is the very select technologies which we get to use. But even then we are usually a couple of years behind.

Another student noted:

> *We, as students at this school, can't go on the Internet to find information for an assignment or just to "surf" the Net for general knowledge. We don't have this privilege, nor do we have the privilege of having an e-mail account like other students across Newfoundland.*

Many participants went on to expound on the notion that all students at their schools did

not have equal access to current technologies:

> *Everyone does not have access to all the technologies which are available. There are students who have all the time they want on the Internet because of a parent's job while others have never been on the Net before.*

Another wrote:

> *Some students, through one reason or another, gain access to faxes, school computers or networks and distance education classes. As well, due to the limited number of computers and Internet facilities, very few students can gain access to the Internet and "surf the web." Also, some students do not gain access to the technological program because of the course of study of the particular student. Some may not have the marks whereas others may not feel that these opportunities can benefit them. But no matter what the case, students should be given equal involvement.*

In an interview, another student remarked:

> *Not everybody has equal access to it so therefore some people are learning a lot more while others who would like to learn it just do not have the opportunity to go on the Internet. Some people do not even have a computer at their house so they can't learn as much as other people do. I have ample access to the Internet because my parents have E-mail addresses. At school teachers will share their Internet time during class or after school. Both my parents have Internet access because they are teachers.*

One respondent complained that the computer courses were not advanced enough.

Another addressed the idea of a computer course for each grade level. This, the student

said, would provide all pupils with a knowledge of current computer programs.

Participants from the group who had less access to current technologies reflected

many of the views of the other sample group. They too recognised that students did not

have enough access to current technology. One student wrote:

> *Negative aspects of current technology:*
> *- not enough access to current technology*
> *- limited resources(money) to maintain and improve the technology*
> *- not all students are able to take advantage of technology ex. Distance Education*

As well, five of these participants noted that students did not get enough Internet time.

One student remarked:

> *The negative aspects are that we are not linked to the rest of the world as some*
> *schools are within respect to this Internet.*

One respondent felt that the problem with current technology was that it was not equally

accessible to all:

> *The negative aspect, I think is the fact that not all students have access to distance*
> *education, the Internet or computer classes. This is taking away from some*
> *students and giving it to others. The major thing is that the students who don't*
> *get to do these courses are probably as capable of doing these courses rather*
> *than the ones already doing it.*

One of these students wrote that there were no negative aspects regarding the current

technology program.

Overview of Question 1.4

Both groups of participants seemed to agree that there were negative aspects

related to the current technology program. With few exceptions, all participants agreed

that students in these small isolated communities were not exposed to enough current

technology. They noted that they did not get to spend enough time on the Internet and

many of them realized that students in larger centres of the province had more access to

the Internet than they did. Several of the respondents also discussed the fact that certain

students within the school had more access to the Internet because their parents were teachers who had an Internet account. Other students, they said, did not have access to distance education courses or computer courses because of their program of study, their grade average or lack of resources. Pupils, who had higher grade averages, were permitted to enrol in distance education courses because the only courses offered were academic and students who had lower grade averages were not permitted to enroll. Many of the courses offered through distance education were not appropriate for lower achieving students because low achievers did not have the academic background. Many of these participants indicated that there was a disparity of access to current technology amongst students within their schools.

This concept of inequality of educational services amongst students in a particular school is discussed by Webster and Connolly (1993). They believe that educational technology should be equally accessible to all students. They say that equality of access to technology is of the utmost importance.

Research Question 2

Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?

The following seven questions were designed to provide insight on this issue:

2.1   Do all students have equal access to the current technologies in your school?

Twenty students responded to this question. Answers to this question varied within the sample groups. Most respondents believed that all students did not have equal access to the current technologies. A small percentage believed that all pupils did have

equal access to the current technologies in their schools.

Eighty percent of the participants who were previously characterized as having more access to current technologies said that all students did not have equal access to current technologies within their schools. One student declared:

I have access to the computers for seven classes in five days while some of my friends don't have access to computers at all except outside of class.

Another wrote:

No, for example, you have to be in the top six of a course area to get in a distance education course. As well, some students do not even have a computer course in their course load and very few students have access to the Internet.

Another respondent expressed corresponding concerns:

All students do not have equal access to current technologies in our school. Some have more free time than others and get to spend more time with the technologies available to them. Often times, due to limited space, only a certain number of students are able to use the facilities at one time. Also, due to your academic achievement, somebody who would like to do geology, for instance, may not be able to do this course on distance education, whereas another with higher marks, is able to do it or another course through distance education.

The two participants that stated that all students do have equal access to current technologies in their schools, commented that many do not care to access the technology.

One student wrote:

All students do have access to the current technologies if they want to, but most don't want to.

Another stated in response to this question:

Yes! But a lot don't take advantage of it.

These two participants seemed to believe that any student could have access to current technologies if he/she wanted it.

Seventy percent of the group who was categorized as having less access to current technologies agreed that all students do not have equal access to current technologies. One participant claimed:

No, not all students have equal access to the current technology in the school, only if your marks are very good.

Similar views were reflected by another student:

No, there is not equal accessibility to current technology in our school for everyone. There is a log-on program and everyone who's in a computer course can get onto the system but other's can't. I think everyone should have a chance to work on the system.

Three of these students felt that everyone did have equal access to current technologies but many did not take advantage of the technology. One student wrote:

All students has equal access to the current technologies in our school but it is only by choice whether they take the advantage of not.

Overview of Question 2.1

In total, seventy-five percent of the participants believed that students did not have equal access to current technologies within their schools. Only twenty-five percent felt that all students did have equal access to technology.

The reality that all students, in an individual school, did not have equal access to current technologies is inconsistent with the ideal argued by Webster and Connolly (1993). They contend that equality of access to new technology is of the utmost importance for a quality education. Likewise, Margolis and Moses (1992) theorize that to ensure a quality education for all students in a particular school, there must be availability of resources for all.

2.2   Do some students in your school have greater accessibility to educational technology than others? If so, why do you think this is so?

Twenty participants responded to this question. Unlike the previous question, all twenty respondents agreed that some students in their school had greater access to educational technology than others. There was a range of reasons as to why they believed that this was so.

The group who had more access to technology listed many reasons why they thought there were some students who had greater access to educational technology. One respondent indicated that only trustworthy students were given the right to have unrestricted access to current technology. He/she said that students who were trusted gained the right to have more access to computers in their school. Five participants remarked that some students had more access to technology within the school because they had higher grade averages. One student wrote:

> It is just because they have higher marks, they get chosen to do distance education courses.

Another said:

> Only advanced courses are taught through distance education. Some people may not be at the advanced level of these courses and therefore are not able to take them and cannot be taught using distance education.

Two of the participants realized that only a set number were permitted to register for each distance education course thus eliminating qualified students from the course. One student wrote:

> Only six students from a class could be accepted for a distance education course. This would limit the access of the course to the six top students while the others in

the class could very well be capable of keeping up with the course.

Another said:

> *Well, in distance education, they usually take the top six people who are top in your class but people who are average and might want to do a course that is offered are not going to get the opportunity to do it because they are not in the top six.*

The distance education equipment only accommodated six individuals thus the students who had the highest grade averages were allowed to study these courses. The above respondent has indicated that if there are students, other than the chosen six who are capable of completing the distance education course, he/she may not be permitted to do so because of the enrollment limitations on class size. Others discussed the notion that access to the Internet was often determined by the occupation of the parents. One student wrote:

> *If your parent is a teacher, they more than likely have free time on the net. Therefore, their kids will use more time on the net and have greater accessibility.*

In an interview, another student indicated that his/her parent was a teacher thus he/she had more access to the Internet than many others. He/she pointed out that most parents, except teachers, did not have access to the Internet at home because they would have to pay for the service. This student indicated that there are some who are at a great disadvantage:

> *Like I just said, not everybody has equal access to it so therefore some people are learning a lot more while others who would like to learn it just do not have the opportunity to go on the Internet.*

Other students who were characterized as having greater access to current technology complained that those who were more academically inclined had less access to computer

courses because of the time factor. They did not have enough time to do all of the

academic courses that they wanted in addition to the computer courses they would have

liked to have done. One student commented:

> *I think some may have a little more access to the technology (computers) than other's because they have more free time or time to take these courses. Students, like myself, are taking all academically inclined courses ie: Advanced Math, Precalculus, Chemistry, Physics, English, etc. Therefore, we don't have the time within the school day to have access or take a beneficial technological computer course which I feel, we should have. While others, who don't have a tight schedule, have more time to use computer's and learn a lot more about them, therefore having greater accessibility to this technology (although they still don't get on Internet).*

Another student wrote:

> *Some students are given greater accessibility to educational technology than others. Some students have a lot of free time and they get chances to frequent the computers more often and learn more by just spending time at the facilities. As well, students may have lower marks, have free time to spend at computer facilities and therefore end up learning more about practical things than other student with higher marks would learn because they were doing a more academically inclined outline of study.*

Students who had less access to current technologies identified many of the same

reasons as did the former sample group. They noted that there was a limit on the number

of students who had access to distance education courses because of the limited

resources:

> *Some students in our schools have greater accessibility to educational technology than others. This is the result of limited resources available to provide this technology (money for computers).*

Preference for admission to the distance education courses was given to students with

higher marks because the courses were academic and many were not capable of

completing these courses. One student wrote:

Some students in my school have greater accessibility to educational technology than others because people who are smart enough to take the second year of chemistry have a chance to go on-line every second day using the computer.

