

Attitudes of Stakeholders Toward Computer Use in Schools

by


Richard Walker Smith
B.Sc., University of Pennsylvania, 1970
Diploma in Education, McGill University, 1974

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We accept this thesis as conforming
to the required standard




Dr. Walter Muir, Supervisor (Department of Psychological Foundations)



Dr. John Walsh, Departmental Member (Department of Psychological Foundations)



Dr. Ted Riecken, Outside Member (Department of Social and Natural Sciences)



Dr. Pierce Farragher, External Examiner (Department of Social and Natural Sciences)

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University of Victoria

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Supervisor: Dr. Walter Muir

ABSTRACT


The purpose of this study was to investigate the attitudes, perceptions, and expectations of educators, students, parents, and business people regarding the use of computers in a K-12 public school jurisdiction, Peace River School Division No. 10, in northwestern Alberta. An eight page questionnaire was distributed to the four groups. One of the main components of the questionnaire was the Attitude Toward School Computers Survey. Data was collected on a number of variables, including sex, age, educational position, grade level, owning a home computer, recent computer activity, location of school and business, size of business, and computer workshops taken. Responses from 147 educators, 220 students, 82 parents, and 51 business people were analyzed using descriptive statistics, ANOVA, and protected *t* test.

Attitudes toward the school use of computers revealed significant differences for some of the groups by grade level taught, whether respondents owned a home computer, frequency of computer use, and school location.


The results of the study suggest that all four groups have positive attitudes toward school use of computers and appear to show that they share more similarities than differences. All groups appear to feel that the present use of computers in schools is fairly limited, and the study suggests the major barrier to computer use is a lack of hardware. In addition, the results suggest that site-specific characteristics of schools are important factors in perceptions and expectations about the school use of computers. There is a

definite indication that all groups expect that the use of computers in schools is important, and will be expanded in the future.


Examiners:




Dr. Walter Muir, Supervisor (Department of Psychological Foundations)



Dr. John Walsh, Departmental Member (Department of Psychological Foundations)



Dr. Ted Riecken, Outside Member (Department of Social and Natural Sciences)



Dr. Pierce Farragher, External Examiner (Department of Social and Natural Sciences)

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DEDICATION

The completion of this thesis is dedicated to my wife, Buff, who fortunately (in retrospect, at least) made me do it.

CHAPTER 1

Introduction

Background to the Problem

There has been a dramatic increase in the use of microcomputers in schools in the past 15 years. In 1985, within 10 years of the development of the first microcomputer in 1975, more than 90% of all public schools in the United States owned at least one microcomputer (Office of Technology Assessment, 1987). And by the end of the 1980's, Becker (1990) estimated the number of computers in use in U.S. schools to be 2.4 million. Similar trends also apply to schools across Canada.

The attitudes of the direct educational participants — the teachers and the students — are obviously important factors in determining if and how computers are used in schools. Numerous researchers have identified the development of a positive attitude toward computers by students and teachers as a prerequisite of computer use (Stevens, 1980; Loyd & Gressard, 1984a; Woodrow, 1987). A disparity between the attitudes of teachers and students can also mean the value of computers in education may not be fully realized (Vermette, Orr, & Hall, 1986).

It is not only the people directly involved in schools that have been important in the introduction of educational computing. One of the reasons for the rapid deployment of microcomputers has been a push from both parents and business to “teach computers” in the schools. Parents have felt that teaching their children how to use computers can “put their fingers on the keys to success,” and business people have emphasized the

essential role computer knowledge and skills now play in personal employment opportunities and in promoting economic world-wide competitiveness.

Statement of the Problem

Even though large numbers of microcomputers have been introduced into schools, many teachers have been reticent to use computers personally and reluctant to integrate computers into their classrooms and educational methodology (Collis, Kass, & Kieren, 1989). Lack of training, limited time in already busy schedules, poor quality educational software, hard to use hardware and software, computer anxiety, and uncertainty about the impact of the new technologies on learning outcomes have all contributed to this reluctance (Fullan & Miles, 1988). At the same time, other important educational stakeholders — students, parents, and business people — have generally been encouraging more educational use of computers. Parents, who may see computer skills as essential to their children's futures, may have different perceptions about the present educational uses of computers and different expectations about the future of computers in schools than teachers. Business people, who want employees who have positive attitudes toward computers and adequate computers skills, may also have different perceptions and expectations.

While the number of computers in most Canadian schools has expanded rapidly, questions about that use have also become increasingly important. What are the most effective ways to use computers in schools? Are the considerable sums of money invested in computers being spent wisely? Do all students have equal access to computers? It is

not only educators and students who are asking these questions; parents and business people are also voicing increasing concerns about the educational system in general and the use of computers in schools in particular.

The possibly divergent attitudes, perceptions, and expectations by educators, parents, students, and business people, regarding present and future educational uses of computers, can create conflicting demands for computer use. If there are significant differences among these four groups, it can contribute to a lack of harmony and a sense of discordance among the stakeholders which, in turn, can be unhealthy for the educational system. It can be important to understand not only stakeholders' perceptions about present computer uses, but also their expectations about uses of computers because those expectations will help determine future uses and nonuses.

Students, parents, and business people are not often given an opportunity to express their attitudes, perceptions, and expectations regarding microcomputers in schools. This situation can be counter productive because it is the perceptions and expectations of these educational stakeholders, plus those of educators, that will help shape the implementation and future uses of computers.

Purpose of the Study

The purposes of the present study are: 1) to discover the attitudes of educators, parents, students, and business people toward educational uses of computers in Peace River School Division (PRSD), 2) to discover the perceptions of educators, parents, students, and business people of the present uses of educational computers in PRSD, 3) to discover the expectations of educators, parents, students, and business people regarding

future educational computer use in PRSD, and 4) to discover if there are any differences between teachers' perceptions of the present uses of computers in schools and their expectations about future uses of educational computing. An additional purpose of the study is to discover if there are any demographic or institutional characteristics of educators, parents, students, and business people that are related to certain attitudes, perceptions, and/or expectations toward educational use of computers.

The results of the above investigations may provide a background from which to draw conclusions about future directions for the implementation and uses of microcomputers in PRSD and school districts with similar characteristics.

CHAPTER 2

Review of the Literature

Growth of Computer Use in Education

Over the past 15 years, the number of microcomputers in schools has increased dramatically. By the end of the 1980's, Becker (1990) estimated the number of computers in use in United States schools to be 2.4 million. Similar growth in the number of computers in schools is also applicable to Canada. The impetus for this introduction of technology has come not only from professional educators, but also from parents, students and business people who have urged schools to purchase ever larger numbers of computers. There is a general feeling that positive attitudes toward computers, knowledge about them, and specific computer skills are necessary in our present information age. Even as early as 1983, in the initial stages of the introduction of microcomputers into United States' schools, the report of the National Commission on Excellence in Education (A Nation at Risk, 1983) tied many of its recommendations for revitalizing American education to the use of computers in schools. There was, and is, a strong feeling among educational stakeholders that the present generation of children is growing up in the computer era and they need to become familiar with computer use as an integral part of their education.

This growth in the number of machines in schools has not, however, automatically meant changes in education practice. When microcomputers were first introduced into public schools in the 1970's, the impetus was for computer literacy. This demand could, in many cases, be met by one or two keen teachers on a staff at a school offering a new

course with computers as objects of study. The majority of teachers were not involved with computers and students who did not take the computer literacy courses were unaffected. Even with the change in the later 1980's to the view of computers as educational tools that should be integrated throughout the curriculum, most Canadian high school students were not getting opportunities for computer uses within the contexts of their regular courses (Collis et al., 1989).

Why the reality of computers in schools has not lived up to the expectations is complex and multifaceted, but one important factor is the attitudes of educational stakeholders, especially teachers and students. Personal attitudes toward computers in a learning situation can be crucial to the success of any program (Clement, 1981). Since the ultimate decision as to how or whether to use computers will generally be left to individual teachers, it is unlikely that computer skills will be transferred to students and encouraged by teachers unless they have positive attitudes toward the use of computers (Elkins, 1985; Okinaka, 1992). Cuban (1986) states it very succinctly when he says that “teachers are the gatekeepers of instructional technology” (p. 37). Thus, their attitudes toward computers and their perceptions of how to use computers are crucial to the implementation of computers in schools. As Knupfer (1988) states, new technologies “are doomed if classroom teachers don't perceive them as meaningful within the current classroom environment” (p. 29).

The attitudes of students are also important, and the value of computers in education may not be realized fully if the views regarding the use of computers in the

classroom are essentially negative or differ radically between teachers and students (Vermette et al., 1986).

Development of Computer Attitude Scales

With the recognition that attitudes toward computers were an important factor influencing their educational use, attitude scales were developed to measure these attitudes. Ahl (1975) used a self-developed instrument to conduct a survey of subscribers of the magazine Creative Computing focusing on public attitudes toward computers in society. He also referred to and made some limited comparisons to a joint survey conducted in 1971 by the American Federation of Information Processing Societies and Time Magazine. Lichtman (1979) did a follow-up study using Ahl's instrument, with the addition of some of his own items, in which he narrowed the focus and surveyed the attitudes of educators' toward computers. At the University of Victoria, Collis (1984) developed an instrument to measure the attitudes of secondary school males and females toward computers.

The first published instrument to measure computer attitudes that was subject to validity and reliability checks by other researchers was the Computer Attitude Scale (CAS) developed by Loyd and Gressard (1984a). The CAS divides attitudes toward computers into three subscales (computer liking, computer confidence, and computer anxiety), and it is used for measuring attitudes of both students and teachers. Roszkowski, Devlin, Snelbecker, Aiken, and Jacobsohn, (1988), used the CAS and another instrument (the Computer Aptitude, Literacy, and Interest Profile, CALIP) as assessment tools for an 11 month project at one location that retrained teachers to become teachers of computer

science at the secondary school level. They found they found that “both the CALIP and the CAS appear to have value for selecting candidates in computer science teacher retraining programs” (p. 1034).

Additional instruments for measuring attitudes toward computers were developed by Bannon, Marshall, and Fluegal (1985), who broke attitudes into two dimensions: cognitive and affective; and Richards, Johnson, and Johnson, (1986), who developed a scale for assessing student attitudes toward computers that measured attitudes along four dimensions: liking for computers, self-confidence, belief in the necessity of computers for career success, and belief that computers are a male domain. Other instruments were developed by Bear, Richards, and Lancaster (1987), who developed the Bath Country Computer Attitudes Scale (BCCAS) aimed at measuring the attitudes of public school students; and Abdel-Gaid, Trueblood, and Shrigley (1986), who, with a thorough statistical analysis, not only developed an instrument for measuring attitudes toward computers but also detailed a systematic procedure for constructing such a valid instrument. Troutman (1991) developed an attitude scale designed specifically to measure “attitudes toward the general use of computing in the school environment for instructional or management purposes” (pp. 1-2).

Teacher Attitudes, Perceptions, and Expectations

Teacher attitudes toward computers in schools have been well documented by numerous researchers. Lichtman (1979) found that educators, in general, seemed less enthusiastic about the role of computers than the general public; that administrators were generally more positive in their attitudes than were teachers; and teachers viewed

computers in a more dehumanizing manner than other segments of the general population, especially administrators. Stevens (1980, 1982) found educators strongly favored instruction to foster computer literacy in secondary schools, but her respondents did not feel qualified to teach computer literacy. This positive attitude but perceived lack of expertise by teachers was developed further by Norris and Lumsden (1984) who found that teachers had a positive attitude toward the educational use of computers in general, but when it came to them personally using computers in their classrooms (i.e., when the functional distance was decreased) they were much less enthusiastic. Vermette et al. (1986) added to this finding that, while both teachers and students “tended to express positive views of computers in education, their perceptions of the effects of computerization on them personally and individually tended to be negative” (p. 45). Elkins (1985) confirmed earlier reports by Lawton and Gerschner (1982) that had shown teacher preservice and inservice training programs, involvement in curriculum development, and prior experience with computers affected teacher attitudes and aided acceptance and successful implementation of computer technology. Gressard & Loyd (1985) examined changes in teacher attitudes toward working with computers from the beginning to the end of a staff development course and found that anxiety decreased and positive computer attitudes increased as a result of this experience with computers. Martin and Lundstrom (1988) reported similar results from a small study of home economics teachers and the findings from this study also indicated that having a computer in the home and having taken computer coursework were the only variables “for which a significant contribution to the variance of the posttest score was found” (p. 87). Age,

years of teaching experience, and perceived amount of computer experience were found not significant. Troutman (1991), looking at preservice education majors at the University of South Florida, concluded that those individuals who feel secure in their own personal use of computers, also feel positive toward the use of computers in schools. Kristiansen (1992), in a Norwegian study of attitudes toward new information technologies in general, and computers in particular in the more recent 1990 segment of his study, found that in 1970, age, gender, and educational level were the background variables for which there were significant differences in attitudes toward educational uses of computers. In 1990, he found age, educational level, and location of school (degree of urbanization) were the variables for which there were significant differences.

Student Attitudes, Perceptions, and Expectations

The attitudes of students, ranging from elementary grades to college, toward educational use of computers have been measured extensively regarding a variety of variables over the past ten years. In terms of overall attitudes toward computers, all of the studies examined reported positive attitudes by students. Greater amounts of computer experience were found to be significantly related to less anxiety and greater liking of computers (Loyd & Gressard, 1984b; Loyd & Gressard, 1987; Chen, 1986). The results of a British study by Harvey and Wilson (1985) using a semantic differential scale, and Loyd and Gressard's two studies (1984b & 1987) revealed very little difference in attitudes toward computers with regard to ages of students.

Concerning difference in attitudes depending on gender, there have been conflicting and complicated results. Collis (1984), in studying senior high-school students,

reported that males had consistently more positive attitudes than females. Harvey and Wilson (1985) found there was very little difference by gender, although they expressed surprise at their results (p. 187). Loyd, Loyd, and Gressard (1987) found that gender was significant for 7th and 8th grade students, with females exhibiting more positive attitudes than males, results just the opposite of Collis' findings. Miura (1987) found in her study that overall gender was significant but that it was mediated by socioeconomic status, and there were many more differences between the middle-school-aged girls and boys within the high-SES group than in the low-SES group. She concluded that "it may be important to consider gender and SES together when attempting to understand their effects on computer interest and use" (p. 243). Kay (1989), in a study of education students at the University of Toronto, reported that males and females appear to have similar attitudes toward computers, but males had significantly higher mean scores in computer literacy, computer locus of control and commitment to computers. Sutton (1991) further added to the complexity of the issue by stating that "schools and teachers play a major role in gender inequalities separate from society and parental influences" (p. 481).

Harvey and Wilson (1985) found a difference in attitudes toward computers between owners and non-owners of home computers. A nationwide Canadian survey by Collis, Kass, and Kieren (1989) discovered inequities with respect to student access to computers in all parts of the country. Krendl and Broihier (1992) in a three year longitudinal study of grade 4 to grade 10 students reported clear evidence of novelty effects with regard to computer preference, perceived learning, and perceived difficulty.

Parent Attitudes, Perceptions, and Expectations

The current study examined the attitudes, perceptions, and expectations of parents toward the use of computers in schools, but a review of the literature discovered a limited number of studies of parents' attitudes *per se*. The studies, rather than focusing on parents of students, are instead examinations of the attitudes of adults, in general, toward educational computing.

In general, adults feel a knowledge of how to use a computer is necessary for children's future (Cooper & Pace, 1982; Kristiansen, 1991). Adults' feelings go farther than this, and extend to expectations that computers will change education. As Giacquinta and Lane (1990) pointed out, "The early home microcomputing literature contains strongly held expectations about the educational empowerment of children and parents through the use of microcomputers" (p. 27). Collis et al. (1989), however, found "no real evidence that any pervasive or meaningful shift is occurring in the student's perception of the home-school relationship with respect to learning, based on his or her access to a home computer" (p. 87). This perception would presumably also apply to the student's parents. Giacquinta and Lane (1990) also found that, in families with home computers, virtually none of the children was engaged in home academic microcomputing, and "this was in spite of the fact that more than one-half of the families had purchased their machines with the education of their children as a primary or secondary focus" (p. 31).

Adults have high expectations about the role computers can play in education. Respondents to a Creative Computing survey (Ahl, 1975) felt, on the whole, that the computer would improve the quality of life in the four areas that Ahl included in his

Quality of Life category of his questionnaire: education, law enforcement, health care, and prevention of fraud. Of the four areas, education evoked the most positive response. About 85% of all the respondents strongly or mostly agreed with the statement that computers will improve education, and only 5% disagreed. "This was the highest positive (or negative) response to any single question and also the question which had the greatest agreement between adult and youth" (p. 49).

Regarding differentiation of adult attitudes toward school computers by certain variables, Cooper and Pace (1982) found that attitudes were somewhat influenced by factors such as the age of the person, whether the person used a computer at work, and whether the person was a professional educator. In terms of attitudes toward computers in society in general and not specifically toward computers in schools, Baack, Brown, and Brown, (1991) also found significant differences on 17 of the 20 items on the Attitudes Toward Computer Usage Scale (ATCUS), with the older adults indicating a less favorable attitude toward the use of computers. Three examples of the types of statements included on the ATCUS which were significant discriminators between the young and old groups are: 1) I would prefer to type on a word processor than on a typewriter, 2) Whenever I use something that is computerized, I am afraid I will break it, and 3) I would like to own or do own a computer. (p. 427)

Regarding these views of adults, a couple of cautions are necessary. Cooper and Pace (1982) found that even the 50% of the people who responded to their mailed survey did not always have strong opinions regarding the use of computers in the schools. And while this result could obviously indicate just what it says (namely that parents do not have

strong views regarding the use of computers in schools), the absence of strong opinions could also attest to a lack of knowledge about educational computing and perhaps call into the question the validity of the views expressed. Also, Cooper and Pace entitled their study "Attitudes of Adults Toward the Use of Computers in Schools," yet in their conclusions they spoke only of attitudes toward computer-assisted instruction (CAI). They, and their respondents, seemed to have assumed, at least in 1982, that the use of computers in schools and CAI were synonymous, but that assumption may not have been valid then and certainly would not be valid today. The purposes for which computers are used in schools may have an important impact on people's attitudes, perceptions, and expectations about them.

Business Attitudes, Perceptions, and Expectations

There is very little information available in educational journals regarding business peoples' attitudes toward school use of computers. A very broadly defined ERIC search in March, 1993, using the descriptors 1) attitudes, 2) computers, and 3) elementary-secondary education yielded numerous documents; but only one (Schuttenberg, McArdle, & Kaczala, 1985) contained any reference to business.

Schuttenberg et al. compared the perceptions and expectations of educators, parents, and business leaders regarding school uses of computers and student competencies. The school uses presented as choices in their survey were 1) administrative record keeping, 2) student drill, 3) teacher record keeping, 4) administrative word processing, 5) student instruction of new material, 6) and instructional management. Thirteen student competencies were presented (understand basic terms; use keyboard;

appreciate value; understand relationship between hardware and software; understand capabilities and limitations; identify careers relative to computers; create simple programs; use prepared programs; understand basic computer parts; use word processing; recognize effect of space age; identify differences between micro, mini, and main; and use computer as calculator). Only descriptive statistics were presented. They found, in general, that educators, parents, and business people agreed on how they expected computers to be used in schools, although "higher percentages of business respondents indicated support than did parent or educator groups with only one major exception — the area of student drill. This finding highlights the importance that the business leaders in this study ascribed to computer education for students" (p. 19). Regarding perceptions and expectations about student competencies, there were some differences among educators, parents, and business people, but they were difficult to interpret because of the way they were reported, and because there was no statistical analysis of the data.

Schuttenberg et al. found that all three groups thought that more should be done in the schools in all areas of computer applications than they perceived was actually being done. They cautioned, however, that "this finding is tempered somewhat by the fact that large percentages of respondents were unaware of what was actually happening in the schools with regard to computer applications and computer competencies being taught" (p. 22). They recommended that more be done to inform educational stakeholders in these areas.

Summary

While computer use in schools has grown dramatically in the past fifteen years, and while there has been increasing recognition by educational stakeholders — educators, students, parents, and business people — that knowledge about computers and the ability to use them should be an important component of education, there have not been the significant changes in educational practice regarding computers that might have been expected. There are a variety of factors which might contribute to this result, but one important component which can determine the use or non use of computers in schools has been shown to be the attitudes of educational stakeholders toward computers. With the recognition of the importance of attitudes towards computers, a variety of instruments were developed to measure those attitudes, both in general and with regard to school use of computers in particular.

Regarding the attitudes of educators toward computers, studies have shown that the more contact they have with computers, both in terms of personal experience and specific training, the more positive their attitudes. One study indicated that school administrators had more positive attitudes toward computers than teachers. Studies also suggested educators have a positive attitude toward computer use in schools, in general, but when it comes to them personally, there is a perceived lack of expertise.

Studies concerning students again show that more computer use equals less anxiety about computers. Gender studies with students demonstrate conflicting results.

Studies of parents' attitudes toward school use of computers demonstrate that parents have high expectations about the role of computers in education and that they see

computer use as necessary for their children's future. Some studies have also shown age and owning a home computer to be significant factors in determining attitudes toward computers.

Regarding business attitudes toward school use of computers, there is very little information. The one study concerning this group indicated that business places a high importance on computers in schools, but there was also a caution that businesses appeared to have a lack of knowledge about school use of computers.

CHAPTER 3

Rationale, Definitions, and Research Questions

Rationale

The purpose of this study is to discover the attitudes, perceptions, and expectations of students, educators, parents, and business people with regard to the school use of computers in Peace River School Division (PRSD). Making explicit the attitudes of educators, parents, students, and business people will hopefully provide some guidelines and directions for implementations of microcomputers for PRSD and possibly other school jurisdictions with similar characteristics.

The theoretical framework upon which the present study is based is that knowledge of the attitudes of educational stakeholders toward school use of computers is important because those attitudes are a precondition to the implementation of computers in schools. Clement (1981) states, in general, that “the attitudes of participants in any activity are important to its success,” and, more specifically, that the “personal attitudes about using computers in a learning environment can be critical to the success ...” (p. 28). Elkins (1985) seconds this assertion, by stating, “... attitudes toward computing, therefore, are critical if computers are to be successfully implemented ...” (p 31). And Okinaka (1992) states in his study concerning factors that affect teacher attitude towards computer use that “the underlying issue is one of attitude towards computer use” (p. 3). Fullan and Stiegelbauer (1991) sum up the importance of attitudes when they state, “Real change ... represents a serious personal and collective experience characterized by

ambivalence and uncertainty.... The anxieties of uncertainty [i.e. attitudes]... are central to the subjective meaning of educational change... ” (p 32).

Asking students, educators, parents, and business people for their attitudes, perceptions, and expectations could also provide some stimulus for starting to build a consensus among educational constituents regarding computers in education. Although getting parent and business input on educational uses of computers is a tiny step toward community involvement in schools, it could be one small move that would facilitate the implementation of technological innovation. (Fullan & Stiegelbauer, 1991)

Making apparent the hypothesized gap between the perceptions of what is presently being done with educational computing and expectation about what should be done in the future (Schuttenberg et al., 1985) could provide impetus and direction for change.

A second purpose of the study is to discover if there are any demographic or institutional characteristics of educators, parents, students, and business people that are correlated with certain attitudes, perceptions, and/or expectations toward educational use of computers. As detailed in the previous chapter, there have been many studies that have examined computer experience, gender, age, socioeconomic status, and other factors and their correlation with attitudes toward computers (Loyd & Gressard, 1984b, 1987; Collis, 1984; Chen, 1986; Miura, 1987; Sutton, 1991). This study provides additional information to complement the previous research.

Definitions

Microcomputer and Computer: The terms will be used interchangeably, although technically “microcomputer” would be the more precise term. Collis (1984) suggested, through the administration of a semantic differential instrument, that students attach similar meanings to the terms “computer,” “microcomputer,” and “home computer” (p. 47). These similar meanings would probably be even stronger today with the widespread increase in the number of computers in the last 10 years being primarily in the microcomputer category.

Attitudes: Attitudes for the purposes of the present study are defined operationally by the instrument being used to measure them (i.e. the Attitude Toward School Computers survey developed by Troutman (1991))

Perceptions: Individuals’ awareness and understanding of the present situation. For this study, perceptions are specifically related to individuals’ awareness and understanding of the present use of computers in Peace River School Division schools.

Expectations: What individuals anticipate will be done in the future; what should be done regarding the use of computers in schools, as opposed to what is presently being done or not being done.

Research Questions

Major Research Question:

1. What are the attitudes and perceptions of educators, students, parents, and business people regarding how computers are presently being used in Peace River School Division schools and their expectations about how computers should be used in the future?

Subsidiary Research Questions:

2. Are there significant differences in stakeholders' attitudes toward computer use in schools according to a variety of variables (e.g. gender, age, educational position, full or part time employment, etc.). See Table 2, p. 25 for a complete list of variables tested for each group of respondents.
3. Do parents, students, and business people have higher expectations about computer use in schools than educators?
4. Do parents have more positive attitudes and higher expectations regarding computer use in schools than the other three groups?
5. Do institutional variables (e.g. school, community, grade level, etc.) better explain differences in attitudes toward school use of computers than personal characteristics (e.g. gender, age, education level, etc.)?

CHAPTER 4

Method

Introduction

The method of the study involved administration of questionnaires to four groups: 1) educators employed by Peace River School Division (PRSD), 2) students attending PRSD, and 3) the parents of the students attending PRSD, and 4) business people in the area serviced by PRSD. A questionnaire, composed of attitude, perception, and expectation subsections, was an appropriate measurement tool for the study for a number of reasons. First, there were a fairly large number of subjects participating in the study (approximately 225 educators, 225 students, 225 parents, and 150 business people). Second, the object of the study — computers in schools — is well known, and the subjects should have had sufficient knowledge to provide the necessary information. Third, there was no reason to doubt that subjects were likely to answer honestly.

To add richness and depth to the information, after the data from the questionnaires had been collected, brief interviews with a random selection of three respondents from each of the four groups were conducted.

Description of the School Division

Peace River School Division No. 10 (PRSD) is a rural school jurisdiction located 500 kilometers northwest of Edmonton, Alberta, Canada. At the time of the study, PRSD had a total population of 2700 students in 11 different schools ranging in size from

approximately 60 to 350 students.¹ Within the boundaries of the Division, there are a number of hamlets and villages, and three towns — Peace River, Grimshaw, and Manning with populations of 6,000, 2,500, and 2,000 respectively. Grimshaw is 25 kilometers west of Peace River, and Manning is approximately 100 kilometers north of Peace River. See Table 1 for details. The School Division central office is located in the town of Peace River. Major economic activities in the Peace River Region include farming, oil and gas exploration, forestry, government services, and tourism.

Table 1

Summary of Schools in Peace River School Division

Town	School	Grade Levels	Students	Teachers (FTE's)
Nampa	1. Nampa Public School	1-6	55	4
Peace River	2. Springfield Elementary	1-3	300	19.5
	3. McGrath Elementary	4-6	300	18
	4. T.A. Norris Jr. H.S.	7-9	300	19
	5. Peace River H.S.	10-12	300	17
	Grimshaw	6. Kennedy Elementary	K-6	325
7. Grimshaw Jr/Sr H.S.		7-12	350	20.5
Berwyn	8. Lloyd Garrison School	1-6	125	8.3
Dixonville	9. Dixonville School	1-9	65	5.5
Manning	10. Manning Elementary	1-6	200	9.5
	11. Paul Rowe H.S.	7-12	250	15

¹ Since the study was conducted, there has been a major restructuring of school jurisdictions in Alberta, and Peace River School Division has amalgamated with a neighboring jurisdiction. PRSD now covers approximately 50% more geographical area, has 50% more students, and eight additional schools. All of the information presented in the study pertains to PRSD as it existed in the 1993/94 school year.

Samples

There are four groups involved in the study. 1) educators (teachers, school-based administrators/teachers,² central office administrators, teachers' assistants, school librarians, and school board trustees), 2) students, 3) parents, and 4) business people.

At the time of the study, there were approximately 225 educators in Peace River School Division. In total, 11 sites were involved — 10 schools and the School Division central office.

Random samples of approximately 25 parents and students from each of the 10 schools in Peace River School Division with students in grade four or higher were surveyed. In total the sample size was approximately 225 parents and 225 students.

A random sample of approximately 150 business people throughout the Peace River area was surveyed. Businesses were selected randomly from the Chamber of Commerce Business Listings for the towns of Peace River, Grimshaw, and Manning, the three major communities within Peace River School Division.

Description of the Questionnaire

A questionnaire with four sections was developed:

1. Personal, institutional, and computer information (See Table 2 for the variables tested for the four sample groups of educators, students, parents, and business.)

² Because of the numerous small schools in PRSD, most school based administrators also teach classes for a significant part of the school day. Also, in Alberta, both school administrators and teachers are members of the same professional organization (union), the Alberta Teachers' Association.

2. Attitudes Toward School Computers (ATSC)
3. Perceptions about present computer use and perceived barriers to computer use
4. Expectations regarding computer use

Table 2

Variables and Groups

Variable	Educator	Student	Parent	Business
Population of Respondent	X	X	X	X
Sex	X	X	X	
Age	X		X	
Educational Position	X			
Full or Part Time	X			
Grade Level	X	X		
Years as Educators	X			
Highest Degree Earned	X		X	
Own a Home Computer	X	X	X	X
Any Recent Use of Computer	X	X	X	X
Initiated Comp. Instructional Activity	X			
Location (School or Community)	X	X	X	X
Class Time Recent Use of Computers	X	X	X	
Apportioning Comp. Time in School	X	X	X	
Min./Wk Class Time Use of Computers	X	X	X	
No. of Student Use Computers	X	X		
Size of Business				X
No. of Employees in Business				X
Primary Business Activity				X
Does Business Use Computers				X
Do You Hire PRSD Graduates				X
Computer Workshops Taken	X		X	X

See Appendices A (p. 143), B (p. 152), C (p. 160), and D (p. 168) for copies of the four questionnaires, and Appendix E (p. 176) for copies of the covering letters for each of the questionnaires.

To account for differences in point of view and vocabulary level among the four populations, minor modifications were made to the questionnaire so that it was individualized specifically for educators, students, parents, and business people. For example, the student's questionnaire refers to "your school," while the parent's questionnaire refers to "your child's school." Notwithstanding this necessary customization, the intent was to make the questionnaires as similar as possible.

Creation of the Questionnaire

The questionnaire was developed through a combination of brainstorming, looking at other, similar instruments, and consultation with my thesis advisor. Also very helpful was the assistance of David Wighton of the British Columbia Educational Technology Centre (ETC) who provided me with numerous samples of surveys and questionnaires developed by the ETC.

The central component of the questionnaire is the section that measures attitudes toward computers. After reviewing numerous computer attitudes scales, the one that seemed most appropriate to the study, because it specifically focused on educational computing, was the Attitude Toward School Computers (ATSC) developed by Troutman (1991). The instrument consists of 32 positively and negatively worded Likert-type statements. Subjects respond to all statements by selecting one of five responses ranging

from “strongly agree” to “strongly disagree.” Item responses are coded so that a higher score corresponds to a more positive attitude toward computers. Scores can range from a low of 32 to a high of 160. Initial responses for negatively worded items were reversed so that they would be consistent with the method for finding total measures of attitudes.

Troutman reported an alpha reliability coefficient for the test of 0.97. See Appendix A (p. 145) for the 32 statements which comprise the Attitude Toward School Computers (ATSC) Scale, as included in the Teachers’ Computer Attitude Questionnaire.

In October, 1993, the questionnaire was administered to a convenience sample of five teachers from another school jurisdiction, and the feedback from the small test group was used to make minor clarifications and refinements to the questionnaire. The changes were not substantive; they were minor wording changes to improve readability.

Distribution of the Questionnaires

After making a brief presentation to the Peace River School Division School Board in August, 1993, permission to conduct the study was granted. Questionnaires were distributed to all 228 educators either personally or via the School Division’s internal courier system during November, 1993. A teacher contact at each school site was asked to distribute the questionnaires and the covering letters/permission forms to educators at his/her location, encourage educators to complete the questionnaires, and then return them to me. The school contact person also separated the covering letter/permission slip from the questionnaire so that respondents remained anonymous.

To facilitate completion of the questionnaire by students during school time, one representative classroom was selected randomly from each of the 10 schools involved in the study. Therefore, the sample sizes, which ranged from 16 to 29, varied from school to school depending on the particular class selected and the number of students in each class. Students were surveyed during April, May, and June, 1994, as part of regular travel to schools on other work-related business. Depending on the ages of the students, it took between 30 and 45 minutes to complete the questionnaire. As students handed in their questionnaires, the covering letter/permission slip was separated so that students remained anonymous.

After finishing their questionnaires, students were given parent versions of the questionnaires to take home to their parents or guardians. Completed parent questionnaires were returned to the school secretary by the students and then forwarded to me via PRSD courier. The school secretary separated the covering letter/permission slip from the completed questionnaires to again preserve anonymity.

Questionnaires were mailed to businesses during November, 1993. They were returned to the School Division office in stamped self-addressed envelopes, and a secretary separated the covering letter/permission slip from the completed questionnaires before returning them to me.

Questionnaire Response Rates

Response rates to the questionnaire (Table 3) varied depending on the sample group, the different methods of administering the questionnaires to different samples (e.g. personal administration to students vs. mail to business people), and the location.

Educator, student, and parent groups have questionnaire response rates related to specific sites, but the business group does not because businesses were not associated with specific schools and their questionnaires were mailed to them directly at their business location. In summary, as can be seen in Table 3, the overall response rates were: educators - 64%, students - 100%, parents - 37%, and businesses - 34%. For the four groups combined, the response rate was 61% (i.e. out of a total of 818 questionnaires, 500 questionnaires were returned).

Table 3

Questionnaire Response Rates by Group and Site

Site	Educators			Students			Parents			Business		
	Sent	Rtnd	%	Sent	Rtnd	%	Sent	Rtnd	%	Sent	Rtnd	%
Nampa	6	6	100	22	22	100	22	13	59	0	0	N/A
Peace River H.S.	18	14	78	25	25	100	25	11	44	0	0	N/A
T.A. Norris	23	12	52	22	22	100	22	8	36	0	0	N/A
Springfield	29	19	66	0	0	N/A	0	0	N/A	0	0	N/A
McGrath	22	17	77	19	19	100	19	10	53	0	0	N/A
Kennedy	30	15	50	25	25	100	25	7	28	0	0	N/A
Grimshaw H.S.	28	19	68	17	17	100	17	10	59	0	0	N/A
Lloyd Garrison	13	12	92	16	16	100	16	6	38	0	0	N/A
Dixonville	11	9	82	21	21	100	21	3	14	0		N/A
Manning	16	7	44	29	29	100	29	7	24	0	0	N/A
Paul Rowe	18	8	44	24	24	100	24	7	29	0	0	N/A
Central Office	14	9	64	0	0	N/A	0	0	N/A	0	0	N/A
Totals	228	147	64	220	220	100	220	82	37	150	51	34

Interviews

After questionnaires were completed by each of the four samples, three subjects from each group were contacted for a brief interview. Each interview, most of which were conducted by telephone, lasted approximately 10 to 15 minutes. Interviews were semi-structured and included open ended questions; major sections of the questionnaire were mentioned (i.e. perceptions, barriers, and expectations) and respondents were asked for their comments. Respondents were also asked how they had answered miscellaneous questions from the questionnaire and asked for clarification and explanations about their responses.

Educators were randomly selected names from the School Division's staff list, called by telephone, and asked if they had completed a questionnaire. Four people were contacted in order to get three who had returned a questionnaire. The three who had returned questionnaires were willing to be interviewed.

For students, the teachers of three of the classes which had been surveyed were contacted (i.e. one upper elementary, one junior high, and one senior high) and asked to recommend a student to interview. We then arranged a mutually convenient time and the students were interviewed. Upon completing the student interview, students were asked for their home phone number and asked to mention to their parents that a telephone interview would be requested. The three parents were then telephoned, and all were willing to conduct an interview.

To conduct the interviews of business people, Companies were randomly selected from the list of businesses that had been mailed questionnaires and phoned to ask if they

had completed a questionnaire. Ten businesses were contacted in order to get three who had responded. Of the three who had responded, all were willing to discuss the questionnaire and their responses.

Analysis of Questionnaire Data

During the summer of 1994, data from the questionnaires was entered into the computer using the SPSS for Windows program (SPSS Inc., v. 5.0.1, 1992). The statistical tools used to analyze the data were descriptive statistics, cross-tabulations, one way analyses of variance, and protected *t* tests.

For each type of respondent (educators, students, parents, and business people), their personal, institutional, and computer-use variables were compared to their scores on the ATSC to determine which, if any, of these variables could help explain differences in attitudes toward computers as measured by the ATSC.

The mean scores on the ATSC of the four respondent groups were compared to each other using one way ANOVA to see if there were any significant differences in attitudes toward computers between the groups. If the overall *F* for an analysis of variance was significant, the protected *t* test (a.k.a. Fisher's least significant difference test) was used as the multiple comparison test.

Selected variables (i.e. location, sex, own a home computer, and community) for all respondents were compared to the mean ATSC scores using one way ANOVA and the protected *t* test.

Perceptions about computer use were analyzed by type of respondent using descriptive statistics and ANOVA. Barriers to computer use were analyzed by type of

respondent using cross tabulations. ANOVA was not used for these questions because, in addition to the five regular responses to the statements about barriers to computer use, for students, parents, and business people, a sixth response of “Don’t Know” was also included. This addition was considered necessary because of the likelihood that these three groups may not have been familiar with the details of the school situation. For educators, on the other hand, wanted to be ‘forced’ to make a response about their perceptions of barriers to computer use. While that purpose might have been accomplished, the different number of possible responses made comparisons among the four groups using ANOVA impossible. For the specific group of educators, their perceived barriers to computer use depending on their location were analyzed using descriptive statistics and ANOVA.