Another student remarked:

The main reason I think some students have more access than others is because of the persons grades. Only the highest grade students in our Level III class got to take chemistry or Distance Education courses.

One participant wrote that time should be available for everyone to use the technology:

I believe there should be a time available for everybody to use the technology in our school.

Overview of Question 2.2

It was clear from the data that student participants from both groups felt that there were many reasons why some students in their schools had greater access to educational technology than others. The sample group who was already characterized as having more access to current technologies listed several reasons why some students had more access to current technologies. They focused on the fact that students who had higher grades were at an advantage and had easier access to distance education courses than those with lower grade averages. Limits on the number of students in distance education courses were a factor in determining who had greater access to educational technology. Students also pointed out that access to the Internet was often determined by a parents occupation. For example, two students remarked that if your parent was a teacher, you were at an advantage because your parent had free access to the Internet, unlike most other parents. This same group who were initially characterized as having more access to current technologies complained that students unlike themselves, who had a less academic

workload, had more access to computer courses. One respondent did note however that students who were enrolled in more computer courses still did not necessarily have access to the Internet.

Students who had less access to current technologies listed many of the same reasons as the former sample group. However, their answers were very brief as compared to those who had more access to current technology. Most of these students felt that those who had higher grade averages had more access to current technologies.

The idea that students who had higher grade averages had more access to current technologies supports recent research completed by Arias in 1990. The study conducted by Arias (as cited in Sutton, 1991) reveals that high-achieving students had greater access to the new technologies in the school. According to the collected data this appears to be the case in rural, isolated communities of Newfoundland and Labrador. It is known that students benefit from advanced learning technologies (Barker et al., 1995). If only some students have access to these learning technologies in our schools in Newfoundland and Labrador, then we realize that there is an inequality in accessibility of current educational technology. It would be fair to conclude that many students in this province are not receiving equal opportunity in their education.

2.3   *What is your current grade average? (Use a letter grade)*

Nineteen students responded to this question using a letter grade. Letter grades varied between the two different groups. The sample group that had more access to current technology, for the most part, had higher grade averages than those who had less access to current technology (Refer to Table 4.3).

Three students from the group who had more access to current technology had a B average whereas the other seven had an A average.

One of the students from the group who had less access to current technologies had a B average, six had a C average while two had a D average. One student from this group did not respond to the question.

Table 4.3 - GRADE AVERAGES OF STUDENTS

Students	Number of students with grade average of A	Number of students with grade average of B	Number of students with grade average of C	Number of students with grade average of D
Students who had more access to technology	7	3		
Students who had less access to technology		1	6	2

Overview of Question 2.3

Grade averages between the two groups varied considerably. The group who were previously identified as students who had more access to current technology had higher grade averages than those who were previously identified as having less access to current technologies. The group with more access to current technologies had A or B averages whereas the group who had less access to current technologies had mainly C or D averages.

Arias (as cited in Sutton, 1991) comments on this relationship. He reveals that high-achieving students had greater access to the new technologies in the school. This

appears to be the case in isolated, rural communities in Newfoundland and Labrador; higher achieving students seem to have more access to current educational technology.

2.4   What is your mother's occupation? What is your father's occupation?

All twenty student participants responded to these questions. Tables 4.4 and 4.5 depict the answers contributed by the participants. Occupations of parents varied considerably within and between the sample groups.

Thirty-five percent of the parents of the students who had less access to current technologies worked as Fish Plant Workers or were fishermen. Only four percent of the parents of students who were characterized as having more access to current technologies were employed in this area. Twenty percent of the parents of students who had more access to current technologies were employed as Teachers, and another twenty percent were employed as Store Clerks. There was also one Nurse and one Nursing Assistant within this group. Of the parents of students who had less access to current technologies, there were no Teachers or Nurses. Ten percent of this group worked as Store Clerks. The other parents in the group worked as a part-time Cook, Fish Plant Production Supervisor, Heavy Equipment Operator, Seasonal Worker, Salesman, Retail Manager, Labourer, Artist, Receptionist or as a House Wife. The remaining parents of students who had greater access to current technologies, worked as a Businessman, House Wife, Labourer, General Manager at a Fish Plant, Cook, Store Manager or as a Lines worker.

Overview of Question 2.4

About thirty percent of the parents of students who had greater access to current technologies could be characterized as highly trained individuals (Refer to Tables 4.4 and

4.5). Another fifteen percent worked at occupations that required training in post-secondary institutions. About ten percent of the parents of students who had less access to current technologies could be classified as working in occupations that would require educational training. Ninety percent of these parents worked in occupations that required very little educational training as compared to fifty-five percent of the parents of students who had less access to technology. Many of the parents were obviously part of a different social class. Gaines, Johnson and King (1996) recognize that inequities in social class relate to denied or restricted access to technology.

Table 4.4   PARENTAL OCCUPATIONS

Students who had less access to technology	Mother's Occupation	Father's Occupation
1	Part-time Cook	Fisherman
2	Fish Plant Worker	Fish Plant Worker
3	Fish Plant Worker	Seasonal Worker
4	Store Clerk	Fish Plant Production Supervisor
5	Store Clerk	Heavy Equipment Operator
6	Fish Plant Worker	Fisherman
7	Fish Plant Worker	Salesman
8	House Wife	Retail Manager
9	Receptionist	Labourer
10	House Wife	Artist

Table 4.5   PARENTAL OCCUPATIONS

Students who had more access to technology	Mother's Occupation	Father's Occupation
1	Store Clerk	Store Clerk
2	Store Clerk	Businessman
3	House Wife	Labourer
4	Fish Plant Worker	General Manager - Fish Plant
5	Nursing Assistant	Teacher
6	Cook	Fisherman
7	Nurse	Linesman
8	Teacher	Teacher
9	Store Clerk	Linesman
10	Store Manager	Teacher

2.5 *Describe your mother's education. Describe your father's education.*

All twenty students responded to this question. There was a very noticeable disparity between the education levels of parents of students from each sample group (Refer to Tables 4.6 and 4.7).

Twenty-five percent of the parents of students who had less access to current technologies had just a high school education. Thirty-five percent of the parents of students who had greater access to technology had a high school education. Of the parents whose children had less access to current technology, sixty percent did not finish high school while fifteen percent went on to a post-secondary education. Of the parents whose children had greater access to current technology, twenty percent did not finish high-school but forty-five percent attended a post-secondary institution.

Overview of Question 2.5

There was a very large difference between the education levels of parents of students who had less access to technology and parents of students who had greater access to current technologies (Refer to Tables 4.6 and 4.7). The majority of the parents of students who had less access to technology did not complete high school, and only fifteen percent of them attended a post-secondary institution. Twenty percent of the parents of students who had greater access to current technologies did not finish high school while forty-five percent of them attended a post-secondary institution. The parents of students who had greater access to current technologies appear to be more educated than the parents of students who had less access to current technology. Gaines, Johnson and King (1996) recognize the correlation between access to the tools of technology and

social class. They insist that steps have to be taken to correct this problem and to allow

equal access to current technologies for all students.

Table 4.6   PARENTAL EDUCATION

Students who had less access to technology	Mother's Education	Father's Education
1	< Grade 11	< Grade 11
2	< Grade 11	< Grade 11
3	< Grade 11	< Grade 11
4	Post Secondary Training	Post Secondary Training
5	High School	High School
6	< Grade 11	< Grade 11
7	< Grade 11	< Grade 11
8	High School	Post Secondary Training
9	< Grade 11	< Grade 11
10	High School	High School

Table 4.7   PARENTAL EDUCATION

Students who had more access to technology	Mother's Education	Father's Education
1	High School	High School
2	High School	High School
3	<Grade 11	< Grade 11
4	High School	Post Secondary Training
5	Post Secondary Training	Post Secondary Training
6	< Grade 11	< Grade 11
7	Post Secondary Training	Post Secondary Training
8	Post Secondary Training	Post Secondary Training
9	High School	Post Secondary Training
10	High School	Post Secondary Training

2.6   Have you ever travelled outside of the province? Have you ever travelled outside of the country?

All student participants answered these questions. Table 4.8 and Table 4.9 represent the students' responses. Answers varied strikingly between students who had less access to current technologies and those who had greater access to current technologies.

Ninety percent of those who had less access to current technologies had not travelled outside of the country or outside of the province. Ten percent of these students had travelled both outside of the province and outside of the country. Of the students

who were characterized as having more access to current technology seventy percent had travelled outside of the province while sixty percent had travelled outside of the country. Thirty percent had not travelled outside of the province while forty percent had not travelled outside of the country.

Overview of Question 2.6

There was a clear difference regarding travel experience between the two sample groups (Refer to Tables 4.8 and 4.9). Students who had more access to current technology travelled notably more than those who had less access to current technology.