For the questionnaire section dealing with expectations about computer use, there were two categories: 1) Current Computer Uses, and 2) Ideal Computer Uses. See p. 150 of the Teacher’s Questionnaire in Appendix A, and p. 166 of the Parent’s Questionnaire in Appendix C. Comparisons can, however, be made only for Ideal Computers Uses because, as with the barriers to computer use section, for the Current Computer Uses section a “Don’t Know” choice was included for students, parents, and business people, but not for educators. In fact, 85% of business respondents answered either “Don’t Know” or didn’t respond at all, and almost half of parents responded with either “Don’t Know” or didn’t answer. Since there were a total of 51 business respondents, if 85% did not give a response from 1 to 5, then the sample size for this group is less than 10, which is too few to be useful. While this situation was unfortunate,

the section on Current Computer Uses was, in fact, somewhat repetitious of the previous section about perceptions of computer use. Analysis of Ideal Computer Uses, using descriptive statistics and ANOVA, was possible because in this section no group had a "Don't Know" choice.

CHAPTER 5

Results and Discussion

Introduction

This chapter provides the results of the research and also discussion of those findings. The chapter is broken into four major sections corresponding to the main sections in the questionnaire: 1) attitudes toward computers, 2) perceptions about computer use, 3) barriers to computer use, and 4) expectations about computer use. Within each major section, the four groups of respondents (educators, students, parents, and business) are dealt with individually and then together.

Attitudes Toward Computers

Educators' Sex

Regarding sex, as can be seen in Table 4, there is no significant difference in mean ATSC scores for male educators ($M = 129.1$) compared to female educators ($M = 125.6$), $F(1, 138) = 1.9$, n.s.

Table 4

Educators' Mean ATSC Scores by Sex

Sex	<i>N</i>	Mean	<i>SD</i>
Males	51	129.1	13.5
Females	89	125.6	15.0
Total	140	126.9	14.5

Educators' Age

Educators were divided into five groups according to age (Table 5), and the mean ATSC scores are not significantly different for any age group, $F(4, 141) = 1.1$, n.s.

Table 5

Educators' Mean ATSC Scores by Age

Age	<i>N</i>	Mean	<i>SD</i>
Under 30	25	129.9	12.5
30 - 39	39	127.2	11.3
40 - 49	49	125.7	18.1
50 - 59	30	122.4	18.6
60+	3	117.0	16.7
Total	146	126.0	15.8

This result is consistent with Martin and Lundström (1988) who found that age of teachers was not a significant variable, but disagrees with Kristiansen's (1992) Norwegian study which found age to be a significant factor in attitudes of educators toward what he called 'new information and communication technologies' in education in both his 1970 and 1990 studies. In the present study, although the mean ATSC score for the 60+ age category is the lowest score for all age groups, it is not significantly so, perhaps because of the small sample size ($n = 3$) in that category.

Educators' Educational position

Regarding educational position (Table 6), mean scores on the ATSC range from a low of 115.1 for school librarians³ to a high of 131.6 for PRSD central office personnel, but there are no significant differences among any of the groups, $F(5, 136) = 1.1$, n.s. Lichtman (1979), among other findings, reported that administrators were generally more positive in their attitudes toward computers than were teachers, which is not the case in the present study.

Table 6

Educators' Mean ATSC Scores by Educational Position

Position	<i>N</i>	Mean	<i>SD</i>
Classroom Teachers	104	126.3	16.5
School Librarians	8	115.1	10.9
Central Office	5	131.6	10.0
Teacher's Aides	12	125.3	17.1
School Administrators	9	130.7	15.1
Trustees	4	123.3	6.2
Total	142	126.0	15.9

Educators: Full or part time

Regarding educators who are employed full time vs. those employed part time (Table 7), there is not a significant difference in mean ATSC scores, $F(1, 135) = 2.9$, n.s.

³ Although they are commonly referred to as school librarians, the individuals in charge of school libraries in PRSD are not teacher librarians per se. They are essentially library clerks.

Table 7

Educators' Mean ATSC Scores for Full vs. Part Time

Employment	<i>N</i>	Mean	<i>SD</i>
Full Time	116	126.9	16.2
Part Time	21	120.4	15.6
Total	137	125.9	16.2

Educators' Grade level

Because Peace River School Division is composed of mostly small schools, educators can work simultaneously at a wide variety of grade levels. On the questionnaire, educators were asked to indicate at what grade level(s) they taught (from K to 12, and "Don't Teach") and then responses were organized into the six categories shown in Table 8 to reflect their main educational responsibility.

As can be seen in Table 8, the ASTC scores for educators at the Upper Elementary

Table 8

Educators' Mean ATSC Scores by Grade Level Taught

Grade Level	<i>N</i>	Mean	<i>SD</i>
Primary (K-3)	27	126.1	12.0
Upper Elem. (4-6)	24	116.0	20.8
Pr/Ue (K-6)	11	123.5	19.9
Junior High (7-9)	17	129.7	13.8
Senior High (10-12)	16	133.9	13.5
Jr/Sr High (7-12)	7	133.4	10.5
Total	102	125.8	16.7

level (grades 4, 5, and 6) are lower than those of educators at all other grade levels, and they are significantly lower than educators at four of the other five grade levels (Primary, Junior High, Senior High, and Junior/Senior High), $F(5, 96) = 3.3, p < .05$.

An additional grouping of educators into just two grade levels — Primary/Upper Elementary (K to 6) and Junior High/Senior High (7 to 12), as can be seen in Table 9, shows that the ATSC scores for Primary/Upper Elementary educators are significantly lower than those of Junior/Senior High educators, $F(2, 144) = 5.6, p < .05$. An explanation of this difference might have more to do with the history of computer implementation in PRSD than characteristics of educators at different grade levels. In Peace River School Division, junior/senior high schools have a larger quantity of computer equipment, more up-to-date equipment, and have had it for a longer time than primary/elementary schools. Greater experience with computers contributing to a more positive attitude toward computers would be consistent with findings of Gerschner (1982) and Gressard & Loyd (1985).

Table 9

Educators' Mean ATSC Scores for Pr/Ue vs. Jr/Sr High

Grade Level Taught	<i>N</i>	Mean	<i>SD</i>
Primary/Upper Elementary (K-6)	62	121.7	17.7
Junior/Senior High (7-12)	40	132.0	13.0
Total	102	125.8	16.7

Educators' Years as an Educator

Regarding the number of years working as an educator, Table 10 shows that there are no significant differences based on ATSC scores, $F(5, 138) = 0.7$, n.s. These results are similar to those of Martin and Lundstrom (1988) who found that years of teaching experience were not significant factors in increasing positive computer attitudes or decreasing computer anxiety.

Table 10

Educators' Mean ATSC Scores by Years Working as an Educator

Years	<i>N</i>	Mean	<i>SD</i>
1 - 4	28	128.0	13.2
5 - 8	24	127.8	12.9
9 - 12	19	122.9	18.0
13 - 16	26	128.0	17.7
17 - 20	17	121.0	17.1
More than 20	30	126.0	16.7
Total	144	126.0	15.8

Educators' Highest degree earned

Referring to Table 11, there are no significant differences on mean ATSC scores based on the highest degree that an educator has earned, $F(7, 135) = 0.8$, n.s.

Table 11

Educators' Mean ATSC Scores by Highest Degree Earned

Degree	<i>N</i>	Mean	<i>SD</i>
Assoc. Degree	7	128.0	7.3
Bachelor	84	125.4	16.3

Degree	<i>N</i>	Mean	<i>SD</i>
2nd Bachelor's	23	129.0	15.7
Master's	9	129.3	12.0
2nd Masters	1	153.0	
Education Specialist	2	126.0	17.0
Professional Degree	2	130.5	12.0
No degree	15	121.5	16.9
Total	143	126.2	15.6

Educators' Owning a Home Computer

Table 12 summarizes that there is not a significant difference on mean ATSC scores depending on whether educators own a personal computer at home which they personally use, $F(1, 145) = 1.7$, n.s.. This result is inconsistent with Martin and Lundstrom (1988) who found that having a home computer was a significant variable in explaining decreased computer anxiety.

Table 12

Educators' Mean ATSC Scores by Whether Own a Home Computer

Own a Home Computer	<i>N</i>	Mean	<i>SD</i>
Yes	85	127.5	15.8
No	62	124.1	15.5
Total	147	126.0	15.7

Educators' Hours of Computer Workshops

Referring to Table 13, there are no significant differences for educators on mean ATSC scores depending on the number of hours of computer workshops taken, $F(6, 140) = 0.3$, n.s. This finding is inconsistent with Lawton and Gerschner (1982) who

found that inservice training programs (among other factors) affected teacher attitudes, and also with Gressard and Loyd (1985) who found that positive attitudes towards computers increased as a result of a staff development course.

Table 13

Educators' Mean ATSC Scores by Hours of Computer Workshops or Courses

Hours of Courses	<i>N</i>	Mean	<i>SD</i>
Zero	23	124.1	15.2
1 - 9	46	125.1	17.6
10 - 19	25	126.2	14.5
20 - 29	13	126.9	18.5
30 - 39	9	129.2	15.1
40 - 49	2	119.5	12.0
50+	29	128.1	14.1
Total	147	126.0	15.7

Educators' Recent Computer Use

Regarding whether an educator had used a personal computer for any reason in the past 14 days, scores on the ATSC range from a low of 120.1 for zero use to a high of 137.0 for those who had used a computer more than 20 times. Table 14 shows the scores for the six groups. Educators who used a computer more than 20 times in the past two weeks have significantly higher ATSC scores than those who used one less than nine times, $F(5, 138) = 4.0, p < .005$.

Table 14

Educators' Mean ATSC Scores by Computer Use Within Past 14 Days

Number of Times	<i>N</i>	Mean	<i>SD</i>
Zero	30	120.1	16.0
1 - 4	41	124.1	16.1
5 - 9	28	123.7	16.7
10 - 14	14	130.7	15.0
15 - 19	7	127.4	8.2
20+	24	137.0	11.0
Total	144	126.1	15.9

Educators' Recent Initiation of an Instructional Computer Activity

Referring to Table 15, there are no significant differences in mean ATSC scores for educators depending upon how recently they initiated an instructional computer activity in school, $F(4, 137) = 2.0$, n.s.

Table 15

Educators' Mean ATSC Scores by Recently Initiated Instructional Computer Activity

How Recent	<i>N</i>	Mean	<i>SD</i>
Within 7 days	51	129.5	18.2
1 - 4 weeks ago	22	124.6	12.3
1 - 8 months ago	25	127.1	14.5
8 months +	17	117.5	16.5
Never	27	124.6	13.0
Total	142	126.0	15.9

Educators' Most Recent Student Computer Use in Class

Educators' Minutes per Week of Student Computer Use

Regarding both the most recent occasion that some students in an educator's class did computer work during class time (Table 16) and how many minutes per week does the average student in an educator's class use computers during class time (Table 17), there are no significant differences on mean ATSC scores, $F(6, 133) = 0.8$, n.s. and $F(5, 118) = 0.8$, n.s. respectively.

Table 16

Educators' Mean ATSC Scores by Recent Computer Work Done During Class Time

How Recent	<i>N</i>	Mean	<i>SD</i>
Never	16	119.9	16.7
3 weeks +	23	129.8	11.6
2 to 3 weeks	4	126.5	11.8
3 days to 2 weeks	16	122.7	10.1
Within 3 days	54	126.9	18.7
N/A	24	127.6	16.5
Other	3	130.3	8.0
Total	140	126.3	15.9

Table 17

Educators' Mean ATSC Scores by Minutes/Week of Student Class Computer Use

Minutes/Week	<i>N</i>	Mean	<i>SD</i>
None	27	124.0	16.6
Less than 30	44	125.8	15.1
30 - 59	36	130.5	14.5

Minutes/Week	<i>N</i>	Mean	<i>SD</i>
60 - 89	12	122.4	23.8
90 - 119	3	132.3	18.7
120+	2	122.5	6.4
Total	124	126.5	16.2

Educators' School

The school in which educators work does demonstrate a number of significant differences in attitudes towards computers as measured by the ATSC (Table 18),

Table 18

Educators' Mean ATSC Scores by School

School	<i>N</i>	Mean	<i>SD</i>
Nampa	6	141.0	8.6
Peace River H.S.	14	133.1	12.7
T.A. Norris	12	131.3	11.6
Springfield	19	127.1	11.5
McGrath	17	115.5	15.9
Kennedy	15	121.3	16.6
Grimshaw H.S.	19	128.3	13.7
Lloyd Garrison	12	127.6	19.1
Dixonville	9	111.7	22.1
Manning	7	121.7	14.6
Paul Rowe H.S.	8	133.5	14.5
Total	138	125.9	16.1

$F(10, 127) = 3.2, p < .001$. Mean ATSC scores of educators at Nampa are significantly higher than educators at Springfield, Manning Elementary, Kennedy, McGrath, and Dixonville; and educators at Paul Rowe H.S., Peace River H.S., T.A. Norris Junior High, Grimshaw H.S., Lloyd Garrison, and Springfield have significantly higher attitudes toward computers than Dixonville and McGrath. In addition, Peace River H.S. educators' attitudes toward computers are significantly higher than those of educators at Kennedy.

Students' Sex

Regarding attitudes toward computers as measured by the ATSC, male and female students have almost identical attitudes toward computers (Table 19), $F(1, 215) = 0.0, n.s.$ As mentioned previously in the section on Student Attitudes, Perceptions, and Expectations (p. 10), although the literature on gender differences in attitudes toward computers is inconclusive, the results of the present study indicate that for students there is no difference in attitudes toward school computers.

Table 19

Students' Mean ATSC Scores by Sex

Sex	<i>N</i>	Mean	<i>SD</i>
Males	106	121.6	14.7
Females	111	122.1	16.3
Total	217	121.8	15.5

Students' Grade

Although students were asked on the questionnaire to indicate their grade level, the results for specific grade level unfortunately cannot be used because of the method used to select students to participate in the study. Because of the difficulties of trying to

Table 20

Students by School and Grade (n and Percent in Each Grade)

	4	5	6	7	8	9	10	11	12
Nampa	5 100%	9 26.5%	8 12.1%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Peace River	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	25 59.5%	0 0%
T.A. Norris	0 0%	0 0%	0 0%	0 0%	0 0%	22 45.8%	0 0%	0 0%	0 0%
McGrath	0 0%	0 0%	19 28.8%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Kennedy	0 0%	25 73.5%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Grimshaw	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	17 40.5%	0 0%
Lloyd Garrison	0 0%	0 0%	10 15.2%	6 42.9%	0 0%	0 0%	0 0%	0 0%	0 0%
Dixonville	0 0%	0 0%	0 0%	8 57.1%	11 100%	2 4.2%	0 0%	0 0%	0 0%
Manning	0 0%	0 0%	29 43.9%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Paul Rowe	0 0%	0 0%	0 0%	0 0%	0 0%	24 50.0%	0 0%	0 0%	0 0%
Total	5 100%	34 100%	66 100%	14 100%	11 100%	48 100%	0 0%	42 100%	0 0%

arrange for students from a number of different classes to complete the questionnaire at the same sitting, one representative class at each school was randomly selected to participate in the study. As can be seen in Table 20, as a result of this selection process all the grade four students, for example, are from Nampa School, all the grade eight students

are from Dixonville School, and 59.5% of the grade 11 students are from Peace River H.S. While this selection procedure greatly facilitated administration of the questionnaire to students, because arrangements had to be made with only the principal and one teacher at each school, as a consequence, the specific grade levels of many students are tied directly to a particular school.

Grouping students into divisions (i.e. upper elementary [grades 4 to 6], junior high [grades 7 to 9], and senior high [grades 10 to 12]) eliminates the problem of students at

Table 21

Students by School and Division (i.e. Upper Elementary, Junior High, and Senior High)

	Upper Elementary	Junior High	Senior High
Nampa	22 21%	0 0%	0 0%
Peace River	0 0%	0 0%	25 60%
T.A. Norris	0 0%	22 30%	0 0%
McGrath	19 18%	0 0%	0 0%
Kennedy	25 24%	0 0%	0 0%
Grimshaw	0 0%	0 0%	17 41%
Lloyd Garrison	10 10%	6 8%	0 0%
Dixonville	0 0%	21 29%	0 0%
Manning	29 28%	0 0%	0 0%
Paul Rowe	0 0%	24 33%	0 0%
Total	105 100%	73 100%	42 100%

specific grade levels being related directly with particular schools because the number of categories is reduced and students within each division are drawn from a variety of schools. As can be seen in Table 21, upper elementary students are drawn from five schools, junior high students from four schools, and senior high students from two schools.

When students are grouped by division (Table 22), there are no significant differences in mean ATSC scores, $F(2, 216) = 0.08$, n.s.

Table 22

Students' Mean ATSC Scores by Division

Division	<i>N</i>	Mean	<i>SD</i>
Upper Elementary	104	122.0	14.9
Junior High	73	122.3	16.1
Senior High	42	121.1	16.3
Total	219	121.9	15.5

Students' School

When grouping students by school (Table 23), their mean scores on the ATSC range from a low of 114.0 for Lloyd Garrison to a high of 129.7 for Paul Rowe H.S., and there are a number of significant differences, $F(9, 209) = 2.4$, $p < .05$. Students at Paul Rowe H.S., Nampa, Peace River H.S., and Kennedy have significantly higher mean scores than students at Lloyd Garrison and Grimshaw H.S.. Paul Rowe students' mean ATSC scores are also significantly higher those of Dixonville, McGrath, and Manning.

Table 23

Students' Mean ATSC Scores by School

School	<i>N</i>	Mean	<i>SD</i>
Nampa	21	126.2	10.9
Peace River H.S.	25	125.6	13.8
T.A. Norris	22	121.4	18.6
McGrath	19	120.2	16.8
Kennedy	25	124.9	13.9
Grimshaw H.S.	17	114.9	17.8
Lloyd Garrison	16	114.0	14.4
Dixonville	21	117.6	14.6
Manning	29	120.2	15.8
Paul Rowe H.S.	24	129.7	13.3
Total	219	121.9	15.5

Students' Owning a Home Computer

Table 24 summarizes that the mean ATSC scores of those students who own a computer at home which they personally use ($M = 124.9$) are significantly higher than those who don't own a home computer ($M = 119.1$), $F(1, 216) = 7.7, p < .05$.

Table 24

Students' Mean ATSC Scores by Whether Own a Home Computer

Own a Home Computer	<i>N</i>	Mean	<i>SD</i>
Yes	108	124.9	14.8
No	110	119.1	15.7
Total	218	122.0	15.5

Students' Recent Computer Use

Considering the number of times that students had personally used a computer either at home or at school during the past 14 days, the more frequent the student's use of computers, the higher the mean ATSC score (Table 25). Those students with more than 20 uses in the past two weeks have mean scores which are significantly higher than those who used a computer nine times or less, and all students' who used a computer within the past two weeks have more positive attitudes toward computers than those who never used one, $F(5, 211) = 7.9, p < .001$.

Table 25

Students' Mean ATSC Scores by Computer Use Within Past Two Weeks

Computer Use	<i>N</i>	Mean	<i>SD</i>
None	36	110.4	14.6
1 - 4 times	94	121.5	13.6
5 - 9 times	48	124.0	14.7
10 - 14 times	13	126.2	18.2
15 - 19 times	6	131.0	11.5
20+ times	20	133.2	15.2
Total	217	121.8	15.5

Students' Most Recent Class Use of Computers

Referring to Table 26, the more recently students used computers during class time (as opposed to any use, including personal, as reported above), the higher their mean ATSC scores, $F(4, 212) = 4.2, p < .05$. Those students who used computers in class

within the past three days have mean scores which are significantly higher than students whose use was either never or more than three weeks ago.

Table 26

Students' Mean ATSC Scores by Most Recent Class Use of Computers

Most Recent Class Use	<i>N</i>	Mean	<i>SD</i>
Never	22	117.4	17.6
3 weeks +	56	116.2	16.3
2 - 3 weeks	17	120.9	15.0
3 days to 2 weeks	53	124.3	13.1
Within 3 days	69	126.1	14.7
Total	217	121.8	15.5

Students' Minutes per Week of Class Time Computer Use

Regarding students' number of minutes per week of class time computer use (Table 27), there are no significant differences in mean ATSC scores, $F(5, 210) = 2.2$, n.s.

Table 27

Students' Mean ATSC Scores by Minutes/Week of Class Time Computer Use

Minutes/Week	<i>N</i>	Mean	<i>SD</i>
No Use	51	117.3	15.2
30 min. or less	51	120.8	15.3
30 - 59 min.	49	122.6	17.3
60 - 89 min.	43	124.7	13.0
90 - 119 min.	11	125.3	8.4
120 min. +	11	131.3	18.6
Total	216	121.9	15.5

Parents' Sex

According to sex (Table 28), parents show no difference on mean ATSC scores, $F(1, 80) = 0.1$, n.s.

Table 28

Parents' Mean ATSC Scores by Sex

Sex	<i>N</i>	Mean	<i>SD</i>
Males	16	122.3	17.5
Females	66	123.4	16.4
Total	82	123.2	16.5

Parents' Age

As can be seen in Table 29, there are no significant differences in mean ATSC scores for parents according to their age, $F(3, 78) = 0.5$, n.s.

Table 29

Parents' Mean ATSC Scores by Age

Age	<i>N</i>	Mean	<i>SD</i>
Under 30	7	119.1	23.8
30 to 39	39	123.2	16.7
40 to 49	31	125.1	15.0
50 to 59	5	116.8	16.1
Total	82	123.2	16.5

Parents' Owning a Home Computer

More than 50% of the parents responding to the questionnaire say they own a home computer which they personally use, and as can be seen in Table 30, their attitudes toward computers as measured by the ATSC are significantly higher than those who do not own a home computer, $F(1, 80) = 5.8, p < .05$.

Table 30

Parents' Mean ATSC Scores by Whether Own a Home Computer

Own a Home Computer	<i>N</i>	Mean	<i>SD</i>
Yes	45	127.0	16.5
No	37	118.4	15.5
Total	82	123.2	16.5

Parents' Highest Degree Earned

Regarding the educational level of parents and mean ATSC scores as seen in Table 31, there are no significant differences, $F(5, 72) = 1.0, n.s.$

Table 31

Parents' Mean ATSC Scores by Highest Degree Earned

Highest Degree Earned	<i>N</i>	Mean	<i>SD</i>
Assoc. Degree	25	126.1	14.1
Bachelor	4	134.3	21.7
2nd Bachelor's	1	137.0	
Education Specialist	2	126.0	21.2
Professional Degree	3	119.0	21.3
No degree	43	120.5	16.6
Total	78	123.3	16.3

Parents' Number of Hours of Computer Courses

Depending on the number of hours of computer courses that parents had taken, mean scores on the ATSC range from a low of 116.6 for those who had taken no courses to a high of 134.3 for those who had taken more than fifty hours of courses (Table 32), and there is a significant difference between those two groups, $F(6, 74) = 3.1, p < .05$. The mean ATSC scores for parents who had taken between 30 and 39 hours of computer courses are the lowest of all the scores ($M = 114.1$), and these scores are also significantly different from those who had taken more than fifty hours of courses.

Table 32

Parents' Mean ATSC Scores by Number of Hours of Computer Courses

Hours of Courses	<i>N</i>	Mean	<i>SD</i>
Zero	29	116.6	14.4
1 to 9	7	124.6	16.9
10 to 19	10	127.3	19.6
20 to 29	6	122.7	17.9
30 to 39	8	114.1	12.1
40 to 49	2	125.5	19.1
50+	19	134.3	14.4
Total	81	123.2	16.6

Parents' Number of Times of Computer Use Within Past 14 Days

Referring to Table 33, there are no significant differences in mean ATSC scores for parents depending on how many times they have used a computer within the past 14 days, $F(5, 75) = 1.6, n.s.$

Table 33

Parents' Mean ATSC Scores by Computer Use Within Past 14 Days

Number of Computer Uses	<i>N</i>	Mean	<i>SD</i>
Zero	29	116.5	15.7
1 - 4	10	129.0	18.0
5 - 9	8	126.9	17.3
10 - 14	9	124.4	15.9
15 - 19	3	123.3	11.2
20+	22	127.5	16.6
Total	81	123.2	16.6

Parents Regarding Most Recent Child's Computer Use in Class

Concerning how recently parents say their child used computers at school during class time (Table 34), there are no significant differences in mean ATSC scores among the groups, $F(4, 70) = 0.7$, n.s.

Table 34

Parents' Mean ATSC Scores by Child's Recent Computer Work During Class Time

Number of Times	<i>N</i>	Mean	<i>SD</i>
Never	6	115.5	24.3
3 weeks +	18	127.1	18.0
2 to 3 weeks	6	119.8	15.5
3 days to 2 weeks	16	123.1	17.6
Within 3 days	29	120.9	13.8
N/A	1	127.0	
Total	76	122.4	16.5

Parents Regarding Minutes per Week of Child's Class Time Computer Use

Grouping parents according to the number of minutes per week that their child says he or she uses computers during class time (Table 35), there are no significant differences in mean ATSC scores, $F(5, 69) = 1.3$, n.s.

Table 35

Parents' Mean ATSC Scores by Minutes/Week of Child's Class Computer Use

Number of Minutes	<i>N</i>	Mean	<i>SD</i>
None	15	129.5	16.1
Less than 30 min.	21	122.3	16.5
30 - 59 min.	20	122.5	18.8
60 - 89 min.	6	109.5	21.4
90 - 119 min.	5	120.4	9.2
120 min. +	8	120.4	10.8
Total	75	122.4	16.9

Parents Regarding Child's School

There is a substantial range in parents' mean ATSC scores based on the school of their child, with scores for parents from four schools in the teen's, four in the twenty's, and two in the thirty's (Table 36), but there are no significant differences among groups, $F(9, 72) = 1.2$, n.s.

Table 36

Parents' Mean ATSC Scores by Child's School

School	<i>N</i>	Mean	<i>SD</i>
Nampa	13	118.5	19.9
Peace River H.S.	11	115.2	17.0
T.A. Norris	8	131.0	12.9
McGrath	10	123.6	19.6
Kennedy	7	130.1	14.9
Grimshaw H.S.	10	126.1	13.2
Lloyd Garrison	6	117.2	21.5
Dixonville	3	113.0	5.6
Manning	7	129.1	13.2
Paul Rowe H.S.	7	127.1	11.2
Total	82	123.2	16.5

Parents' Community

When parents are grouped into the communities based on the school their child

Table 37

Parents' Mean ATSC Scores by Community

Community	<i>N</i>	Mean	<i>SD</i>
Nampa	13	118.5	19.9
Grimshaw	17	127.8	13.6
Manning	14	128.1	11.8
Peace River	29	122.4	17.6
Berwyn	6	117.2	21.5
Dixonville	3	113.0	5.6
Total	82	123.2	16.5

attends (Table 37), there are no significant differences among the groups' mean ATSC scores, $F(5, 76) = 1.1$, n.s.

Business: Community Location

Regarding the community location of a business, there are no significant differences in attitudes toward computers as measured by the ATSC (Table 38), $F(3, 47) = 0.3$, n.s.

Table 38

Business' Mean ATSC Scores by Community Location of Business

Community	<i>N</i>	Mean	<i>SD</i>
Grimshaw	8	126.6	19.3
Manning	9	127.9	12.8
Peace River	30	124.2	15.5
Berwyn	4	131.3	17.8
Total	51	125.8	15.5

Business: Size of Operation

Business: Number of Employees

The questionnaire contains two questions pertaining to the scale of business operations — a subjective question about whether the business is small, medium, or large (Table 39), and a question about the number of employees (Table 40). For neither question is there a significant difference in mean ATSC scores, $F(2, 48) = 0.7$, n.s. and $F(5, 45) = 0.4$, n.s. respectively.

Table 39

Business' Mean ATSC Scores by Size of Operation

Size	<i>N</i>	Mean	<i>SD</i>
Small	28	126.5	16.8
Medium	19	126.6	12.7
Large	4	117.0	19.9
Total	51	125.8	15.5

Table 40

Business' Mean ATSC Scores by Number of Employees

Number of Employees	<i>N</i>	Mean	<i>SD</i>
10 or Less	34	126.6	16.8
11 to 20	7	120.7	5.5
21 to 30	2	127.0	4.2
31 to 40	1	118.0	
41 to 50	1	143.0	
51 to 100	0		
100+	6	125.0	19.8
Total	51	125.8	15.5

Business: Primary Economic Activity

Based on the primary economic activity of the business (Table 41), there are no significant differences in mean ATSC scores, $F(7, 42) = 1.0$, n.s.

Table 41

Business' Mean ATSC Scores by Primary Economic Activity

Primary Business Activity	<i>N</i>	Mean	<i>SD</i>
Retailer/Distributor	14	121.4	14.1
Agriculture/Construction/Mining/Oil/Trans/Utilities	11	122.0	20.2
Manufacturing/Communications	1	131.0	
Finance/Banking/Insurance/Real Estate/Accounting	8	132.8	10.6
Government/Education	2	115.0	38.2
Health/Medical/Legal/Engineering/Architecture	4	136.5	10.8
Food Services	3	134.7	18.0
Other	7	126.6	7.3
Total	50	126.0	15.6

Business: Frequency of Computer Use

Table 42 shows that computer use in businesses in the Peace River Country is wide spread with approximately 75% of business respondents stating that they "always" use computers in their operations. There are, however, no significant differences in attitudes toward computers based on the frequency of their business use, $F(4, 45) = 0.3, n.s.$

Table 42

Business' Mean ATSC Scores by Frequency of Use of Computers in Business

Computer Use	<i>N</i>	Mean	<i>SD</i>
Never	5	126.4	23.0
Rarely	1	114.0	
Occasionally	1	134.0	
Usually	6	122.7	19.7
Always	37	126.8	14.3
Total	50	126.2	15.5

Business: Whether It Hires PRSD Graduates

Table 43 shows that there are no significant differences in mean ATSC scores between the two groups of businesses depending whether they hire Peace River School Division graduates, $F(1, 46) = 3.5$, n.s.

Table 43

Business' Mean ATSC Scores by Whether Hire PRSD Graduates

Hire PRSD Grads	<i>N</i>	Mean	<i>SD</i>
Yes	34	129.2	12.0
No	14	120.6	19.5
Total	48	126.7	14.9

Business: Own a Home Computer

Almost half of the business respondents own a home computer which they personally use (Table 44). The mean ATSC scores are not significantly different for the two groups, $F(1, 49) = 2.4$, n.s.

Table 44

Business' Mean ATSC Scores by Whether Own a Home Computer

Own a Home Computer	<i>N</i>	Mean	<i>SD</i>
Yes	24	129.3	12.7
No	27	122.7	17.3
Total	51	125.8	15.5

Business: Computer Courses Taken

Regarding the number of computer courses taken by business people, Table 45 shows that there are no significant differences in attitudes toward computers as measured by the ATSC, $F(6, 44) = 0.5$, n.s.

Table 45

Business' Mean ATSC Scores by Computer Courses Taken

Hours of Courses	<i>N</i>	Mean	<i>SD</i>
Zero	13	124.9	16.6
1 - 9	10	130.6	11.7
10 - 19	3	133.3	5.0
20 - 29	1	119.0	
30 - 39	9	120.2	19.5
40 - 49	3	121.3	3.2
50+	12	126.8	18.2
Total	51	125.8	15.5

Business: Recent Computer Use Within Past 14 Days

Table 46 shows that there are no significant differences in mean ATSC scores for business people depending on the number of times they used a computer for any reason in the past two weeks, $F(4, 46) = 0.8$, n.s.

Table 46

Business' Mean ATSC Scores by Recent Computer Use

Number of Times	<i>N</i>	Mean	<i>SD</i>
None	11	122.2	20.2
1 to 4 times	7	128.9	9.2
5 to 9 times	5	118.8	7.0
10 to 14 times	2	138.5	17.7
15 to 19 times	0		
20+ times	26	126.9	15.7
Total	51	125.8	15.5

All Respondents Combined: Mean ATSC Scores

As measured by the ATSC, there are no significant differences in mean ATSC scores among the four groups of respondents, $F(3, 495) = 2.3$, n.s.

Table 47

Mean ATSC Scores for All Respondents by Group

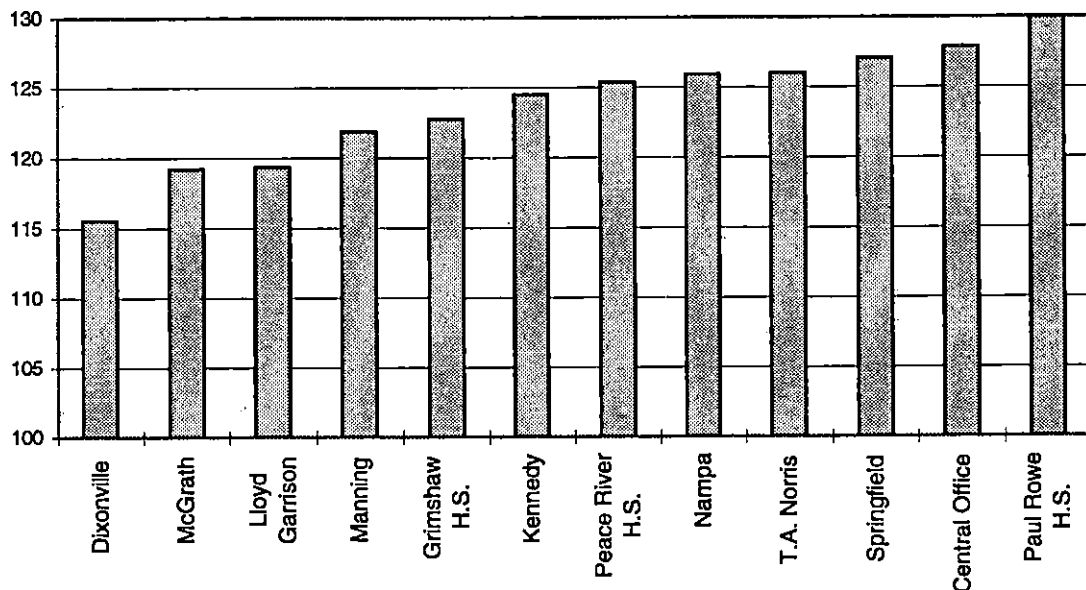
Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	147	126.0	15.7
Business	51	125.8	15.5
Students	219	121.9	15.5
Parents	82	123.2	16.5
Total	499	123.7	15.8

All respondents (Except Business): Mean ATSC Scores by Location

Figure 1 presents the combined mean ATSC scores for educators, students, and parents by location from lowest combined mean ATSC score to highest.⁴ For the combined ATSC scores by location, there are some significant differences,

Figure 1

Combined Mean ATSC Scores for Educators, Students, and Parents by Location, Ranked from Lowest to Highest Mean ATSC Score



$F(11, 436) = 2.4, p < .05$. Attitudes toward computers, as measured by the ATSC, are significantly higher at Paul Rowe H.S., Central Office, Springfield, T.A. Norris, Nampa, Peace River H.S., Kennedy, and Grimshaw H.S. compared to Dixonville. In addition, the

⁴ For Central Office and Springfield School, only educators' score are included, because, at Central Office, administrators and School Board Trustees were grouped together as educators; and Springfield School is a primary school (grades 1 to 3 only) and students, due to their age, and thus parents were not surveyed.

mean ATSC scores at Paul Rowe H.S. are significantly higher than those of McGrath, Lloyd Garrison, Manning, and Grimshaw H.S. T.A. Norris and Nampa are also significantly higher than McGrath.

Excluding Central Office and Springfield Elementary School from the discussion because their “combined” ATSC scores are only those of educators, the one generalization that can be drawn about the mean ATSC scores by location is that the grade levels taught at the school seem to be important. Three of the four schools with the highest combined mean scores teach grades 7 to 12, and the schools with the four lowest mean scores are mainly elementary schools (grades 1 to 6). This result is consistent with the previously mentioned finding that educators’ attitudes toward school use of computers is significantly higher for those who teach at the junior/senior high level as compared to the primary/upper elementary level. (See, Table 9, Educators’ Mean ATSC Scores for Pr/Ue vs. Jr/Sr High, p. 38)

Separating the ATSC scores by location into their component groups, as can be seen in Table 48, in six of the 11 schools in PRSD, educators’ mean ATSC scores are higher than parents’ or students’ mean scores. In only two of the 11 schools are educators’ mean scores the lowest of the three groups of respondents. In four of the 11 schools, students’ mean scores are the lowest.

Table 48

Mean ATSC Scores by Location and Type of Respondent

<u>Respondents & Schools</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>
All Respondents (except Business)	448	123.5	15.8
Nampa	40	125.9	15.7
Educators	6	141.0	8.6

Respondents & Schools	<i>N</i>	Mean	<i>SD</i>
Students	21	126.2	10.9
Parents	13	118.5	19.9
Peace River H.S.	50	125.4	15.3
Educators	14	133.1	12.7
Students	25	125.6	13.8
Parents	11	115.2	17.0
T.A. Norris	42	126.0	16.3
Educators	12	131.3	11.6
Students	22	121.4	18.6
Parents	8	131.0	12.9
Springfield	19	127.1	11.5
Educators	19	127.1	11.5
McGrath	46	119.2	17.0
Educators	17	115.5	15.9
Students	19	120.2	16.8
Parents	10	123.6	19.6
Kennedy	47	124.5	14.9
Educators	15	121.3	16.6
Students	25	124.8	13.9
Parents	7	130.1	14.9
Grimshaw H.S.	46	122.8	16.2
Educators	19	128.3	13.7
Students	17	114.6	17.8
Parents	10	126.1	13.2
Lloyd Garrison	34	119.4	18.0
Educators	12	127.6	19.1
Students	16	114.0	14.4
Parents	6	117.2	21.5
Dixonville	33	115.5	16.2
Educators	9	111.7	22.1
Students	21	117.6	14.6
Parents	3	113.0	5.6
Manning Elem.	43	121.9	15.3
Educators	7	121.7	14.6
Students	29	120.2	15.8
Parents	7	129.1	13.2
Paul Rowe H.S.	39	130.0	13.0
Educators	8	133.5	14.5
Students	24	129.7	13.3
Parents	7	127.1	11.2
Central Office	9	127.9	9.2
Educators	9	127.9	9.2

All respondents (Except Business): Mean ATSC Scores by Sex

Combining educators, students, and parents together (Table 49) shows that the mean ATSC scores by sex are very similar and are not significantly different from each other, $F(1, 437) = 0.0$, n.s.