Ninety percent of the students who had less access to current technology did not travel outside the country or province. Seventy percent of the students who had more access to current technologies travelled outside of the province while sixty percent travelled outside the country.

Gaines, Johnson and King (1996) contend that inequities of social class relate to access to technology. The group of students who had more access to current technologies were a more travelled group. A large majority of those students who were characterized as having less access to current technologies had travelled much less.

Table 4.8   STUDENT TRAVEL

Students who had less access to technology	Travel Outside of Province	Travel Outside of Country
1	No	No
2	No	No
3	No	No
4	No	No
5	Yes	Yes
6	No	No
7	No	No
8	No	No
9	No	No
10	No	No

Table 4.9   STUDENT TRAVEL

Students who had more access to technology	Travel Outside of Province	Travel Outside of Country
1	No	No
2	No	No
3	No	No
4	Yes	Yes
5	Yes	Yes
6	Yes	No
7	Yes	Yes
8	Yes	Yes
9	Yes	Yes
10	Yes	Yes

2.7   *Indicate your family income.*

    A. 15,000 and below ____
    B. 15,000 - 25,000   ____
    C. 25,000 - 35,000   ____
    D. 35,000 - 45,000   ____
    E. 45,000 and above ____

All participants responded to this question. Table 4.1- and Table 4.11 depict the responses of the students. Family income varied considerably between the two sample groups.

The family incomes of the students who were characterized as having less access to current technology were quite varied. Twenty percent of these families had an income of $15,000 and below, twenty percent had an income of $15,000 - $25,000, ten percent had an income of $25,000 - $35,000, forty percent had an income of $35,000 - $45,000 and ten percent had an income of $45,000 and above.

The family incomes of those students who had greater access to current technologies were quite similar. Ten percent of the families had an income of $15,000 and below, forty percent had an income of $35,000 - $45,000, and fifty percent had an income of $45,000 and above.

Overview of Question 2.7

The families of students who had less access to current technologies had a greater diversity of income than the families of students who had greater access to current technologies (Refer to Table 4.10 and Table 4.11). Fifty percent of the families of students who had less access to current technologies had an income of less than $35,000. Only ten percent of the families of students who had greater access to current technologies had an income of less than $35,000. Fifty percent of the families of students who had less access to current technologies had an income greater than $35,000, whereas ninety percent of the students who had greater access to current technologies had a family income that exceeded $35,000. Gaines, Johnson and King (1996) recognize the relationship between economic disparity and access to the tools of technology. They suggest that steps have to be taken to reassure that students who come from low income families have access to current technologies.

Table 4.10   FAMILY INCOME

Students who had less access to technology	$15,000 and below	$15,000 - $25,000	$25,000 - $35,000	$35,000 - $45,000	$45,000 and above
1			✔		
2	✔				
3		✔			
4				✔	
5				✔	
6	✔				
7		✔			
8					✔
9				✔	
10				✔	

Table 4.11   FAMILY INCOME

Students who had more access to technology	$15,000 and below	$15,000 - $25,000	$25,000 - $35,000	$35,000 - $45,000	$45,000 and above
1				✔	
2					✔
3		✔			
4					✔
5					✔
6				✔	
7				✔	
8					✔
9				✔	
10					✔

Research Question 3

**Are the career choices of students who have greater access to current technology
more academic than students who have lesser access to current technology?**

The following question was designed to provide insight into this issue:

3.1   *Describe the career choice that you have chosen. How many years of post
       secondary education would this course require? Do you believe the current
       technologies (such as Netscape and distance education courses) in your school
       have helped you make this decision? If not, why?*

Eighty percent of the students responded to these three questions. Answers
concerning career choice and the required years of post secondary education are depicted
in Table 4.12 and Table 4.13. Replies varied considerably between the two sample
groups.

Students who had less access to current technology chose careers such as Forest
Resource Technologist, Carpenter and Law and Security which all require one to two
years of training at a community college or a school of technology. Three of these
students were undecided. Six of the students, in this sample group, agreed that the
current technologies did not assist them in making their career choices. One student
wrote:

*The current technologies in my school have not helped me make this decision.
During the six years of school here, this is the first time I have had access to*

computers.

Other participants indicated that they had always been interested in the careers they have

chosen. One student said:

> *I was always interested in law and security before we had any of the technology*
> *we have now.*

Another respondent indicated that technology had not influenced his/her career choice

because he/she had no access to the technologies. One student agreed that technology had

influenced his/her decision:

> *I believe the current computer courses have helped me decide to take more*
> *computer courses after I graduate. I like working with computers and learning*
> *more about them.*

Students who had more access to current technologies tended to choose careers

that would require several years of university education. Careers such as Doctor, Nurse,

Engineer and Marine Zoologist/Botanist were chosen by these students. Seven of the

students from this group agreed that current technologies had influenced their career

choices. Several of them indicated the importance of the distance education courses that

they had completed. One wrote:

> *Distance education courses allowed me to further my study in Chemistry and*
> *made me feel that science/medicine would be a good career for me.*

Another student said:

> *Distance education has helped me although I have only done one course on line.*
> *The Internet has not helped because we don't have the privilege to use it.*

Other respondents indicated that current technologies made information concerning universities and careers available to them. Three students mentioned the impact of the Choices Software Program which allowed them to explore career choices.

Two believed that current technologies had no affect on their career choices. They insisted that they had chosen their career years before.

Overview of Question 3.1

Career choices varied considerably between students in the two sample groups (Refer to Table 4.12 and Table 4.13). Students who had more access to current technologies tended to choose careers that would require several years of university training. They chose careers in medicine, business and engineering. Students who had less access to technologies chose careers that would require no more than two years of post secondary school at a community college or a technical school. It would be fair to say that the career choices of those who had greater access to current technology were more academic than students who had less access to current technology.

The majority of students who had greater access to current technologies felt that it did help them make their career choices. This could possibly mean that many of these students had chosen careers that were directly related to educational technology. The majority of students who had less access felt that the current technologies had no impact on their career choices. This may be because their career choices were not in the field of technology.

Table 4.12   CAREER CHOICES & POST SECONDARY EDUCATION

Students with less access to technology	Career Choice	Required Years of Post Secondary Education
1	Forest Resource Technologist	2
2	Law & Security	1.5
3	Pilot	2
4	Community College	1
5	Carpenter	1
6	Business & Computer Studies	2
7	Microcomputers/Network Support	1
8	undecided	
9	undecided	
10	undecided	

Table 4.13   CAREER CHOICES & POST SECONDARY EDUCATION

Students with more access to technology	Career Choice	Required Years of Post Secondary Education
1	Doctor	7
2	Computer Programming	3
3	Undecided	
4	Business Degree	6
5	Doctor	7
6	Bachelor of Nursing	4
7	Doctor	7
8	Engineering	5
9	Electrical Engineering	5
10	Marine Zoologist/Botanist	7

Research Question 4

Has the current technology expanded the career options of students in isolated communities of Newfoundland and Labrador?

The following two questions were designed to gain understanding in this area:

4.1   *Do you believe that more access to these technologies would give you more options in your career choice? Explain.*

All twenty participants responded to this question. Twenty percent of the students from each sample group remarked that they believed that more access to technologies would not give them more options in their career choices. Eighty percent of the students from each sample group believed that more access to these technologies would give them more options in their career choices.

Students who responded negatively for the most part explained that they had always known their career choice and they did not believe that access to technology would change their decisions. They obviously did not believe that access to technology would give them more options. Their responses were succinct and to the point.

Students who believed that greater access to the current technologies would give them more options in their career choices, listed many reasons why they thought this was so. The predominant distinction between the two sample groups related to the explanations of the answers. Students who had less access to current technologies tended to justify their responses using brief, one line answers. Students who had more access to

current technologies elaborated their answers providing lengthy explanations.

Students who were previously characterized as having less access to current technologies explained their point of view with the following statements:

(1)   More access may provide opportunities for a more technologically advanced career.

(2)   The Internet could open up a new world of opportunity.

(3)   More information on different careers could be obtained through the Internet.

Students who had more access to current technologies also explained why they thought greater access to current technologies would give them more options in their career choices. One student discussed the idea of having more distance education courses that might open avenues to more career choices. This person also discussed the outcome of having more access to a computer:

> Yes, I would think that more access to technologies would allow more options in a career choice. For example, if more courses were offered through distance learning (courses which were not usually offered at our school) students would be able to explore other career options. As well, I've noticed that with obtaining my own computer over the past little while, I have become more interested in computing programs and computer technologies. Such access for students might turn them in the same direction.

Other students also recognized the importance of distance education, the Internet and computers with regard to determining a career:

> Yes, I believe it would. Only a year ago our courses were all taught by teachers in the classroom. This year, I do chemistry 3202 through distance education which is the only way it could be available and just this limited amount of access opened my eyes and gave me more options. I believe more access to the Internet, and to computer's would really be beneficial for students in making decisions for careers. It presents more options, gives them more visual opportunities, and gets each student's mind in sync with the career choices that are available and

feasible.

Overview of Question 4.1

There was not a great disparity on this issue between the students who had greater access to current technologies and those who had less access to current technologies. The bulk of the respondents indicated that they did believe that more access to current technologies would give them more options in their career choice.