Table 49

Mean ATSC Scores by Sex for All Respondents (Except Business)

Sex	<i>N</i>	Mean	<i>SD</i>
Males	173	123.9	14.9
Females	266	123.6	15.9
Total	439	123.7	15.5

All Respondents : Mean ATSC Scores by Whether Own a Home Computer

Over 50% of all respondents said they owned a home computer which they personally used (Table 50), and their attitudes toward computers as measured by the ATSC are significantly more positive than those who don't, $F(1, 496) = 17.1$, $p < .0001$.

Table 50

Mean ATSC Scores for All Respondents by Whether Own a Home Computer

Own a Home Computer	<i>N</i>	Mean	<i>SD</i>
Yes	262	126.5	15.3
No	236	120.7	15.9
Total	498	123.8	15.8

Regarding the four groups which make up the study, while the mean ATSC scores for all groups is higher for those who own a home computer, it is only for students and parents

that the difference is significant. For all respondents combined, the significantly more positive attitude toward computers of owners of home computers is consistent with the results of the Harvey and Wilson (1985) study.

All Respondents: Mean ATSC Scores by Recent Personal Computer Use

For all respondents combined, as can be seen in Table 51, there are significant differences in mean ATSC scores depending on the frequency of their recent personal computer use, $F(5, 487) = 10.7, p < .0001$. Groups who had any computer use within the last 14 days have significantly higher mean ATSC scores than those who did not use computers at all, and those individuals who used a computer 20 or more times within the past 14 days also have significantly higher mean ATSC scores than the two groups that used a computer nine times or less.

Table 51

Mean ATSC Scores for All Respondents by Recent Personal Computer Use

Computer Use Within Past 14 Days	<i>N</i>	Mean	<i>SD</i>
None	106	116.1	16.3
1 - 4 times	152	123.0	14.5
5 - 9 times	89	123.9	15.1
10 - 14 times	38	128.1	16.2
15 - 19 times	16	128.0	9.8
20+ times	92	131.0	15.1
Total	493	123.7	15.9

All Respondents: Mean ATSC Scores by Community

When all respondents are grouped by community (Table 52), there are some significant differences in mean ATSC Scores, $F(5, 433) = 2.7, p < .05$, but there are no discernible patterns. Grimshaw, Peace River, Manning, and Nampa mean scores are significantly higher than those of Dixonville; and Manning's mean scores are also significantly higher than those of Berwyn. Two of the smaller communities, Dixonville and Berwyn, have the lowest mean scores; but Nampa is also a small community, and it has the highest mean score. Nor is there any geographic pattern for the two communities with the lowest mean scores.

Table 52

Mean ATSC Scores for All Respondents by Community

Community	<i>N</i>	Mean	<i>SD</i>
Nampa	40	125.9	15.7
Grimshaw	93	123.7	15.5
Manning	82	125.7	14.7
Peace River	157	124.0	15.9
Berwyn	34	119.4	18.0
Dixonville	33	115.5	16.3
Total	439	123.4	15.9

Comparing the four schools within the Town of Peace River (Table 48), shows there is a significant difference between a couple of the schools — T.A. Norris Jr. High School ($M = 126.1$) compared to McGrath Elementary ($M = 119.2$). While in Manning, there is a significant difference between the two schools (Manning Elementary $M = 121.9$

and Paul Rowe High School $M = 130.0$), in Grimshaw there is not a significant difference (Kennedy Elementary [$M = 124.5$] and Grimshaw High School [$M = 122.8$]). Thus, even though there may seem to be differences among communities, aggregating the schools of a community together can hide significant differences among the schools of the community. It appears that school is more important than community in explaining differences in attitudes toward computers as measured by the ATSC.

Perceptions About Computer Use

Introduction

To ascertain perceptions about present computer use in Peace River School Division schools, respondents were presented with two subsections in the questionnaire. The first is composed of 10 Likert type statements (See p. 147 of the Teacher's Questionnaire in Appendix A for the statements.), and the second consists of 11 statements about barriers to computer use (p. 148). There are considerable similarities (unintended during the design of the study) among statements in the two subsections. For example, subsection one contains the statement, "My school has a sufficient number of computers so students have adequate access to computers," and subsection two asks respondents to rate "Lack of hardware, Lack of software, Poor quality of hardware, and Poor quality of software" as possible barriers to computer use. Because of the parallels between the two subsections, analysis and discussion of the 10 'perception statements' will focus on possible differences among all four groups of respondents, while examination of the barriers subsection will concentrate on educators' perceptions, especially according to location. First, the perception statements will be discussed, and the next section will deal with the barrier statements.

For the Likert type perception statements, the possible responses were: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). For educators, students, and parents the statements referred to the situation in their particular school; for business people, who were not linked to a specific school, the statements referred to

PRSD schools in general. See p. 172 of the Business Questionnaire in Appendix D for the slight difference in wording in the introduction to this section of the questionnaire.

Sufficient Numbers of Computers in School

Regarding perceptions about whether their school (or schools in PRSD in general for business respondents) has sufficient computers for student use, students responded most positively ($M = 3.2$) and their mean scores are significantly different from the other three types of respondents (Table 53), $F(3, 483) = 24.9, p < .0001$. Educators, on average, disagreed with the statement, and their scores are the lowest ($M = 2.1$), and are also significantly different from the other three groups of respondents.

Table 53

Mean Responses by Group Regarding Whether Schools Have Sufficient Number of Computers

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	142	2.1	1.2
Business	46	2.5	0.8
Students	219	3.2	1.3
Parents	80	2.7	1.3
Total	487	2.7	1.3

Educators' Computer Knowledge

In response to the statement "Educators in my school have a good general knowledge of computers," students are most in agreement, with a mean score of 3.5

(Table 54), which is significantly higher than business ($M = 3.0$), educators ($M = 3.2$), and parents ($M = 3.2$), $F(3, 482) = 4.7, p < .01$.

Table 54

Mean Responses by Group Regarding Whether Educators Have Good Computer Knowledge

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	142	3.1	1.0
Business	46	3.0	0.5
Students	219	3.4	1.0
Parents	79	3.2	0.7
Total	486	3.3	0.9

Whether School Atmosphere Doesn't Encourage Computer Use

Table 55 shows that educators most strongly disagree ($M = 2.2$) with the

Table 55

Mean Responses by Group Regarding Whether School Atmosphere Doesn't Encourage Computer Use

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	142	2.2	1.1
Business	46	3.0	0.6
Students	218	2.7	2.4
Parents	80	2.5	1.0
Total	486	2.6	1.8

statement, "The atmosphere in my school does not encourage the use of computers." This response is significantly different from business who are slightly above neutral ($M = 3.0$) and students who are slightly below neutral ($M = 2.7$), $F(3, 482) = 3.6, p < .05$. Educators' responses are not significantly different from those of parents'.

Students Need to Learn Keyboarding Skills

Regarding whether students need to learn appropriate keyboarding skills when they start to use computers (Table 56), all respondents are in agreement (combined $M = 3.99$), but educators are least positive ($M = 3.73$), and their response is significantly different from all three other groups, $F(3, 487) = 4.1, p < .01$.

Table 56

Mean Responses by Group Regarding Whether Students Need to Learn Keyboarding Skills

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	143	3.7	1.3
Business	48	4.1	0.8
Students	219	4.1	1.0
Parents	81	4.1	0.9
Total	491	4.0	1.1

Preparing Students Adequately to Use Computers

Table 57 shows that, although scores are generally clustered around neutral, students ($M = 3.44$) are most in agreement with the statement that they are adequately being prepared to use computers in continuing their education and/or in their adult lives.

This student response differs significantly from the three other groups,

$$F(3, 483) = 6.4, p < .001.$$

Table 57

Mean Responses by Group Regarding Whether School are Preparing Students Adequately to Use Computers

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	140	3.0	1.0
Business	47	3.0	0.7
Students	219	3.4	1.1
Parents	81	3.1	1.0
Total	487	3.2	1.1

Whether PRSD Can Afford Cost of Computers

All groups of respondents slightly disagree with the statement, "Peace River School Division cannot afford the cost of computers" (Table 58), but there are no significant differences among the mean scores of the four groups, $F(3, 484) = 2.1, n.s.$

Table 58

Mean Responses by Group Regarding Whether PRSD Can Afford Cost of Computers

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	142	2.6	1.0
Business	47	2.8	0.8
Students	217	2.9	1.2
Parents	79	2.7	1.1
Total	485	2.7	1.1

Computers Equitably Distributed Within School

Table 59 shows that responses by all four groups to the statement that “Computer resources are distributed equitably within my school” are clustered around neutral. Both educators, who are most positive ($M = 3.3$), and students ($M = 3.2$) are significantly different from business scores ($M = 2.9$), $F(3, 474) = 2.7, p < .05$.

Table 59

Mean Responses by Group Regarding Whether Computers are Equitably Distributed Within School

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	140	3.3	1.2
Business	47	2.9	0.6
Students	213	3.2	1.1
Parents	78	3.0	0.9
Total	478	3.2	1.0

Computers Equitably Distributed Throughout Division

As to whether “Computer resources are distributed equitably throughout Peace River School Division,” students, although just slightly above neutral ($M = 3.1$), are the most positive (Table 60), and their scores are significantly different from educators ($M = 2.8$), but not significantly different from either parents ($M = 2.8$) or business ($M = 2.9$), $F(3, 472) = 5.3, p < .05$.

Table 60

Mean Responses by Group Regarding Whether Computers are Equitably DistributedThroughout PRSD

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	139	2.8	0.9
Business	47	2.9	0.5
Students	215	3.1	1.1
Parents	75	2.8	0.7
Total	476	2.9	0.9

Computers Taking Up Scarce Resources

All groups of respondents disagree with the statement that "Computers are taking scarce resources away from other important educational areas." (Table 61) Educators disagree most ($M = 2.2$) and their response differs significantly from students' response ($M = 2.5$) but not from the business response ($M = 2.5$), nor from parents' response ($M = 2.4$), $F(3, 483) = 3.2, p < .05$.

Table 61

Mean Responses by Group Regarding Whether Computers are Taking Away ScarceResources

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	144	2.2	0.8
Business	47	2.5	0.8
Students	216	2.5	1.1
Parents	80	2.4	1.0
Total	487	2.4	1.0

Computer Integration a Top Priority

Table 62 shows that all respondents agree that “Integrating computers into daily schooling should be a top educational priority” with mean scores ranging from a high of 3.8 for business and 3.6 for students to a ‘low’ of 3.5 for both parents and educators.

Responses for the four groups are not significantly different, $F(3, 484) = 1.0$, n.s.

Table 62

Mean Responses by Group Regarding Whether Computer Integration Should be a Top Priority

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	142	3.5	1.0
Business	48	3.8	0.9
Students	217	3.6	1.1
Parents	81	3.5	1.2
Total	488	3.6	1.1

Barriers to Computer Use

Introduction

The second component of the questionnaire regarding perceptions about computers and their use in PRSD is the section about barriers to computer use, which is composed of 11 statements about barriers to computer use. Educators, students, and parents were asked to rate the factors as they pertained to their particular school, while business people were asked to respond regarding computer use in PRSD schools in general. See p. 148 in the Teacher's Questionnaire (Appendix A) and p. 173 the Business Questionnaire (Appendix D) for a list of the 11 factors.

Respondents were also provided with space to add two additional factors which they perceived as barriers to computer use and then rate them.

Students, parents, and business had six possible responses: Not a Barrier (1), Limited Barrier (2), Neutral (3), Moderate Barrier (4), Major Barrier (5), and Don't Know (6). Educators had only five possible responses; they did not have a "Don't Know" choice. (Please see the section immediately following, "Barriers to Computer Use: All Respondents," for a discussion of the implications of this difference regarding analysis of the data.) All of the barrier statements were "negatively" worded (e.g. lack of software, low teacher interest in computers) so that an average of the responses to the 11 statements is possible and will provide an overall measure of the degree to which respondents feel there are or are not barriers to computer use.

Barriers to Computer Use: All Respondents

The purpose of this section is to see which, if any, factors are perceived as important barriers to computer use, and to see if ratings of barriers by educators vary according to school location.

As mentioned previously in Chapter Four, Analysis of Questionnaire Data, there is some difficulty in trying to analyze the results of the Barriers to Computer Use section because student, and parent, and business groups had a "Don't Know" choice while educators did not. Given this situation, unfortunately an analysis of variance of the barrier data is not possible, so, for information purposes, in Table 64 to Table 74, are cross-tabulations for all four groups of respondents for the 11 statements about possible barriers to computer use in Peace River School Division schools.

Further reducing the usability of the data for the parent and business groups is the fact that there are a large number of "Don't Know" responses for both groups. Table 63 shows the combined percentage of business responses for all 11 barrier statements. (For a list of the 11 barriers to computer use statements, please see Appendix A, p. 148.) On

Table 63

Mean Responses of Parents and Business to all 11 Barrier Statements

Respondents	Don't Know	Neutral	Missing	Total Uncommitted Responses
Parents	40%	14%	3%	57%
Business	71%	13%	0%	84%

average, business people answered "Don't Know" 71% of the time, and if the neutral responses are added to the don't know's, then the uncommitted response totals 84%.

Although not to the same extent, parent responses display similar characteristics. As can also be seen in Table 63, parents' "Don't Know" responses average 40%, and again, if the neutral and missing responses are added to the don't know's, the uncommitted responses average 57%.

While it is difficult, because of the different possible responses, to make comparisons among the four groups regarding barriers to computer use, a few generalizations are possible. Students, as a whole, feel that there are less barriers to computer use than the other groups. See, for example, Table 66: Lack of Hardware, p. 83. While 10% of educators, and 15% of parents consider that lack of hardware is a limited barrier or not a barrier, 34% of students believe it is a limited barrier or not a barrier. Another typical example is Lack of Software (Table 64, p. 82). Forty-eight percent of educators say that lack of software is at least a moderate barrier, while only 31% of students believe the same. (Twenty-one percent of parents believe lack of software is at least a moderate barrier, but 48% responded "Don't know" to this item.)

The barrier that respondents as a whole perceive as being the biggest impediment to computer use in PRSD is lack of hardware (Table 66, p. 83). Even with a substantial portion of business people (71%), students (16%), and parents (34%) answering "Don't know" for this item, in total, 47% of respondents see this as at least a moderate barrier to computer use. Lack of software is the second biggest obstacle (Table 64, p. 82), with 31% of respondents seeing this factor as at least a moderate barrier. The two factors which respondents see as being the smallest impediments to computer use are lack of school administrative support (Table 73, p. 86), and lack of school division administrative

support (Table 74, p. 87), with only 16% and 20% respectively seeing these items as at least a moderate barrier.

One caution regarding the above generalizations about barriers to computer use is that educators are given more weight in the analysis than the other groups because educators did not have a "Don't know" choice.

Table 64

Responses to Lack of Software Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	18	27	29	48	19	N/A	141
	%	13	19	21	34	14	N/A	29
Business	<i>N</i>	2	0	9	0	0	38	49
	%	4	0	18	0	0	78	10
Students	<i>N</i>	48	33	28	39	28	41	217
	%	22	15	13	18	13	19	45
Parents	<i>N</i>	6	8	11	2	15	38	80
	%	8	10	14	3	19	48	16
Column	<i>N</i>	74	68	77	89	62	117	487
Total	%	15	14	16	18	13	24	100

Number of Missing Observations: 13

Table 65

Responses to Poor Quality of Software Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	19	27	42	35	16	N/A	139
	%	14	19	30	25	12	N/A	29
Business	<i>N</i>	2	1	5	3	1	37	49
	%	4	2	10	6	2	76	10
Students	<i>N</i>	48	27	29	35	32	45	216
	%	22	13	13	16	15	21	45
Parents	<i>N</i>	8	7	12	3	9	41	80
	%	10	9	15	4	11	51	17
Column	<i>N</i>	77	62	88	76	58	123	484
Total	%	16	13	18	16	12	15	100

Number of Missing Observations: 16

Table 66

Responses to Lack of Hardware Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	5	9	14	60	52	N/A	140
	<i>%</i>	4	6	10	43	37	N/A	29
Business	<i>N</i>	1	0	5	4	4	35	49
	<i>%</i>	2	0	10	8	8	71	10
Students	<i>N</i>	38	36	30	35	42	34	215
	<i>%</i>	18	17	14	16	20	16	44
Parents	<i>N</i>	6	6	13	10	18	27	80
	<i>%</i>	8	8	16	13	23	34	17
Column	<i>N</i>	50	51	62	109	116	96	484
Total	<i>%</i>	10	11	13	23	24	20	100

Number of Missing Observations: 16

Table 67

Responses to Poor Quality of Hardware Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	12	24	47	34	24	N/A	141
	<i>%</i>	9	17	33	24	17	N/A	29
Business	<i>N</i>	1	1	4	3	4	36	49
	<i>%</i>	2	2	8	6	8	74	10
Students	<i>N</i>	30	37	41	39	22	46	215
	<i>%</i>	14	17	19	18	10	21	44
Parents	<i>N</i>	8	8	9	6	11	38	80
	<i>%</i>	10	10	11	8	14	48	17
Column	<i>N</i>	51	70	101	82	61	120	485
Total	<i>%</i>	11	14	21	17	13	25	100

Number of Missing Observations: 15

Table 68

Responses to Lack of Teachers' Time Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	10	17	29	50	33	N/A	139
	<i>%</i>	7	12	21	36	24	N/A	29
Business	<i>N</i>	1	2	7	4	4	31	49
	<i>%</i>	2	4	14	8	8	63	10
Students	<i>N</i>	44	25	54	35	32	23	213
	<i>%</i>	21	12	25	16	15	11	44
Parents	<i>N</i>	5	9	13	16	16	21	80
	<i>%</i>	6	11	16	20	20	26	17
Column	<i>N</i>	60	53	103	105	85	75	481
Total	<i>%</i>	13	11	21	22	18	16	100

Number of Missing Observations: 19

Table 69

Responses to Not Enough Teacher Training Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	8	16	31	52	34	N/A	141
	<i>%</i>	6	11	22	37	24	N/A	29
Business	<i>N</i>	1	1	5	4	6	32	49
	<i>%</i>	2	2	10	8	12	65	10
Students	<i>N</i>	38	34	49	34	28	31	214
	<i>%</i>	18	16	23	16	13	15	44
Parents	<i>N</i>	5	10	13	15	12	25	80
	<i>%</i>	6	13	16	19	15	31	17
Column	<i>N</i>	52	61	98	105	80	88	484
Total	<i>%</i>	11	13	20	22	17	18	100

Number of Missing Observations: 16

Table 70

Responses to Too Few Guidelines for Using Computers Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	16	18	66	31	9	N/A	140
	%	11	13	47	22	6	N/A	29
Business	<i>N</i>	0	0	7	5	4	33	49
	%	0	0	14	10	8	67	10
Students	<i>N</i>	29	35	48	28	23	51	214
	%	14	16	22	13	11	24	45
Parents	<i>N</i>	6	8	14	6	7	37	78
	%	8	10	18	8	9	47	16
Column	<i>N</i>	51	61	135	70	43	121	481
Total	%	11	13	28	15	9	25	100

Number of Missing Observations: 19

Table 71

Responses to Location of Computers in School Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	27	25	28	35	25	N/A	140
	%	19	18	20	25	18	N/A	29
Business	<i>N</i>	2	2	6	2	3	34	49
	%	4	4	12	4	6	69	10
Students	<i>N</i>	81	27	33	39	17	16	213
	%	38	13	16	18	8	8	44
Parents	<i>N</i>	11	10	15	7	9	28	80
	%	14	13	19	9	11	35	17
Column	<i>N</i>	121	64	82	83	54	78	482
Total	%	25	13	17	17	11	16	100

Number of Missing Observations: 18

Table 72

Responses to Low Teacher Interest in Computers Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	19	36	45	37	5	N/A	142
	<i>%</i>	13	25	32	26	4	N/A	29
Business	<i>N</i>	2	1	9	1	3	33	49
	<i>%</i>	4	2	18	2	6	67	10
Students	<i>N</i>	47	33	36	31	24	45	216
	<i>%</i>	22	15	17	14	1	21	44
Parents	<i>N</i>	11	12	8	9	5	35	80
	<i>%</i>	14	15	10	11	6	44	16
Column	<i>N</i>	79	82	98	78	37	113	487
Total	<i>%</i>	16	17	20	16	8	23	100

Number of Missing Observations: 13

Table 73

Responses to Lack of School Administrative Support Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	62	30	34	9	6	N/A	141
	<i>%</i>	44	21	24	6	4	N/A	29
Business	<i>N</i>	2	1	6	0	3	37	49
	<i>%</i>	4	2	12	0	6	76	10
Students	<i>N</i>	24	21	46	27	22	76	216
	<i>%</i>	11	10	21	13	10	35	44
Parents	<i>N</i>	16	10	9	7	5	33	80
	<i>%</i>	20	13	11	9	6	41	17
Column	<i>N</i>	104	62	95	43	36	146	486
Total	<i>%</i>	21	13	20	9	7	30	100

Number of Missing Observations: 14

Table 74

Responses to Lack of School Division Administrative Support Barrier Statement

Respondent		Not a Barrier	Limited Barrier	Neutral	Moderate Barrier	Major Barrier	Don't Know	Row Total
Educators	<i>N</i>	22	26	57	23	11	N/A	139
	<i>%</i>	16	19	41	17	8	N/A	29
Business	<i>N</i>	2	1	6	1	2	37	49
	<i>%</i>	4	2	12	2	4	76	10
Students	<i>N</i>	21	18	41	21	24	89	214
	<i>%</i>	10	8	19	10	11	42	44
Parents	<i>N</i>	12	11	8	5	8	36	80
	<i>%</i>	15	14	10	6	10	45	17
Column	<i>N</i>	57	56	112	50	45	162	482
Total	<i>%</i>	12	12	23	10	9	34	100

Number of Missing Observations: 18

Barriers to Computer Use: Educators Only

Because of the limitations mentioned above (the different possible responses for teachers as compared to business, parents, and students, and the large percentage of uncommitted responses from business and parents), further analysis of responses to statements about barriers to computer use will focus only on responses from educators.

Table 75 shows the average of the responses for all educators to the 11 barrier statements. Although most of the responses are close to neutral ($M = 3.0$), the most outstanding exception is the feeling among educators that lack of hardware is a moderate barrier to computer use ($M = 4.0$). The two additional areas which, on average, are seen as barriers to computer use are lack of teacher time ($M = 3.6$) and not enough teacher training ($M = 3.6$). And the one area that is seen as only a limited barrier to computer use is lack of school administrative support ($M = 2.1$).

Table 75

Educators' Mean Responses to Barrier Statements

Barrier Statement	<i>N</i>	Mean	<i>SD</i>
Lack of software	141	3.2	1.3
Poor quality software	139	3.0	1.2
Lack of hardware	140	4.0	1.0
Poor quality hardware	141	3.2	1.2
Lack of teacher time	139	3.6	1.1
Not enough teacher training	141	3.6	1.1
Too few guidelines for computer use	140	3.0	1.0
Location of computers in school	140	3.0	1.4
Low teacher interest in computers	142	2.8	1.1
Lack of school administrative support	141	2.1	1.2
Lack of school division admin. support	139	3.1	1.1

While the average of all educators' ratings of barriers to computer use shows which areas are or are not perceived as impediments, the aggregation also hides differences among educators at different locations. Table 76 shows educators' responses to the 11 barrier statements for the 12 locations in the Division (i.e. 11 schools and central office), and Figure 2 shows the educators' responses by location from highest to lowest average.

For educators, there are a number of significant differences in the perceptions about barriers to computer use in schools depending on location, $F(10, 126) = 5.4$, $p < .0001$. The barrier means for Grimshaw H.S., Manning, Springfield, Central Office, McGrath, Peace River H.S., Lloyd Garrison, and T.A. Norris are significantly higher than

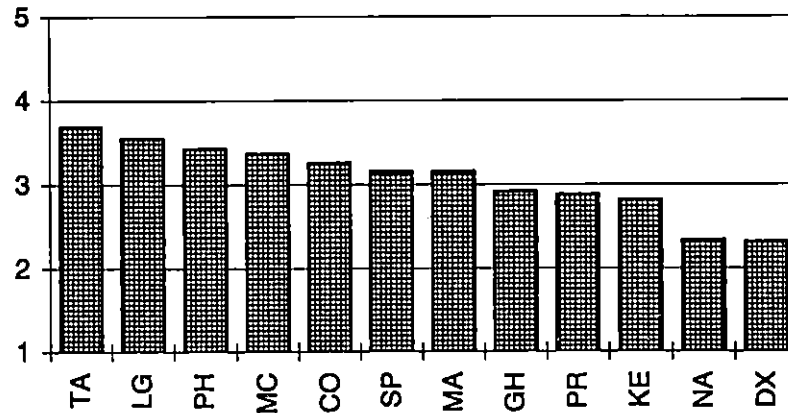
Table 76

Educators' Mean Responses to Barrier Statements by Location

School	<i>N</i>	Mean	<i>SD</i>
Nampa	6	2.3	0.9
Peace River H.S.	14	3.4	0.6
T.A. Norris	12	3.7	0.6
Springfield	19	3.2	0.6
McGrath	17	3.4	0.6
Kennedy	14	2.8	0.4
Grimshaw H.S.	19	2.9	0.6
Lloyd Garrison	12	3.5	0.7
Dixonville	9	2.3	0.8
Manning	7	3.2	0.4
Paul Rowe H.S.	8	2.9	0.6
Central Office	5	3.3	0.5
Total	142	3.1	0.7

Dixonville and Nampa. McGrath's mean is also significantly higher than Kennedy's and Grimshaw H.S.'s; and Peace River H.S.'s, Lloyd Garrison's, and T.A. Norris' are significantly higher than Kennedy's, Paul Rowe H.S.'s, and Grimshaw H.S.'s. And finally, T.A. Norris' mean is significantly higher than Springfield's.

Figure 2

Educators' Mean Responses to Barrier Statements by Location, Ranked from Highest toLowest Mean Score

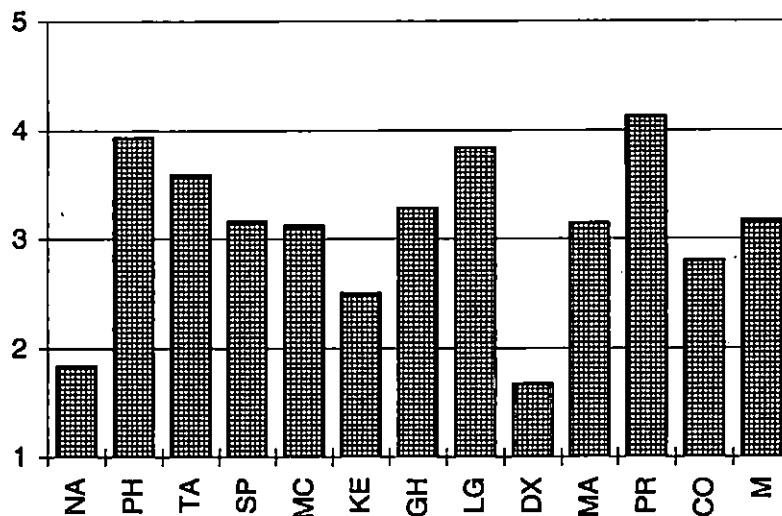
Note: Abbreviations for locations used in the figures are:

NA	Nampa	GH	Grimshaw H.S.
PH	Peace River H.S.	LG	Lloyd Garrison
TA	T.A. Norris Jr. H.S.	DX	Dixonville
SP	Springfield Elem.	MA	Manning Elem.
MC	McGrath Elem.	PR	Paul Rowe H.S.
KE	Kennedy Elem.	CO	Central Office

Not only is location important regarding educators' perceptions in general about barriers to computer use, it is also important for specific factors. As can be seen in Figure 3, while the mean response (the far right bar [M] of the figure) to whether lack of software is a barrier to computer use is neutral ($M = 3.2$), scores range from a low of 1.7 for Dixonville to a high of 4.1 for Paul Rowe H.S. To some extent, it appears that the educators at schools with grades 9 to 12 (Peace River H.S., T.A. Norris, and Paul Rowe H.S.) are more concerned about the lack of software, while Nampa and Dixonville (which are mainly elementary schools) are less concerned. This fact may be due to the existence of a jurisdiction-wide license for software aimed at grades 1 to 6 which has been in place for the past few years, while no such system-wide license for junior/senior high software was available. Educators at Lloyd Garrison (grades 1 to 9) also feel that the lack of software is a moderate barrier to computer use at their school, but, being mainly an elementary school, they don't fit into the above generalization about grade levels.

Figure 3

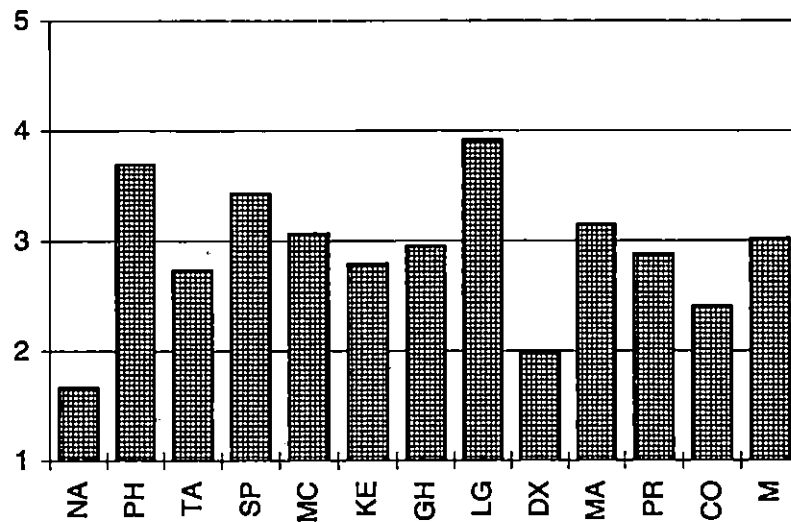
Educators' Mean Responses to Lack of Software Barrier Statement by Location



Feelings about the quality of software (Figure 4) are somewhat similar to those of quantity, although not so clearly delineated along grade levels. Educators at Lloyd Garrison are most concerned about quality of software (as they are about the quantity), and their ratings must reflect concerns specific to their school rather than general school characteristics.

Figure 4

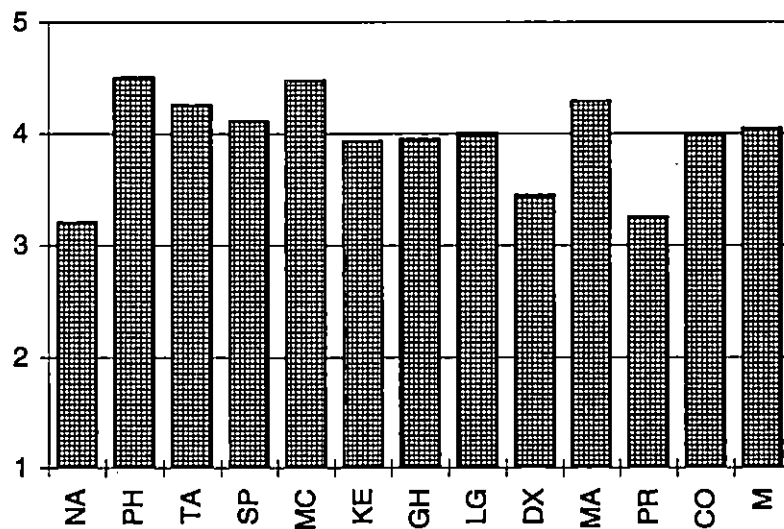
Educators' Mean Responses to Poor Quality of Software Barrier Statement by Location



Of all of the possible barriers, lack of hardware is seen as the biggest impediment to computer use (Figure 5) with an average score of 4.0, and educators at all locations rate it above neutral, even Nampa and Dixonville, the two schools with the lowest overall barrier average. Lack of hardware is a fundamental obstacle to computer use in schools, and the high rating of this factor may help to explain the generally neutral responses to the other barrier statements. That is, how can lack of software, poor quality of hardware, etc., be considered by educators to be significant barriers to computer use if they feel they don't have enough hardware to be able to use computers in the first place?

Figure 5

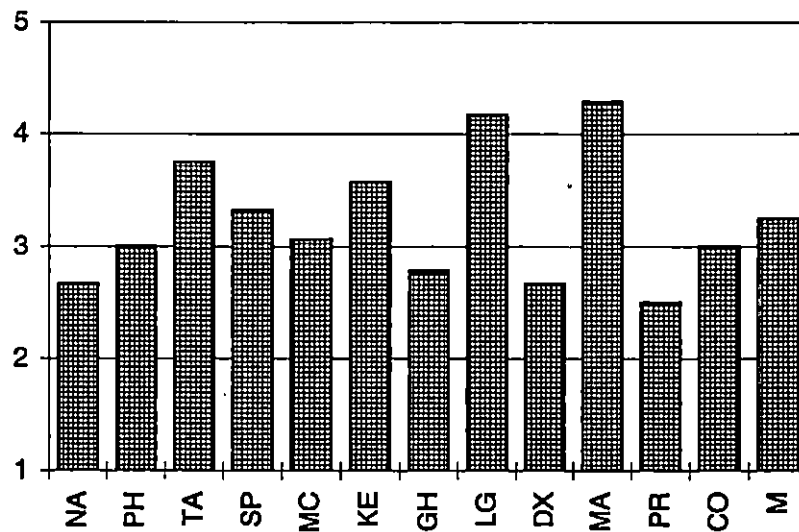
Educators' Mean Responses to Lack of Hardware Barrier Statement by Location



Poor quality of hardware (Figure 6) also received an above neutral rating as a barrier to computer use ($M = 3.2$). The two schools who rated this factor the highest (Lloyd Garrison and Manning) are both mainly elementary schools (grades 1 to 9 and grade 1 to 6 respectively), but two of the lowest ratings (Nampa and Dixonville) are also mainly elementary schools. Again, it would appear that the reasons for educators' perceptions about barriers to computer use are based, not on any general characteristics about the type of school, but rather on site specific factors.

Figure 6

Educators' Mean Responses to Poor Quality of Hardware Barrier Statement by Location



Educators see both “Lack of teachers’ time” (Figure 7) and “Not enough teacher training” (Figure 8) as close to moderate barriers to computer use with both with means of 3.6. There is not a great variation in the average ratings by location, with the “Lack of teachers’ time” ranging from 2.8 to 4.2, and the “Not enough teacher training” ranging from 3.1 to 4.3. It would appear that concern about these two issues is universal throughout the Division.

Figure 7

Educators’ Mean Responses to Lack of Teachers’ Time Barrier Statement by Location

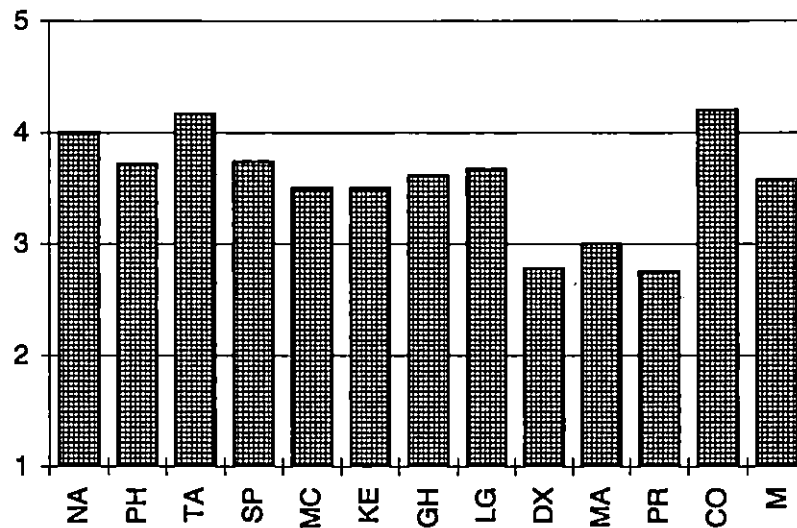
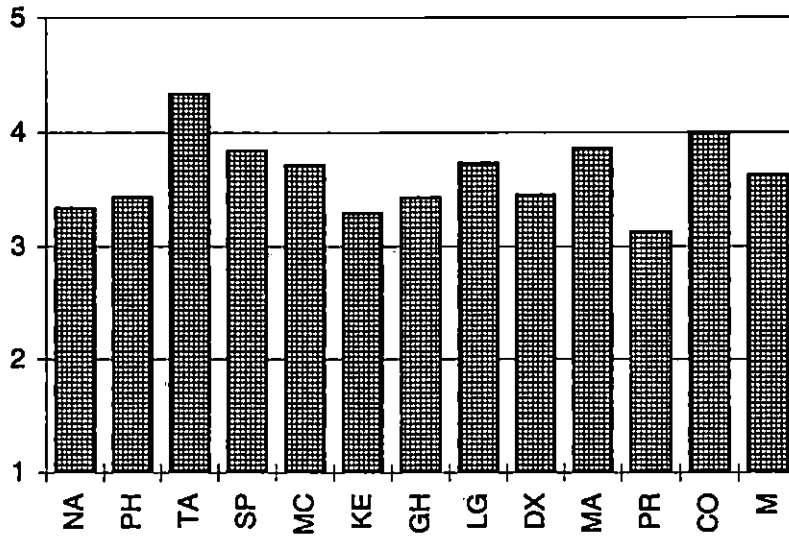


Figure 8

Educators' Mean Responses to Not Enough Teacher Training Barrier Statement by

Location

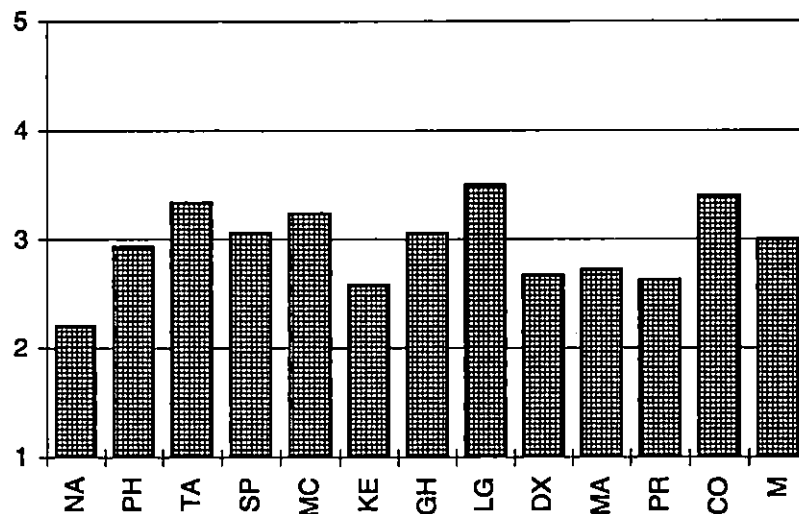


“Too few guidelines for using computers” is not seen by educators as an important barrier to using computers (Figure 9), with an overall rating of 3.0 and average scores for individual locations clustered around a neutral response.