Several students rationalised how greater access to distance education courses, would allow for more options in their career choices. Others noted the importance of the Internet for locating information about career opportunities. Students seem to recognize that technology can enhance their education (Stevens, 1994).

4.2 *Do you believe that the current technology program in your school has expanded your career options? If so, in what capacity?*

All twenty participants responded to this question. There was a significant disparity on this issue between the two sample groups. Sixty percent of the students who were characterized as having less access to current technologies advocated that the current technology in their schools did not expand their career options. Forty percent of this group replied that the current technology program did expand their career options. Ninety percent of the students who were classified as having greater access to current technologies agreed that the current technology program in their schools had expanded their career options, while ten percent disagreed. A variety of reasons for these opinions were contributed by students from each sample group.

Several of the students who had less access to current technologies noted that the

reason current technologies had no bearing on their career options, was because they did not use the current technology program. One student wrote:

> *No, I don't really believe it has expanded my career choices because I don't really use a computer a lot.*

Another bluntly stated:

> *No, because I have had no access to it.*

Another student noted that the school did not have technology that would enhance career options:

> *No, I don't think the current technology program in this school has expanded my career options because we only have the basic technology.*

Of the four students in this sample group who acknowledged that the current technologies did in fact expand their career options, three of them explained that having used computers has made them aware of career choices involving computers. One of these students mentioned the fact that information about careers could be accessed via the computer.

Of the students who had more access to current technologies ninety percent agreed that the current technology program had expanded their options. Several who had completed or who were enrolled in distance education courses were quite adamant that these courses had expanded their knowledge of career choices. One student wrote:

> *Yes, I would think that at least to an extent, the current technologies at school have expanded my career options. For example: this year through distance learning, I took a chemistry course which is very helpful in exploring this area in post secondary school. As well, it has given me the opportunity to learn about careers involved in this area.*

Another discussed the importance of the Choices Software Program that was available at

his/her school:

> Yes, the current technology program in my school has expanded my career
> options. But not in a large degree. Distance ed., chemistry showed me I like
> chemistry while the computer network with the Choices program allowed me to
> determine what careers involved chemistry.

One student noted that his/her career options would probably have been expanded more if

the Internet service had been readily available:

> Distance Education has expanded my career opportunities in making chemistry
> 3202 available to me. It's an experience that I feel is important to me and my
> character. Distance Education courses are more demanding and thus makes a
> student more responsible for their work, grades, etc. It's an experience that I
> benefited from. I believe that having this opportunity expanded my career options.
> But I believe they would be expanded even more with more access to computer's
> and the Internet because they present more opportunities and open more windows
> which I may be interested in after seeing and reading about them. Last summer, I
> had access to the Internet when I was working at Memorial University. The
> Internet presented opportunities that I didn't even know were available or real.
> So I know what it's like to have access and use it to my advantage and not to have
> access and wish it were available. At our school we're missing part of what is
> important.

Overview of Question 4.2

Regarding the impact of the current technology programs on career options, there

was a significant distinction between the perspective of students who had more access to

technology compared to the perspective of those who had limited access to current

technologies. Ninety percent of the students who had greater access to technologies felt

that the current technology program in their schools had expanded their career options

while only forty percent of those who had less access to technologies agreed. The

greatest differences in their explanations pertained to the influence of distance education

courses. Many of the students who had greater access to current technology mentioned

that distance education courses had expanded their career options. One of these students mentioned the importance of the Internet on career options. Only one of the students who had less access to current technologies discussed the fact that career options could be explored by means of a computer. None of them discussed the influence of distance education courses.

Current technology has expanded the career options of mainly students who had greater access to current technologies. The majority of those who had less access to current technologies believe that current technology has not expanded their career options. It appears that the students in some isolated communities of Newfoundland and Labrador are not necessarily equally benefiting from the technological program. Gaines, Johnson and King (1996) agree when they say that all students do not equally benefit from technological learning tools because there are not enough technological tools to go around thus many are being denied access.

Research Question 5

Do students have ideas that may lead to a technological program that will optimize student involvement?

The following two questions were designed to answer the above question:

5.1   Do you believe that the education system optimizes student involvement in the technological program? Explain.

All twenty students answered this question. Responses from participants in both groups were quite similar. The majority of students from the two sample groups contended that the education system did not optimize involvement in the technological

program.

Thirty percent of the students from the sample group that was identified as having less access to current technologies suggested that the educational system did optimize involvement in the technological program. Twenty percent of the students who were characterized as having more access to current technologies noted that the education system did optimize involvement in the technological program. One student commented:

> *The teachers try to get students into technology more now than they used to and everyone is starting to get involved.*

Another noted:

> *Yes, but we are only able to get on the Internet once in a while. But we have access to Windows.*

Access to Windows and limited access to the Internet appeared to be acceptable to this particular student. The explanations, provided by the students who believed that the educational system did optimize student involvement were exceptionally terse.

The majority from both sample groups asserted that the education system did not optimize student involvement in the technological program. Students who had less access to current technology outlined ways that the education system failed to optimize involvement in the technological program. They indicated that this failure to optimize their involvement in the technological program consequently led to obstacles in the education program of the school. One student asserted:

> *The education system doesn't optimize student involvement in technological programs. The school boards don't put enough money in place to ensure equal access to technological programs. Other schools have better and more advanced technological programs than our school. The students are also given more opportunities to use this technology. This gives them a greater advantage over us*

for getting accepted for post secondary institutions, jobs etc.

Another remarked:

> *The education system does not optimize all students involvement in the technological program because in some schools all the students are able to go on the Internet. In other schools, students cannot go on the Internet unless their teachers bring in a computer.*

These particular respondents surmised that the technological program was not optimized

for them and they felt that students at their particular school were at a disadvantage,

compared to those in other schools who had more access to current technologies.

Suggestions to optimize student involvement were proposed by some of the participants.

One student noted:

> *I think school boards should improve technology by buying new pieces of computer equipment.*

Another recommended:

> *We need to get hooked up to the Internet and we need more Internet time allotted for others who don't have computer class.*

> Students who were classified as having more access to technology also

emphasized the notion that the failure to optimize involvement in the technological

program led to obstacles in the education program of the school. One student wrote:

> *Students in larger centres are given more opportunities than are students in rural areas.*

Another made the following point:

> *The technological programs are given first to the schools in the larger areas like St. John's. Here, by the time you get the programs, they are probably years old.*

Students from this sample group also acknowledged that to optimize the technological

program, all pupils within a school should have an opportunity to benefit. One

participant remarked:

> *Unfortunately, the distance education programs have been limited in availability and has been limited to how many students can take them.*

Another student said:

> *Distance education only offers one course right now. It only optimizes involvement for those interested in chemistry.*

Participants who were identified as having more access to current technologies discussed

some of the reasons why the educational system does not optimize student involvement in

the technological program. Two mentioned the effects of government cutbacks:

> *Due to all of the recent government cutbacks, education is suffering.*

Another commented:

> *I don't believe that the education system optimizes student involvement in the technological program because the government has not given the school the amount of financial assistance they need.*

Overview of Question 5.1

An average of seventy-five percent of the participants, from both sample groups,

contended that the education system did not optimize student involvement in the

technological program. An average of twenty-five percent conceded that the educational

system did optimize student involvement in the technology programs. Explanations did

not vary considerably between sample groups. Those who agreed that the education

system did in fact optimize involvement in the technology programs only briefly

explained their views whereas most of the students who disagreed with this opinion,

elaborated on their explanations.

The data in this section clearly indicates that the majority of students do not believe that the educational system optimizes involvement in the technological program. Students obviously wish to see changes within the technological program so that it will optimize their involvement. Gaines, Johnson and King (1996) note that there is a critical need for broader technology access to optimize student involvement. Some students mentioned that a reason for the limited involvement was a lack of funding by the government. Gaines, Johnson and King (1996) agree with this idea and they contend that governmental regulations do not insure equity of access.

5.2   Do you think the Department of Education could improve the technological program in your school? If so, how?

Nineteen participants responded to this question. One student did not respond. Replies from both sample groups were comparable. The majority of students from both groups maintained that the Department of Education could improve the technological program in their schools. Ten percent of the students from each group insisted that the Department of Education could not improve the technological program in their schools.

Students, who said that the technological program in their schools could not be improved by the Department of Education, insisted that the technology program in their school was efficient. He/she wrote:

I think it is good the way it already is.

Others indicated that the Department of Education could not afford to provide a better service to their schools. One student replied:

The fact is by the way the province is run, it looks like they haven't got enough money. In my opinion the Department of Education can only give so much to

each school.

Students from both sample groups recommended (to the Department of Education) several areas of improvement for the technological programs in their schools:

(1)   The government could invest more money into keeping current technology up-to-date.

(2)   Distance education should be made accessible to a greater number of students.

(3)   A communications receiving dish should be made available to isolated areas of the province to allow for a more convenient Internet service.

(4)   The computer - student ratio must be increased.

(5)   Schools should be provided with technological access comparable to that of urban schools of Newfoundland.

(6)   A distance education program, that allows the students to see the instructor instead of just seeing his/her writing, would provide a better service.

(7)   Teachers should be trained to properly integrate the new technologies into the curriculum.

(8)   More access to the Internet and to computers would improve the technology program.

(9)   Equal access should be provided to all students in a particular school.

(10)   Funding is required to buy updated computer programs.

One student insisted that in his/her situation, more teachers are required:

With all schools being shut down, more teachers will be needed to cope with the influx of students, but this is not being done. In our area students will be coming to our school from a recently closed high school. There will be many more

students but access to technological facilities will decline as a result.

Overview of Question 5.2

There appears to be a consensus on the part of most of the participants regarding the desire for the Department of Education to improve the technological program in their schools. The majority of the participants listed various avenues for improvement of the technological program in their school. Ten percent did not list any means of improvement. There were no major differences in the opinions of students who had more access to current technology in comparison to students who had less access to current technology.

Many of the concerns and ideas of the student participants are reflected in the current literature. Gaines, Johnson and King (1996) promote the need for broader technology access. They also elaborate on the idea of increasing the number of computers per student. The suggestion that schools in remote areas receive technological education similar to those of students in urban areas is recognized by Craig (1994) who acknowledges that the more remote an area, the less opportunity students have to avail of educational opportunities accessible to those in urban areas. The Department of Education (1991) also admits that schools in isolated areas have fewer services. The implication that the Department of Education should ensure that students within a particular school have equal access to technology is supported by Sutton (1991) who writes that the disparity of accessibility of these educational tools between pupils in schools should be eliminated. The recommendation that teachers should be properly trained to use new technologies is supported by Stevens (1994) who claims that

technologies are unlikely to be fully utilized unless teachers are properly trained to do so.

Two students contended that the Department of Education does not have sufficient funds to enhance technological programs. Gaines, Johnson and King (1996) also discuss the fact that resources are not there to provide adequate technology tools.

Chapter 5

Answers to Research Questions

Chapter four presented findings of the questionnaires and interviews. The survey data was presented in five sections that were guided by the major research questions. The sixteen questions from the surveys were categorized and placed under the major research question that guided their construction. The responses to each of the questions were analysed and presented under the heading of that particular question. A short overview to each of these sixteen individual questions was also presented. This chapter will present an answer to each of the five research questions. This will bring together the overviews of responses to each individual question.

Research Question 1

Is current educational technology valued differently among students in isolated communities of Newfoundland and Labrador?

According to this study, current educational technology was clearly valued differently among students in isolated communities of Newfoundland and Labrador. There was a distinct disjunction between what each of the two groups of participants perceived as the purpose of technology in their schools. Both groups of students agreed that technology was vital in the functioning of their schools. However, the degree of importance of the three sources of educational technology mentioned, (computers, the Internet and distance education), was somewhat varied. Students who had less access to technology tended to value the computer as a tool for preparing them for the workplace and as a tool for the preparation of assignments. Students who had greater access to current technology placed more emphasis on the significance of distance education

courses. They also identified computers with the Internet and the information highway rather than as only a means of preparing assignments and tests. Participants who had greater access to current technologies were more apt to perceive the technology program as having a positive impact on their education than the group who had less access to current technologies.

Current educational technology is definitely valued differently between students involved in this study. The group of participants who had more access to technology tended to place a high value on technology. They saw technology as a great asset to their educational endeavours. Those respondents who did not have as much access to technology did value it but not as highly as students in the former group. Distance education courses and the Internet were of little value to this group.

Research Question 2

Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?

The data from this study clearly indicates there was a sociological division between students who had greater access to current educational technology and those who had less access. This sociological division was based on differences in current grade averages, parental occupations, parental education, family income and how well travelled the participants were. A large majority of the participants felt that students did not have equal access to current technologies within their schools. Participants listed several reasons why some students had more access to current technologies. They focused on the

fact that those who had higher grades were at an advantage and had greater access to distance education courses than those with lower grade averages. Limits on the number of students in distance education courses was a factor in determining who had greater access to educational technology. Respondents also pointed out that access to the Internet was often determined by a parents occupation. For example, it was pointed out that if your parent was a teacher then you were at an advantage because your parent had free access to the Internet unlike most others. Grade averages between the two groups varied considerably. The group of students who had more access to current technology had higher grade averages than those who had less access to current technologies. Parental occupations differed between the two groups. A much larger percentage of the parents of students who had greater access to current technologies worked in job positions that required educational training as compared to the parents of those who had less access to current technology. As well, the parents of students who had greater access to current technology tended to be more educated than the parents of those who had less access to current technology. According to the study, students who had more access to current technology were a more travelled group. Family incomes varied considerably between the two sample groups. Fifty percent of the families of students who had less access to current technologies had a family income greater than $35,000 whereas ninety percent of the students who had greater access to current technologies had a family income that exceeded $35,000.

The sociological division between the two sample groups was quite apparent. Students who had more access to technology tended to have higher grades, their parents

worked in job positions that required educational training, their parents were more educated, they came from families with higher incomes and they were a much more travelled group of individuals.

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Research Question 3

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Are the career choices of students who have greater access to current technology more academic than students who have lesser access to current technology?

The results of the study demonstrate that the career choices of students who had greater access to current technology were more academic than the career choices of those who had less access. Those respondents who had more access to technology tended to choose careers that would require extensive training at a university or college. Those participants who had less access to technology tended to choose careers that would require minimal time at a community college or trade school. The majority of students who had greater access to current technologies felt that the current technologies helped them make their career choices. The majority of students who had less access to current technologies felt that the current technologies had minimal impact on their career choices.

Students who had greater access to technology wanted to embark on a professional career that would require years of post-secondary education. This is not unlike their parents who, according to Research Question 2 (Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?), tended to be well educated. Respondents who had less access to technology hoped for a career that would require much less training and education. Again, this is not unlike their parents who

tended to be more uneducated than those from the former group. It appears that students are inclined to do as their parents did.

Research Question 4

Has the current technology expanded the career options of students in isolated communities of Newfoundland and Labrador?

According to this study, current technology has expanded the career options of some students in isolated communities of Newfoundland and Labrador. Ninety percent of the students who had greater access to technologies felt that the current technology program in their schools had expanded their career options while only forty percent of those who had less access to technologies agreed.

Research Question 5

Do students have ideas that may lead to a technological program that will optimize student involvement?

This research study clearly indicates that students have ideas that may lead to a technological program that will optimize involvement. The majority of students did not believe that the education system optimized involvement in the technological program. Most participants felt that the Department of Education of Newfoundland and Labrador should improve the technological program in their schools. They emphasized the importance of having more computers in the school so that all students could have access. As well, they stressed the significance of having access to the Internet comparable to the access provided to students in many larger centres of Newfoundland and Labrador. The participants indicated that distance education courses should be made available to a larger

number of students. Many of them noted that adequate resources had to be made available to the schools if the technological program were to improve.

Chapter 6

Implications, Recommendations and Conclusion

Chapter six discusses how this study is being brought together in terms of the implications for schools and the implications for policy. There is a brief reflection on methodology and recommendations for further study are suggested.

Reflection on Methodology

The methodology employed in this research study has been quite effective and has led to quite an interesting study. There were, however, some problems with the methods used. Engaging a field worker to conduct the questionnaires in one of the schools was not as effective as carrying out the research oneself. Transcripts of the data collected by the field worker had to be read numerous times whereas the data that was collected by the researcher was much more easily comprehended. This was probably due to the fact that the researcher had not only collected information through questionnaires but had interviewed the participants as well. Before reading the questionnaires, the researcher had some understanding of what this group of students were feeling. This was not so with respect to participants from the other school. Thus, collecting the information for oneself and meeting all of the participants would have been more effective.

The results of this study were limited because it was a small scale study that included only two schools and twenty-two participants. This limits the results of the study to two very small areas of Labrador. The outcome of the study cannot automatically be applied to all isolated communities in Newfoundland and Labrador. A larger scale project would have to be undertaken to generalize the results.

Implications for Schools

In consideration of the current education theory and study findings, the researcher has arrived at a number of suggestions which may help schools in Newfoundland and Labrador to more equally satisfy the needs of all students within remote, isolated areas such as North Community and South Community.

Downer (1996) and Begley (1995) both praise the merits of important stakeholders being involved in the education system by becoming important players in the decision making process. Participants mention the important role of teachers in Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?) of the study findings. Singh (1990) insists that teachers, parents and school administrators, that are interested in equality within classrooms should examine present educational policy and practice. If educational policies and practices do not adhere to the equality of opportunities, then changes have to occur in the education system. Findings from this study indicate that for the majority of students in some isolated communities of Newfoundland and Labrador, equality of educational opportunity, with regard to the accessibility of current technology in education, does not exist. Thus, it is time that teachers, parents and school administrators become involved in a change process that will give all students equal opportunity.