Figure 9

Educators' Mean Responses to Too Few Guidelines for Using Computers Barrier

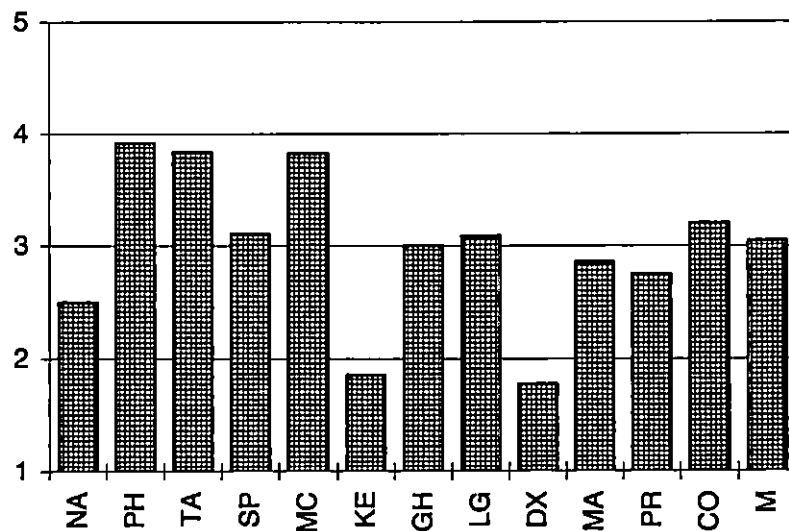
Statements by Location



Whether “Location of computers in school (i.e. lab, classrooms, etc.)” is perceived as a barrier to using computers (Figure 10) has a neutral average for the School Division as a whole ($M = 3.0$), but scores vary substantially from location to location with a low of 1.8 for Dixonville to a high of 3.9 for Peace River H.S. There are no discernible patterns as to grade levels taught, size of school, or community, so again whether or not this factor is perceived as a barrier seems to depend on the specific circumstances of the particular school and how each school has chosen to arrange their computers at their location.

Figure 10

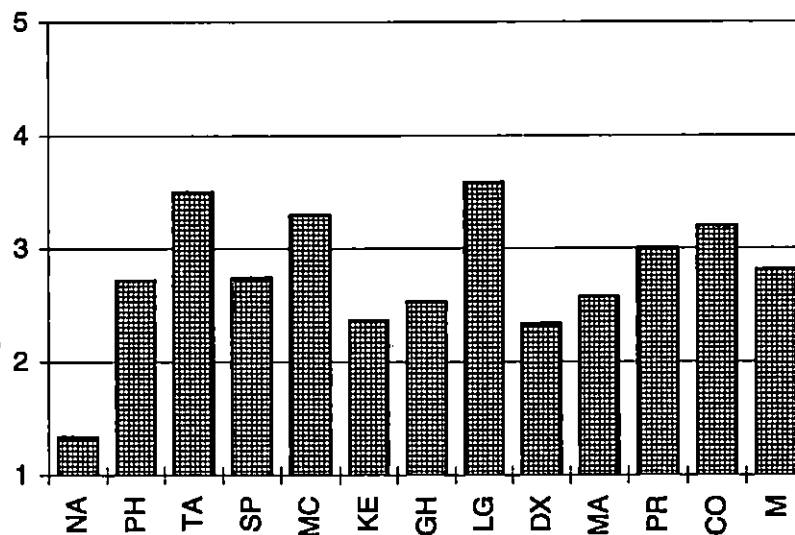
Educators’ Mean Responses to Location of Computers in School Barrier Statement by Location



In general “Low teacher interest in computers” (Figure 11) is seen as neutral or a limited barrier to computer use ($M = 2.8$), but mean scores do vary substantially from a low at Nampa ($M = 1.3$) where it is “not a barrier” to a high of 3.6 at Lloyd Garrison and 3.5 at T.A. Norris where it is close to a “moderate barrier.”

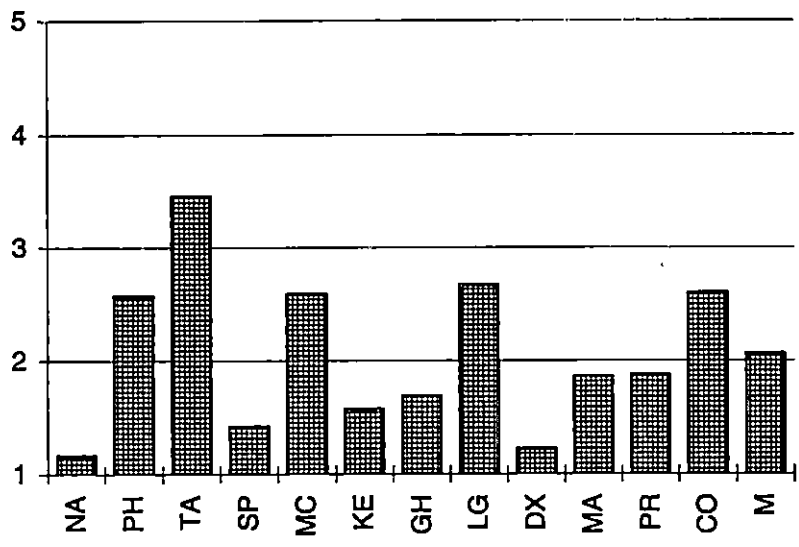
Figure 11

Educators' Mean Responses to Low Teacher Interest in Computers Barrier Statement by Location



“Lack of school administrative support” (Figure 12) is, on average throughout the Division, seen as only a limited barrier to computer use ($M = 2.1$), with all the locations, except T.A. Norris ($M = 3.5$), giving this factor a rating of less than neutral.

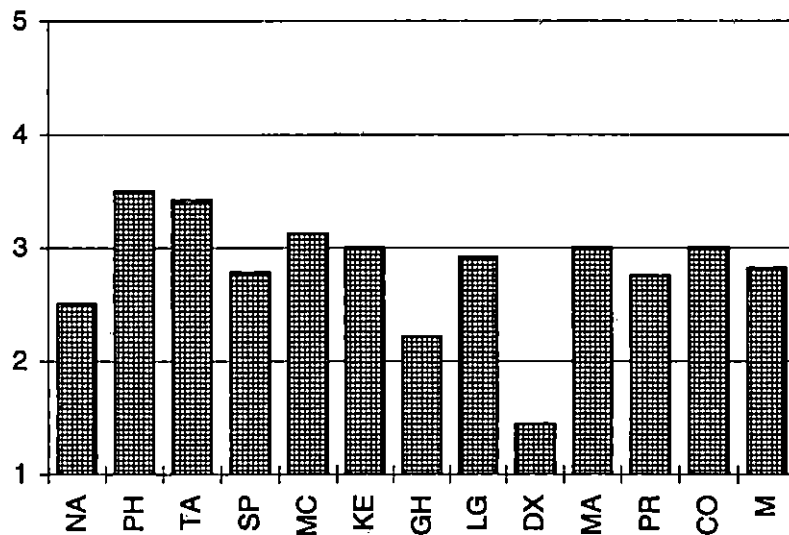
Figure 12
Educators’ Mean Responses to Lack of School Administrative Support Barrier Statement
by Location



While “Lack of school administrative support” is not an issue at almost all locations, “Lack of school division administrative support” (Figure 13)” is slightly more of a concern to educators, but it still has a rating just below neutral ($M = 2.8$). Scores are clustered around neutral, except for Dixonville where educators feel this factor is “Not a barrier” ($M = 1.4$).

Figure 13

Educators’ Mean Responses to Lack of School Division Administrative Support Barrier
Statement by Location



In addition to the 11 specified barriers to computer use, the questionnaire provided respondents with two blank spaces where they could add additional barriers if they chose to do so. See p. 148 of the Teacher’s Questionnaire in Appendix A. Out of a total of 500 respondents in all four groups, 36 individuals added one of their own barriers, and 18 people added two. Almost all of the additional barriers emphasized three points: lack of hardware, lack of access to computers, and lack of time. Specific statements, which are

representative of the additional barriers as a whole, are “Lack of instructional time,” “Outdated hardware,” “Lack of computers for teacher use,” and “Lack of time on computers.”

Regarding barriers to computer use throughout Peace River School Division, a few factors stand out as universal concerns for educators: lack of hardware, lack of teachers’ time, and not enough teacher training. In the follow-up interviews conducted with three educators, when the issue of barriers to computer use was brought up, all three of the educators emphasized the lack of hardware, and one teacher sarcastically remarked, “What hardware?” And two of the three wondered where they were supposed to find the time to learn and teach computers.

Generalizations about what characteristics of schools might lead educators at each site to perceive particular barriers as more imposing than others seem difficult to make. There do not seem to be any patterns based on characteristics such as grade levels taught, size, or community. Each school seems rather to have site specific factors (e.g. how it has arranged the computers in its school, computer scheduling and time tabling for students, and software used) that contribute significantly to educator’s perceptions of barriers to computer use. All three educators, when they were interviewed, mentioned the need for the School Division to provide more funding for computers. These remarks are contradictory to educators’ neutral rating to “Lack of School Division administrative support” as a barrier to computer use. All comments during the interviews focused more attention on distinct situations at individual schools which did or did not impede computer use.

Expectations About Computer Use

Introduction

The purposes of this aspect of the study are twofold: 1) to discover the expectations of educators, parents, students, and business people regarding future educational computer use in PRSD, and 2) to determine if there are any differences between educators' perceptions of the present uses of computers in schools and their expectations about future uses of educational computing. To ascertain expectations about computer use in school, this section of the questionnaire consists of two categories: Current Computer Uses and Ideal Computer Uses. See p. 150 of the Teacher's Questionnaire (Appendix A) and p. 174 of the Business Questionnaire (Appendix D) for a list of the 14 statements.

As with the Barriers to Computer Use section, for the Current Computer Uses, the questionnaire provided a "Don't Know" choice for business, students, and parents, but not for educators. The rationale was that students, parents, and business might feel they did not have the information necessary to answer the Current Computer Uses section, while educators were being "forced" to respond. As with the Barriers to Computer Use section, a large percentage of students, parents, and business people did, in fact, answer "Don't Know" or didn't respond to the statement at all (i.e. "Missing"). As can be seen in Table 77, the total of "Don't Know" and "Missing" responses for students is 36%, for parents 45%, and for business 85%. Given both the fact that students, parents, and business, had the choice of a "Don't Know" response while educators did not and the large percentages of students, parents, and business people who either answered "Don't Know" or didn't

respond to the statements, discussion of Current Computer Uses which follows will have to be limited to only educators.

Table 77

Don't Know and Missing Responses for All 14 Current Computer Use Statements

Respondents	Don't Know	Missing	Total of Don't Know and Missing
Students	27%	9%	36%
Parents	42%	3%	45%
Business	75%	10%	85%

Current Computer Uses

As can be seen in Table 78, educators report only one current computer use, school administrative record keeping ($M = 4.0$), as receiving general use, and two other uses are rated above moderate use: drill and practice ($M = 3.3$), and keyboarding ($M = 3.2$). No computer uses are described as being currently wide spread. The

Table 78

Educators' Mean Ratings of Current Computer Uses in PRSD

Current Use Statement	N	Mean	SD
Keyboarding	126	3.2	1.3
Word processing	121	2.9	1.2
Databases & spreadsheets	118	1.9	1.0
Graphics & creative arts tools	119	2.1	.9
Programming & operating systems	117	2.0	1.0
Telecommunications	117	1.5	.7
Drill & practice programs	122	3.3	1.0
Problem solving & tutorials	118	2.7	1.0
Simulations	120	2.7	1.2
Multimedia	118	1.6	.9
Teacher record keeping	122	2.5	1.1
Teacher word processing	123	2.8	1.1
School administrative record keeping	122	4.0	1.0
Computer literacy	120	2.8	1.1

three least pervasive current uses, all three of which are below a rating of "Limited Use," are telecommunications ($M = 1.5$), multimedia ($M = 1.6$), and databases and spreadsheets ($M = 1.9$). Two additional computer uses (i.e. graphics and creative arts tools, and

programming and operating systems) are also reported by educators as seeing limited use. In general, throughout the School Division, computer use, as rated by educators, could be described as moderate to limited, and the three highest-rated current uses are what would be characterized as fairly traditional or introductory computer uses.

Ideal Computer Uses

For the section on Ideal Computer Uses (i.e. expectations about future computer use in PRSD), all four groups of respondents had the same choices regarding each of the 14 statements: No Use (1), Limited Use (2), Moderate Use (3), General Use (4), and Wide Spread Use (5) (i.e. no group had a "Don't Know" alternative). Thus a comparison among groups is possible. The results of each of the 14 computer uses will be reported and discussed in turn.

Regarding ideal keyboarding use (Table 79), all groups are very much in

Table 79

Mean Ideal Keyboarding Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	127	4.3	1.0
Business	41	4.2	.9
Students	195	4.1	1.2
Parents	74	4.2	1.0
Total	437	4.2	1.1

agreement that it should be a general computer use ($M = 4.2$), and there are no significant differences in mean scores among the groups, $F(3, 433) = 1.9$, n.s. This finding agrees

with the results of the perceptions section of the questionnaire in that all groups see the necessity of keyboarding (Table 56, p. 74).

With regard to word processing as a computer use (Table 80), all four groups are again in substantial agreement that it should a general use ($M = 4.0$), and no groups significantly differ in their ratings, $F(3, 424) = 1.6$, n.s. With basic, traditional computer uses such as keyboarding and word processing there is unanimity among the four groups of respondents about what they expect to be done with computers in schools.

Table 80

Mean Ideal Word Processing Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	124	4.1	.9
Business	40	4.2	.8
Students	192	3.9	1.1
Parents	72	4.2	1.0
Total	428	4.0	1.0

With database and spreadsheet use of computers in schools, although there is a general feeling that these uses should be moderate, there is some disagreement among groups (Table 81). Educators, with the lowest rating, feel it should be a moderate use ($M = 2.9$), and that response is significantly different from all three other groups, $F(3, 415) = 7.0$, $p < .0001$. Business gives this use the highest rating of the four groups and feels it should see general use in schools ($M = 3.7$). Perhaps business, with closer contact to daily commercial uses of databases and spreadsheets, can see the need to familiarize students with these computer tools.

Table 81

Mean Ideal Database and Spreadsheet Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	120	2.9	1.2
Business	40	3.7	1.1
Students	188	3.4	1.2
Parents	71	3.6	1.2
Total	419	3.3	1.2

With an overall rating of 3.8, all groups feel that graphics and creative arts tools should see close to general use (Table 82), but students have the highest rating ($M = 4.0$) which is significantly different from the other three groups, $F(3, 423) = 4.6, p < .05$.

These uses of computers are very prominent in the media, especially on TV stations like YTV and Much Music which cater to a youth audience, and would have a wide appeal to students as a “fun” computer activity.

Table 82

Mean Ideal Graphics and Creative Arts Tools Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	122	3.6	1.3
Business	39	3.6	1.0
Students	191	4.0	1.1
Parents	75	3.5	1.2
Total	427	3.8	1.2

As can be seen in Table 83, all groups feel that programming and operating system use of computers in schools should ideally see between moderate and general use ($M = 3.5$). Students want to see the most widespread use ($M = 3.8$), and their response is significantly higher than both educators and business, $F(3, 407) = 11.1, p < .0001$. The parents' response, which is significantly higher than educators', is the second highest.

Table 83

Mean Ideal Programming and Operating System Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	117	3.0	1.1
Business	38	3.4	1.2
Students	183	3.8	1.1
Parents	73	3.6	1.3
Total	411	3.5	1.2

Regarding ideal telecommunications use (Table 84), on average, all groups feel that it should see slightly more than moderate use in schools ($M = 3.3$), and the students'

Table 84

Mean Ideal Telecommunications Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	120	3.0	1.1
Business	39	3.2	1.2
Students	186	3.6	1.2
Parents	73	3.1	1.4
Total	418	3.3	1.2

mean score, the highest ($M = 3.6$), is significantly different from both educators and parents, $F(3, 414) = 7.4, p < .0001$.

All groups would like to see general educational use of computers for drill and practice (Table 85), and there are no significant difference in mean scores among the four groups, $F(3, 424) = 2.0, n.s.$

Table 85

Mean Ideal Drill and Practice Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	125	3.9	1.0
Business	39	3.6	1.2
Students	189	3.6	1.2
Parents	75	3.8	1.2
Total	428	3.7	1.1

All groups want to see general use for problem solving and tutorial programs (Table 86), and there are no significant difference in mean scores for the four groups, $F(3, 411) = 2.4, n.s.$

Table 86

Mean Ideal Problem Solving and Tutorial Program Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	121	3.9	.9
Business	40	3.8	1.0
Students	179	3.6	1.2
Parents	75	3.9	1.2
Total	415	3.8	1.1

Regarding ideal simulation uses of computers in schools (Table 87), educators and students want to see general use, and their ratings are significantly higher than both business and parents, who want to see moderate use, $F(3, 404) = 8.9, p < .0001$. Use of simulations in schools might appeal to educators because these types of programs can be powerful educational tools, and they might appeal to students, because, at the same time, they can also be engaging and entertaining.

Table 87

Mean Ideal Simulations Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	123	3.7	1.1
Business	40	3.0	1.0
Students	173	3.8	1.2
Parents	72	3.2	1.3
Total	408	3.6	1.2

Referring to Table 88, students ($M = 3.9$) want to see the widest use of multimedia in schools and their response is significantly higher than those of the other three groups, $F(3, 398) = 13.0, p < .0001$. Educators' rating is also significantly higher than parents' and business'. Multimedia is a relatively new, and high profile computer use which appears, similar to the graphics and creative arts tool use, to appeal especially to students, while business, at least at the time of the study, does not place a high value on its use.