Frith and Mahoy (1994) assert that empowering teachers as researchers will assist in positive change within a school system. Teachers, they say, are the first to recognize inequalities within the school and within the classroom. Bastian, et.al (1986) recommend that school administrators and teachers be included in decision making processes that

control budget and policy. They believe this is a positive step toward mandating educational equality in a society filled with structural inequalities. They insist that it is often concluded that students who fail to meet standards applied evenly to all, do so as a matter of choice. Sometimes, it is assumed that these students have learning deficiencies. Bastian et al. contend that student failure frequently occurs under the mask of competition. From the findings in this study, it may be ascertained that this is precisely what is happening in some rural schools in Newfoundland and Labrador. Research Question 2 (Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?) reveals that students who excel academically are the students who benefit from educational technology. The problem is that the majority of students are not among this elite group and therefore are not equally benefiting from educational technology. Bastian et al. (1986) go on to discuss the idea of school failure for low-income students. They believe that students from low-income families, who are at the bottom academically, have been terribly disserved. This correlates with the results of Research Question 2 (Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?). Students from lower income families tend to have lower grades and tend not to have immediate access to current technology. Bastian et al. maintain that if a school system is to operate effectively, there should be a commitment of equality whereby each child is offered the same structures of opportunity. Progress, they say is possible if school administrators and teachers work together with support staff to make

improvements within the school. Teachers, as well as school administrators, should be part of the decision making processes that determine the selection of curricula, that decide what supplies are needed in the schools and that choose how to use time and space within the school. District support for teachers to develop more flexible instruction and planning to promote equality is also a requirement. Of course teachers and school administrators have to play a role in creating a social environment that treats all children equally (Singh 1990). Singh writes a list of five practical questions that educators may ponder:

1. Whenever we are involved in the decision-making process - be it deciding curriculum materials, formulating admission policies, writing down rules and regulations about classroom discipline, school dress, bussing, I.Q. testing, etc., - we may pause and ask ourselves and others these questions: What is my ideology? What are the ideologies of others with whom I am interacting? What is my position in the social organization as compared to others? How would policies based upon my ideologies affect other groups of people in the province?

2. Each of us educators may ask ourselves: What perspective on social inequality do I have?

3. As individual educators we may ask ourselves: What understanding do I have about the social stratification in Newfoundland and in Canada? To what extent do I understand the relationship between schooling and social stratification?

4. Each of us may ask a question: What principle do I use in evaluating what I do in my class? Is the principle on which I evaluate my classroom activities drawn from liberal/conservative or other ideologies? For example, why do I practice grouping and intelligence testing? What is the purpose of these practices? What principles do I use to evaluate these practices? How do I justify or rationalize the results of these activities? Which groups of people get the most benefit out of my grouping and I.Q. testing practices? Who is left behind? Did I intend to leave this group behind?

5. What am I doing as an educator? What is the purpose of my activities? (p.21).

Rodriquez (1990) believes that the foundation for improving education is

contained within the following four statements:

(1)   What we want.

(2)   What we believe.

(3)   What we know.

(4)   What we do.

He says that educators have to ask themselves the following:

(1)   What do we want from our students? Do we have a common understanding of the goals, objectives and outcomes that we expect our students to achieve? Do we have a common mission in our school? What is it? And, more importantly, what does it mean?

(2)   What do we believe? Do we believe that all students can become successful learners? Do we believe that we can teach ALL children? Do we believe our schools must be accountable to the public? Do we believe that our schools must continually strive to improve?

(3)   What do we know? What is the evidence to support equity? What does the research literature suggest about teaching and learning? What evidence is there to suggest that things might not be as well off as one may suspect? What do we know that works? What do we know that doesn't work?

(4)   What do we do? How do we plan? Who makes the decisions? How do we know if we make a difference? Are we willing to take a risk? How do we evaluate our progress? (pp.262-263).

To improve upon the present educational system, parents must become involved

in the decision making processes (Lodge and Blackstone, 1982, Bastian, et al, 1986 and

Lieberman, 1995). Keith and Lichtman (1992) contend that parents who have high

economic status tend to be more involved in their children's education. Research

Question 2 (Is there a sociological division between students who have greater access to

current educational technology and students who have lesser access to current educational

technology?) reveals that family incomes differed between the two groups. The families of students who had less access to current technologies had a greater diversity of income than the families of students who had greater access to current technologies (Refer to Table 4.9 and Table 4.10). Fifty percent of the families of students who had less access to current technologies had a family income of less than $35,000. Only ten percent of the families of students who had greater access to current technologies had a family income of less than $35,000. Fifty percent of the families of students who had less access to current technologies had a family income greater than $35,000 whereas ninety percent of the students, who had greater access to current technologies, had a family income that exceeded $35,000. Bastian, et al. (1986) insist that low- income parents need to become more involved because it is more often their children who are suffering academically. These parents have to work together to overcome barriers to involvement in educational matters. Research Question 2 (Is there a sociological division between students who have greater access to current educational technology and students who have lesser access to current educational technology?) reveals that in this case it is the students of low-income families that have less access to current technologies, and it is these same individuals who are not as successful academically. These are the parents who need to become involved in the education process to bring about improvement for their children and to help solve the problem of poor academic achievement for students from low-income families. There was a very significant difference between the education levels of parents of students who had less access to technology and parents of students who had greater access to current technologies (Refer to Tables 4.5 and 4.6). The majority of the parents of students who

had less access to technology did not complete high school and only a small percent of them attended a post-secondary institution. However, it was pointed out by Downer (1996) that parents do not have to be well educated to make a difference. She contends that children will benefit when parents are aware of the issues and have input into the solutions.

To improve upon the present school system in some, isolated communities of Newfoundland and Labrador, the problem of inequality has to be recognized. From this study, it has been realized that individual schools have to address the problem as well. Research has shown that school administrators should empower teachers, parents and students in the decision making processes.

Implications for Policy

In consideration of the current education theory and study findings, the researcher has arrived at a number of suggestions which may help the Department of Education of Newfoundland and Labrador to more equally satisfy the needs of all students within remote, isolated areas such as North Community and South Community. This study indicates that not all students in some rural, isolated communities of Newfoundland and Labrador are equally benefiting from current educational technology. Current educational technology appears to be elitist and seems to be meeting the needs of a particular group of students while having minimal value for the mainstream student. It was pointed out by Greenfield (1986) that education paradigms must recognize the values, morals, goals and ideals of the people it serves. This would imply that in constructing an equally accessible educational technology program, the goals and ideals of all the students involved must be

taken into consideration. Consequently, the Department of Education, for the province of Newfoundland and Labrador, would be well advised to adhere to the suggestions of students regarding the educational technology program. The following is a list of suggestions that were derived from Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?):

(1)   The government could invest more money into keeping current technology up-to-date.

(2)   Distance education should be made accessible to a greater number of students.

(3)   A communications receiving dish should be made available to isolated areas of the province to allow for a more convenient Internet service.

(4)   The computer - student ratio must be increased.

(5)   Schools should be provided with technological access comparable to that of urban schools of Newfoundland.

(6)   A distance education program, that allows the students more interaction with the instructor instead of just seeing his/her writing, would provide a better service.

(7)   Teachers should be trained to properly integrate the new technologies into the curriculum.

(8)   More access to the Internet and to computers would improve the technology program.

(9)   Equal access should be provided to all students in a particular school.

(10) Funding is required to buy updated computers and computer programs.

All of the above suggestions imply that equality of access to current technology between

and within schools is the underlying request. Frith and Mahoy (1994) suggest that any school which is looking to improve and raise standards is not going to successfully do so unless the issue of equality is addressed. They contend that the issues of inequalities between students within schools have already been recognized but the problems have not been addressed. Action they say must be taken to deal with the issues of inequalities amongst students. They too emphasize the importance of student opinions. They insist that it is essential in any change process that students are empowered to become involved in the decision making process.

Participants insist, in Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?) that the computer-student ratio be increased so as to provide greater access to computers. Research Question 3 (Are the career choices of students who have greater access to current technology more academic than students who have lesser access to current technology?) and 4 (Has the current technology expanded the career options of students in isolated communities of Newfoundland and Labrador?) revealed that participants feel that more access to computers would assist students in making career choices. Franks, et al. (1996) agree that instruction can be improved if policies allow students access to computers through computer laboratories, classroom computers and computer take-home policies. A computer, they say, should be made available in every classroom for demonstration purposes. More computer laboratories would give students access to computers for individual or group work. Gaines, Johnson and King (1996) believe that finding cheaper older models of computers for students to take home will help solve the problems of

inequities. They say that some manufacturers make cheaper models that are appropriate to loan to students because the replacement costs are much lower. These types of suggestions may very well give more students greater access to computers especially those who do not have computers at home. Frank, et al., point out that, in their study, schools where computers are more available and accessible, had a significantly reduced gap between students, as compared to schools that provided less access to computers.

In Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?)participants suggested that the government allot more funding to ensure equal access to technological programs. Bastian, et al. (1986) assert that it is essential for school funding to meet equity needs. As well, individual schools should be provided with viable resources for effective management. This they contend may be obtained by changing the revenue base for school funding. They believe that grants to particular schools should be allotted according to the need of the school. Schools, they say, should be regularly monitored for improvements and replanning should occur accordingly. Allotting funding according to need could be an answer to many of the concerns of participants as outlined in Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?). Monies could be used to keep current technology up-to-date and the computer-student ratio could be increased thus providing greater access to computers. The Task Force on Educational Finance (Dixon, et al. 1989) for the Government of Newfoundland and Labrador agrees that it is no longer acceptable to allot funding that would provide equal expenditure per pupil. They write that to provide equal

opportunity to each child would require the allotment of funding according to need. The Task Force already agrees that there are inequalities in educational opportunities throughout the province. It points out that many improvements have been made in the province when it comes to inequalities in educational opportunity. However, the data from this study reveals that some inequalities in educational opportunity still do exist especially with regard to the accessibility of educational technology between students in rural, isolated communities of Newfoundland and Labrador.

Gaines, Johnson and King (1996) point out that equity requires us to ponder how we use our resources and fundings that we have now. They suggest the following considerations when searching for funding for the much needed resources to support educational technology programs in our schools:

(1)   Re-direct some of the funding used for buying textbooks to support the technology fund. CD-ROMS can replace much of the formerly used printed materials.

(2)   Ask schools if they wish to spend some of their allotted funds differently. Schools may be willing to sacrifice other materials to buy technological products so that all students have an opportunity to benefit from educational technology. Priorities do have a tendency to change.

(3)   Leasing technology may prove to be cheaper.

(4)   New funding sources have to be acquired. There should be a major overhaul in the educational delivery system which may require reallocation of existing governmental monies.

Research Question 2 (Is there a sociological division between students who have

greater access to current educational technology and students who have lesser access to current educational technology?) indicates that most participants felt that students did not have equal access to current technology within their schools. In Research Question 5 (Do students have ideas that may lead to a technological program that will optimize student involvement?) respondents suggest that this inequality be eliminated by providing distance education courses to a greater number of students, by providing an Internet service which would be comparable to that of urban schools in the province and by increasing the number of computers in the school. Gaines, Johnson and King (1996) recognize that in many schools access to the tools of technology is not equal amongst students. They insist that steps have to be taken to correct this problem and to allow equal access of current technologies to all students.

From the literature that has been read and from the research study conducted, it appears that the following would be appropriate steps for the Department of Education to take to begin the process of providing equal access to current technologies for all students in rural schools of Newfoundland and Labrador:

(1)   Listen to the opinions and beliefs of students. Much of the cited literature and the research data indicate that the views of students are a priority. They are aware of inequalities within their school settings and they are quite willing to discuss these problems.

(2)   Empower teachers and local administrators to make decisions regarding the needs of students and of the school. Many educational researchers and theorists agree teachers and local administrators are very aware of problems within their own

particular schools and are therefore at an advantage to help with decision making regarding the schools where they work. Teachers and administrators may wish to work on a plan that will provide access to educational technology for all students.

(3) Allot funding to schools in terms of need. Much of the cited literature promotes funding to schools in terms of need rather than allotting equal funding per pupil. Writers are quite aware that many small, rural schools require more funding to remain up to par with schools in larger centres. Funding for schools may have to be spent differently to provide ample educational technology resources which would enable all students access.

(4) Provide a technology program that will allow all students in rural areas to have equal access to educational technology. Prior research studies indicate that current technology is of the utmost importance in a child's education today. As well, research studies indicate that students in rural areas are often disadvantaged educationally due to lack of resources. Gaines, Johnson and King (1996) are quite adamant that in order to provide equal educational opportunity to all students, children in rural areas have to be provided with equal resources that will ensure equal educational opportunity for all.

Recommendations

Even though, this study has been carried out on a small scale and even though, it has involved only two schools with a total of twenty-two participants, the results may very well be an indication of what is happening in isolated schools across Newfoundland and Labrador. This could mean that the problem of inequality between students within schools is quite common within this province. It is recommended that more research be conducted to further enlighten the Government of Newfoundland and Labrador about the existing situation in our schools. To do this, research could be carried out in different areas of Newfoundland and Labrador or a replication of this study could be conducted. The study could be done on a larger scale to involve more schools. It is possible that the incidences of inequalities are characteristic of schools in Labrador only, but it would be beneficial to all students in the province if research was conducted on a larger scale.

Conclusion

There are obviously serious problems in some of the schools in rural Newfoundland and Labrador and there are no ready-made solutions. Fundamental changes have to be made in order to improve the present situation. Equal educational opportunity should be provided to all students in all areas of the provinces. This will require equal access to educational opportunity. However, research indicates that students, teachers, school administrators and parents have to be involved in this change process in order to make the changes successful and beneficial to all students.

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Appendix A

Thesis Questions

Winter Semester 1997

Della Healey

Comparative Analysis: A Comparison of Students who have Greater Access To Current

Educational Technology with Students who have Lesser Access To Current Technology.

Questionnaire

1.   What purpose does technology serve in the education system of your school?

2.   Is current technology in the education system valuable to you? If so, in
     what way? If not, why?

3. **What do you consider to be the positive aspects of the current technology program on your education?**

4. **What do you consider is the negative aspects of the current technology program on your education?**

5.   Do all students have equal access to the current technologies in your school?

6.   Do some students in your school have greater accessibility to educational

technology than others? If so, why do you think this is so?

7.   Do you believe that the education system optimizes student involvement in
      the technological program? Explain.

8.   Do you think the Department of Education could improve the technological
      program in your school? If so, how?

9. Describe the career choice that you have chosen. How many years of post secondary education would this course require? Do you believe the current technologies (such as Netscape and distance education courses) in your school have helped you make this decision? If not, why?

10. Do you believe that more access to these technologies would give you more options in your career choice? Explain.

11. Do you believe that the current technology program in your school has expanded your career options? If so, in what capacity?

12. What is your current grade average? (Use a letter grade)

13. What is your mother's occupation?

14. What is your father's occupation?

15. Describe your mother's education.

16. Describe your father's education.

17. Have you ever travelled outside of the province?

18. **Have you ever travelled outside of the country?**

19. **Check the blank that best describes your family income.**

   A. 15,000 and below _____

   B. 15,000 - 25,000   _____

   C. 25,000 - 35,000   _____

   D. 35,000 - 45,000   _____

   E. 45,000 and above _____

Appendix B

Della Healey
P.O. Box 28
Forteau, Labrador
AOK 2PO
709 931-2920 (work)
709 931-2490 (home)

April 11, 1997

Dear Student Participant:

I am presently completing a Master's Degree in Educational Leadership at Memorial University of Newfoundland under the supervision of Dr. Ken Stevens. My thesis is entitled **A Study Examining Divisions in the Value of Educational Technology Between Students in Isolated Communities of Newfoundland and Labrador.**

The study is designed to achieve the following five objectives:

(1) Determine if there are differences in the value of current educational technology among students in isolated communities of Newfoundland and Labrador.

(2) Identify whether there is a division between students who have greater access to technology and students who have lesser access.

(3) Identify whether or not the career choices of students who have greater access to current educational technology would differ in terms of the amount of time required in a post secondary institution as opposed to students who have lesser access to current educational technology.

(4) Identify whether or not current educational technology has expanded the career options of students in isolated communities of Newfoundland and Labrador.

(5) Elicit, from students, ideas that may lead to a technological program that optimizes student involvement.

There will be a total of 22 participants involved in this study. They will include 20 students selected from the towns of North Community, and South Community. An administrator from each school will be asked to participate as well.

Participants will be randomly selected, with the exception of school administrators.

Myself or a field worker will contact all the participants by telephone or in person and

ask them to participate. The field worker will be informed of the nature and purpose of the study. When participants are contacted, the nature and purpose of the study will be explained to each person. Each participant will be forwarded a questionnaire and asked to complete it. Each student participant will be interviewed and the interviews will be audio-taped. An assurance of confidentiality will be given to the participants both verbally and in writing.

My thesis proposal has been reviewed by the Ethics Review Committee of Memorial University of Newfoundland and has been approved by that committee. Dr. Linda Phillips, Acting Associate Dean of Graduate Programs and Research, is acting as the resource person for the study.

Your participation in the study is completely voluntary and all responses will be kept in strict confidence. Audiotapes will be properly disposed of at the end of the study. You have the right to withdraw from the study without prejudice at any time and refrain from answering whatever questions you prefer to omit. Research results will also be made available to you upon request.

The attached questionnaire has been sent to all other participants. It will provide you with the opportunity to have input in this project.

A stamped, self-addressed envelope has been included. Thank you for your time and consideration. If you have any questions, please call me collect at the above number or contact Ken Stevens at 737-4847 or Rodney Healey at 737-1206.

Yours truly,

Della Healey

attachment

I, _____, hereby agree to complete a questionnaire and to take part in an interview for the Educational Leadership thesis undertaken by Della Healey. I understand that my participation is voluntary. No individual or organization will be identified, and I give permission to be quoted in any research article produced after I have had the opportunity to review the text.

Date: _____

Interviewee's Signature: _____

Appendix C

Della Healey
P.O. Box 28
Forteau, Labrador
AOK 2PO
709 931-2920 (work)
709 931-2490 (home)

April 11, 1997

Mr. Calvin Patey
Director
Labrador School Board
Happy Valley,
Labrador
AOP 1EO

Dear Mr. Patey:

I am presently completing a Master's Degree in Educational Leadership at Memorial University of Newfoundland under the supervision of Dr. Ken Stevens. My thesis is entitled **A Study Examining Divisions in the Value of Educational Technology Between Students in Isolated Communities of Newfoundland and Labrador.** This letter is to ask for consent of the school board to conduct a study at the school in North Community, Labrador. I would like to have the Board of Trustees of LSB informed and have their consent for this study.

The study is designed to achieve the following five objectives:

(1) Determine if there are differences in the value of current educational technology among students in isolated communities of Newfoundland and Labrador.

(2) Identify whether there is a division between students who have greater access to technology and students who have lesser access.

(3) Identify whether or not the career choices of students who have greater access to current educational technology would differ in terms of the amount of time required in a post secondary institution as opposed to students who have lesser access to current educational technology.

(4) Identify whether or not current educational technology has expanded the career options of students in isolated communities of Newfoundland and Labrador.

(5)   Elicit, from students, ideas that may lead to a technological program that
            optimizes student involvement.

There will be a total of 22 participants involved in this study. They will include 20
students selected from the towns of South Community and North Community. An
administrator from each school will be asked to participate as well.

Participants will be randomly selected, with the exception of school administrators.

Myself or a field worker will contact all the participants by telephone or in person and
ask them to participate. The field worker will be informed of the nature and purpose of
the study. When participants are contacted, the nature and purpose of the study will be
explained to each person. Each participant will be forwarded a questionnaire and asked
to complete it. Each student participant will be interviewed and the interviews will be
audio-taped. An assurance of confidentiality will be given to the participants both
verbally and in writing.

My thesis proposal has been reviewed by the Ethics Review Committee of Memorial
University of Newfoundland and has been approved by that committee. Dr. Linda
Phillips, Acting Associate Dean of Graduate Programs and Research, is acting as the
resource person for the study.

Research results will also be made available to all subjects who participate in the study,
as well as, the Labrador School Board.

I would be happy to provide you with any other information you may require. If you
have any questions, please call me collect at the above number or contact Ken Stevens
at 737-4847 or Rodney Healey at 737-1206.
Thank you for your time. .

Yours truly,

Della Healey

Appendix D

P.O. Box 28
Forteau, Labrador
AOK 2PO
709 931-2920 (work)
709 931-2490 (home)

April 11, 1997

Mr. Dennis Parsons
Director
Northern Peninsula/Labrador South School Board
Flowers Cove,
Newfoundland
AOK 2NO

Dear Mr. Parsons:

I am presently completing a Master's Degree in Educational Leadership at Memorial University of Newfoundland under the supervision of Dr. Ken Stevens. My thesis is entitled **A Study Examining Divisions in the Value of Educational Technology Between Students in Isolated Communities of Newfoundland and Labrador.** This letter is to ask for consent of the school board to conduct a study at the school in South Community, Labrador. I would like to have the Board of Trustees of the Northern Peninsula/Labrador South School Board informed and have their consent for this study.

The study is designed to achieve the following five objectives:

(1)   Determine if there are differences in the value of current educational technology among students in isolated communities of Newfoundland and Labrador.

(2)   Identify whether there is a division between students who have greater access to technology and students who have lesser access.

(3)   Identify whether or not the career choices of students who have greater access to current educational technology would differ in terms of the amount of time required in a post secondary institution as opposed to students who have lesser access to current educational technology.

(4)   Identify whether or not current educational technology has expanded the career options of students in isolated communities of Newfoundland and Labrador.

(5)   Elicit, from students, ideas that may lead to a technological program that optimizes student involvement.

There will be a total of 22 participants involved in this study. They will include 20 students selected from the towns of South Community and North Community. An administrator from each school will be asked to participate as well.

Participants will be randomly selected, with the exception of school administrators.

Myself or a field worker will contact all the participants by telephone or in person and ask them to participate. The field worker will be informed of the nature and purpose of the study. When participants are contacted, the nature and purpose of the study will be explained to each person. Each participant will be forwarded a questionnaire and asked to complete it. Each student participant will be interviewed and the interviews will be audio-taped. An assurance of confidentiality will be given to the participants both verbally and in writing.

My thesis proposal has been reviewed by the Ethics Review Committee of Memorial University of Newfoundland and has been approved by that committee. Dr. Linda Phillips, Acting Associate Dean of Graduate Programs and Research, is acting as the resource person for the study.

Research results will also be made available to all subjects who participate in the study, as well as, the Northern Peninsula/Labrador South School Board.

I would be happy to provide you with any other information you may require. Thank you for your time. If you have any questions, please call me collect at the above number or contact Ken Stevens at 737-4847 or Rodney Healey at 737-1206.

Yours truly,

Della Healey

Appendix E

P.O. Box 28
Forteau, Labrador
AOK 2PO
709 931-2920 (work)
709 931-2490 (home)

April 11, 1997

Mr. Administrator
Vice-Principal
North Community School
North Community, Labrador
AOS 1SO

Dear Mr. Administrator:

I am presently completing a Master's Degree in Educational Leadership at Memorial University of Newfoundland under the supervision of Dr. Ken Stevens. My thesis is entitled **A Study Examining Divisions in the Value of Educational Technology Between Students in Isolated Communities of Newfoundland and Labrador.** This letter is to ask for consent to conduct a study at the school in North Community, Labrador. As well, I am requesting your participation in this study.

The study is designed to achieve the following five objectives:

(1)   Determine if there are differences in the value of current educational technology among students in isolated communities of Newfoundland and Labrador.

(2)   Identify whether there is a division between students who have greater access to technology and students who have lesser access.

(3)   Identify whether or not the career choices of students who have greater access to current educational technology would differ in terms of the amount of time required in a post secondary institution as opposed to students who have lesser access to current educational technology.

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Participants will be randomly selected, with the exception of school administrators.

Myself or a field worker will contact all the participants by telephone or in person and ask them to participate. The field worker will be informed of the nature and the purpose of the study. When participants are contacted, the nature and the purpose of the study will be explained to each person. Each participant will be forwarded a questionnaire and asked to complete it. Each student participant will be interviewed and the interviews will be audio-taped. An assurance of confidentiality will be given to the participants both verbally and in writing.

My thesis proposal has been reviewed by the Ethics Review Committee of Memorial University of Newfoundland and has been approved by that committee. Dr. Linda Phillips, Acting Associate Dean of Graduate Programs and Research, is acting as the resource person for the study.

Research results will also be made available to all subjects who participate in the study, as well as, the Labrador School Board.

A stamped envelope is enclosed for your reply. I would be happy to provide you with any other information you may require. If you have any questions, please call me collect at the above number or contact Ken Stevens at 737- 4847 or Rodney Healey at 737-1206. Thankyou for your time.

Yours truly,

Della Healey

Appendix F

P.O. Box 28
Forteau, Labrador
AOK 2P0
709 931-2920 (work)
709 931-2490 (home)

April 11, 1997

Mr. Administrator
Vice-Principal
South Community School
South Community, Labrador
AOJ 3P0

Dear Mr. Administrator:

I am presently completing a Master's Degree in Educational Leadership at Memorial University of Newfoundland under the supervision of Dr. Ken Stevens. My thesis is entitled **A Study Examining Divisions in the Value of Educational Technology Between Students in Isolated Communities of Newfoundland and Labrador.** This letter is to ask for consent to conduct a study at the school in South Community, Labrador. As well, I am requesting your participation in this study.

The study is designed to achieve the following five objectives:

(1) Determine if there are differences in the value of current educational technology among students in isolated communities of Newfoundland and Labrador.
(2) Identify whether there is a division between students who have greater access to technology and students who have lesser access.
(3) Identify whether or not the career choices of students who have greater access to current educational technology would differ in terms of the amount of time required in a post secondary institution as opposed to students who have lesser access to current educational technology.
(4) Identify whether or not current educational technology has expanded the career options of students in isolated communities of Newfoundland and Labrador.
(5) Elicit, from students, ideas that may lead to a technological program that optimizes student involvement.

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students from the communities of North Community and South Community. An administrator from each school will be asked to participate as well.

Participants will be randomly selected, with the exception of school administrators.

Myself or a field worker will contact all the participants by telephone or in person and ask them to participate. The field worker will be informed of the nature and the purpose of the study. When participants are contacted, the nature and the purpose of the study will be explained to each person. Each participant will be forwarded a questionnaire and asked to complete it. Each student participant will be interviewed and the interviews will be audio-taped. An assurance of confidentiality will be given to the participants both verbally and in writing.

My thesis proposal has been reviewed by the Ethics Review Committee of Memorial University of Newfoundland and has been approved by that committee. Dr. Linda Phillips, Acting Associate Dean of Graduate Programs and Research, is acting as the resource person for the study.

Research results will also be made available to all subjects who participate in the study, as well as, the Northern Peninsula/ Labrador South School Board.

A stamped envelope is enclosed for your reply. I would be happy to provide you with any other information you may require. If you have any questions, please call me collect at the above number or contact Ken Stevens at 737- 4847 or Rodney Healey at 737-1206. Thankyou for your time.

Yours truly,

Della Healey