Table 88

Mean Ideal Multimedia Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	119	3.4	1.2
Business	39	2.8	1.1
Students	174	3.9	1.2
Parents	70	3.1	1.4
Total	402	3.5	1.3

With regard to the ideal use of teacher record keeping (Table 89), on average, all groups want to see general use, and there are no significant differences in mean scores for the four groups, $F(3, 403) = 2.4$, n.s.

Table 89

Mean Ideal Teacher Record Keeping Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	124	4.0	1.0
Business	39	3.9	1.0
Students	171	3.7	1.2
Parents	73	4.1	1.2
Total	407	3.9	1.2

Educators ($M = 4.1$) want to see the widest use of computers for teacher word processing (Table 90), and their rating is significantly higher than students', but not significantly higher than business' or parents', $F(3, 398) = 4.3$, $p < .05$. All groups also want to see general school use of non-specific word processing (Table 80). The high

rating of both types of word processing use by all groups, and especially by educators, again indicates the value placed on an established computer use.

Table 90

Mean Ideal Teacher Word Processing Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	123	4.1	1.0
Business	39	3.9	1.0
Students	169	3.6	1.2
Parents	71	3.9	1.2
Total	402	3.9	1.1

The use of computers for school administrative record keeping (Table 91) has the highest overall average of all the ideal computer use statements on the questionnaire ($M = 4.2$). The use desired by educators, business, and parents of this computer application is significantly higher than that of students, $F(3, 397) = 18.2, p < .0001$. Adults, in general, appear to recognize more readily than students the utility of computers in this area. Since PRSD school offices have used computers for administrative record keeping for a number of years, the response by educators is also a confirmation of the value they see in this function.

Table 91

Mean Ideal School Administrative Record Keeping Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	123	4.6	.7
Business	39	4.4	.9
Students	167	3.8	1.3
Parents	72	4.4	1.1
Total	401	4.2	1.1

Regarding the ideal use of computers for computer literacy (i.e. learning about computers), the mean score for all respondents is 4.0 (Table 92), and group scores range from 4.1 to 3.9, but no one group's mean score is significantly different from another's, $F(3, 405) = 0.9$, n.s. There appears to be unanimity among all groups that computer literacy, another established computer use, should be emphasized.

Table 92

Mean Ideal Computer Literacy Use by Group

Respondent	<i>N</i>	Mean	<i>SD</i>
Educators	122	3.9	1.1
Business	40	4.1	1.1
Students	173	3.9	1.2
Parents	74	4.1	1.2
Total	409	4.0	1.1

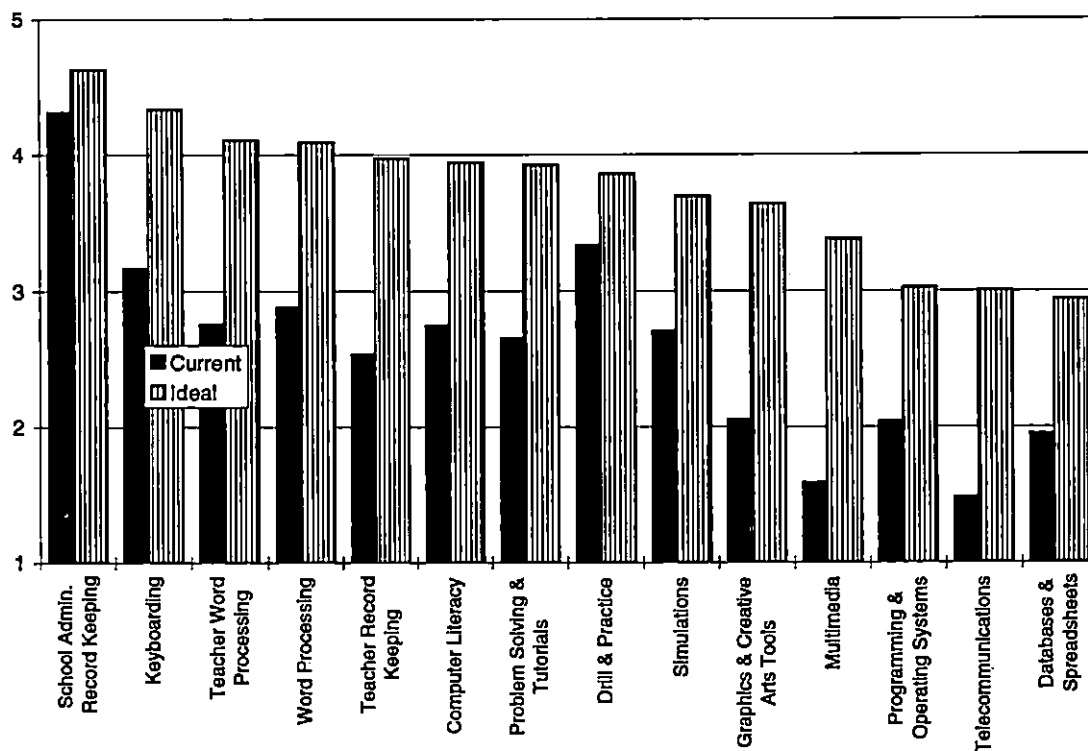
Current vs. Ideal Computer Uses

Because of the problems mentioned above, it is only for the educator group that any comparison between current and ideal computer uses can be made. As can be seen in Figure 14, in all 14 areas of computer use, educators desire an increase in computer use, and even for the area with their lowest rating (databases and spreadsheets) they ideally want to see moderate use ($M = 2.9$). The areas of computer use that educators want to see most widely used, all of which are rated above “general use,” are the conventional areas such as administrative record keeping ($M = 4.6$), keyboarding ($M = 4.3$), teacher word processing ($M = 4.1$), and word processing in general ($M = 4.1$).

Figure 14

Educators' Mean Current and Ideal Computer Uses, Ordered from Highest to Lowest

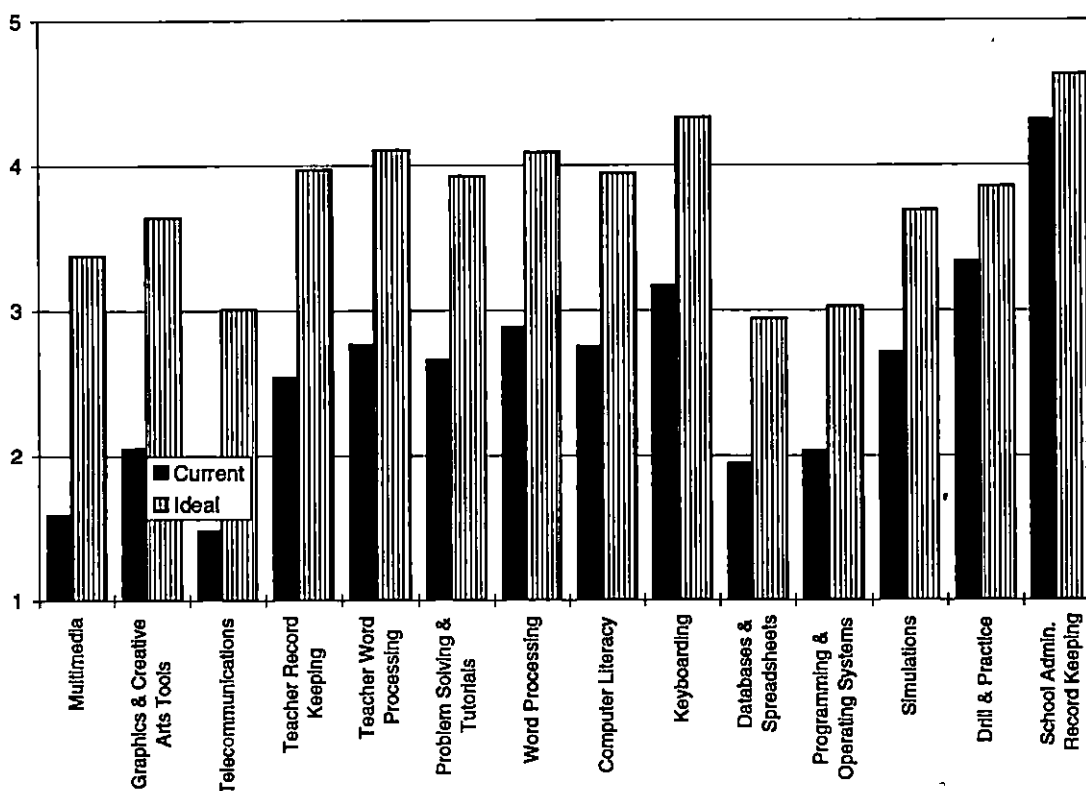
Ideal Use



While Figure 14 seems to indicate that educators are most interested in established computer uses, presenting the data in a different way reveals a somewhat contrasting picture. Figure 15 shows educators' current and ideal computers uses ordered from largest to smallest difference between the two. It is three of the newer computer uses (multimedia, graphics and creative arts tools, and telecommunications) which educators feel need the most attention if current use is to achieve their ideal desired use. So, on one hand, educators seem to favour conventional computer uses, yet they also recognize the need to develop uses in newer areas.

Figure 15

Educators' Mean Current and Ideal Computer Uses, Ordered from Largest to Smallest Difference



CHAPTER 6

Conclusions

Introduction

The present study had four main purposes: 1) To discover the attitudes of educators, parents, students, and business people toward educational uses of computers in Peace River School Division (PRSD), 2) To discover the perceptions of educators, parents, students, and business people of the present uses of educational computers in PRSD, 3) To discover the expectations of educators, parents, students, and business people regarding future educational computer use in PRSD, and 4) To discover if there are any differences between teachers' perceptions of the present uses of computers in PRSD and their expectations about future uses of educational computing.

This chapter provides a summary of the findings, a discussion of the implications for theory and practice, and the limitations of the study. In conclusion, there are some implications for future research and a concluding statement.

Summary of the Findings

Attitudes Toward Computers

The instrument used to measure the attitudes of the four educational stakeholder groups (i.e. educators, students, parents, and business people) in Peace River School Division was the Attitude Toward School Computers (ATSC) developed by Troutman (1991). With 32 Likert type questions, total scores on the ATSC can range from a low of 32 to a high of 160, with a score of 96 representing a neutral attitude. With a mean score

of 123.7 for all 499 respondents, the overall attitude toward the use of computers in schools can be described as positive. (See Table 47, p. 63.) This mean score of 123.7 on the ATSC is similar to Troutman's finding in her study of a mean score of 125 (Troutman, p. 5).

All four groups of respondents (i.e. educators, students, parents, and business people) have a positive attitude toward the use of computers in schools, and none of the groups' mean ATSC scores are significantly different from another. Although the mean score for the student group is the lowest of the four, it is still 121.9, which is nevertheless a positive attitude. The initial hypothesis of the study was that the attitudes toward using computers in schools would be most positive for business people, because of the wide spread use of computers in daily commercial activities and their desire for computer literate employees, and also for parents, who have been inundated by the media with information about the merits of educational computers and how they are 'the key to the future' for their children. Educators, who, through responses to other sections of the questionnaire, complained about a lack of time in their busy daily schedules and a lack of computer training, would one might think from those responses feel frustrated about trying to use computers and would therefore have a more negative attitude than the other groups. But, even with the perception that there are barriers to using computers in schools, educators still have a positive attitude about the educational uses of computers. This high positive attitude of educators in the present study contradicts Lichtman's (1979) study which found that educators, in general, seemed less enthusiastic about the role of computers than the general public.

Numerous variables (e.g. sex, age, educational position, and owning a home computer) were tested on all or some of the four groups of respondents to see if those variables had any significant influence on attitudes toward the school use of computers.

Sex is not a significant variable for educators, students, or parents either as separate groups or collectively. Business people were not identified by gender. See Table 49, Mean ATSC Scores by Sex for All Respondents (Except Business), p. 67. The literature on the influence of gender differences on computer attitudes is inconclusive (Collis, 1984; Harvey & Wilson, 1985; Kristiansen, 1992; Loyd, Loyd, & Gressard, 1987), but other studies have looked at computer attitudes in general. The present study, with its focus on attitudes toward school use of computers, as measured by the ATSC, indicates that sex is not a significant factor.

For the two groups that were asked for their ages (i.e. educators and parents), age does not have a significant impact on their attitude scores. See Table 5, Educators' Mean ATSC Scores by Age, (p. 35) and Table 29, Parents' Mean ATSC Scores by Age, (p. 52). Previous studies show contradictory results. Martin and Lundstrom (1988) found that age was not significant for teachers, and Harvey and Wilson (1985) and Loyd and Gressard (1984b & 1987) found ages of students unimportant, but, on the other hand, Kristiansen (1992) found it a significant variable in both his 1970 and 1990 studies. Inadequacies in the present study make it difficult to draw conclusions about age, because, for both the educator and parent groups, the range of ages is not very great, and for the oldest age categories the sample sizes are quite small. In the 50+ age categories $n = 33$ and $n = 5$ for educators and parents respectively. It was planned to increase the age range by using the

student group, and, although students were not directly asked for their ages because the intention was to use their grade level instead, as mentioned previously, because of the selection method, students' specific grade level was unusable because it was linked to school location.

Variables which are applicable only to educators are educational position, full or part time employment, grade level taught, and years working as an educator. Regarding educational position (Table 6, p. 36), there are no significant differences in attitudes towards school use of computers. Lichtman (1979) reported that administrators had more positive attitudes towards computers, but the present study shows that administrators' mean ATSC scores (both centrally and school based) are not significantly different from any other category of educators. In general, all categories of educators, have positive attitudes toward school computers. Even the category with the lowest mean ATSC score, school librarians ($M = 115.1$) have a mean score on the ATSC which is more than mid-way between neutral and agree.

There is no difference in attitudes toward school computers depending on whether an educator is employed full or part time. Reflecting upon the educators in PRSD, this result is not surprising because there has been in the past few years considerable movement of full time educators to part time employment and back again to full time employment (i.e. job sharing), especially for women with young families.

Because educators in a jurisdiction such as PRSD work in mainly small schools, to analyze the data, educators' grade levels were split into six categories (Table 8, p. 37). In general, it appears that as the grade level taught increases, attitudes toward using

computers in schools also become more positive, but it is only educators at the upper elementary level (grades 4, 5, and 6) who have a mean ATSC score which is significantly lower than all other categories except primary/elementary. Grouping educators into just two categories — primary/upper elementary and junior/senior high — shows a clearer delineation, with the junior/senior high educators being significantly more positive in their attitudes toward computers than the primary/elementary ones. One explanation for this difference would be the history of computer implementation in PRSD. Junior/senior high schools have traditionally had more computers for a longer period of time than primary/upper elementary schools, and since studies (Gerschner, 1982; Gressard & Loyd, 1985) have shown that greater experience with computers contributes to a more positive attitude, junior/senior high educators in PRSD would, with longer experience, therefore have been expected to feel more positive about computer use.

Regarding the number of years working as an educator, there is no difference in attitudes toward school computers, as measured by the ATSC, and this finding is similar to Martin and Lundstrom (1988) who also found that years of teaching experience was not significant.

Two groups — educators and parents — (See Table 11, p. 39 and Table 31, p. 53 respectively) were surveyed regarding their highest degree earned, and for neither group is this factor significant in explaining their attitudes toward using computers in school. One problem with the data for the parents is that, in attempting to be consistent with the responses for both educators and parents, parents did not have the range of choices needed for their educational circumstances. That is, they should have had alternatives

such as “high school diploma” and “less than high school.” With the alternatives that were available for parents, over half of them selected “no degree,” and therefore the sample sizes in most of the other categories are very small (e.g. $n = 4$ for Bachelor’s degree).

Three groups — educators, business people, and parents — were asked to indicate how many hours of computer courses they had taken. For only the parent group are there any significant differences, with those taking 50 or more hours of courses having higher mean ATSC scores than those who had taken none (Table 32, p 54). Inexplicably, the category of parents with the least positive attitude toward computers is those who had taken 30 to 39 hours of computer courses.

All respondents were asked if they owned a home computer which they personally used, and for all respondents combined, owners of home computers have a more positive attitude toward computer use than non-owners (Table 50, p. 67). For individual groups, there is not a significant difference for educators and business people, but there is for students and parents, with computer owners in those two groups having a more positive attitude toward computer use than non-owners.

Concerning the relationship between attitudes towards computers and frequency of computer use, those individuals who use computers most frequently have significantly more positive attitudes toward computers than low frequency users or non users (See Table 51, p. 68). Regarding the four groups of respondents, for two of the four groups (i.e. educators and students) there are significant differences in attitudes toward school computer use depending on the frequency of their computer use. (There are no significant differences in attitudes toward computers for parents and business people.) For educators

see Table 14 (p. 42), and for students see Table 25 (p. 50). The finding for all respondents combined that the more people use computers the more positive their attitudes about their use is consistent with previous studies (Elkins, 1985; Gressard & Loyd, 1985; Lawton & Gerschner, 1982). For business people (Table 42, p. 60), there is not a significant relationship between frequency of computer use and attitude, but this result is probably due to the fact that 75% of business people said they 'always' used computers, and coupled with the overall small number of business respondents ($n = 50$), that leaves very small sample sizes in the other five frequency categories.

For the educator's group only, an additional measure of computer use aimed specifically at use in schools, was how recently they had initiated an instructional activity which required their students to use computers (Table 15, p. 42). There are no significant differences in attitudes toward computers depending on how recently an educator initiated a school-based computer activity. This finding is not inconsistent with the studies cited in the previous paragraph regarding the relationship between more computer use and more positive attitudes towards computers because this variable is not necessarily a measure of frequency of computer use. For example, an educator who might have attempted his first school-based computer activity the week before the administration of the questionnaire would have responded the same way as an educator who had been conducting regular, ongoing school-based computer activities and also initiated one within the week prior to responding to the questionnaire.

Two additional variables for educators, students, and parents which were tested against attitudes toward school computers were how recently students did computer work

during class time and how many minutes per week students used computers during class time . See, for educators, Table 15 (p. 42) and Table 16 (p. 43); for students, Table 26 (p. 51) and Table 27 (p. 51); and for parents, Table 34 (p. 55) and Table 35 (p. 56).

Students only show any significant differences, with students with the most recent class time use having a more positive attitude than those who used computers during class time more than three weeks ago or never, and also the students with more than 120 minutes per week of class time use are more positive than those who used computers less than 30 minutes per week or not at all. The expectation was that educators whose students used computers more during class would have more positive attitudes, but that is not the case. The assumption was that how recently students used computers during class and how many minutes per week they used computers during class time would relate to how much computer activity the educator was also doing during class time, but that may be an incorrect supposition. Students could be doing their class-time computer activities with a different instructor. That is, a teacher might consider the class time in question to be her own, but she is, in fact, sending her students to another teacher for computer activities.

With regard to location (i.e. 11 schools and central office) and community (i.e. Nampa, Grimshaw, Manning, Peace River, Berwyn, and Dixonville) there are conflicting results concerning attitudes toward school computers among educators, students, and parents, the three groups tested. Business people were not identified with a specific school but rather with a community. Educators at some schools have more positive attitudes than those at other schools, while students at different schools have significantly different attitudes from students at still other schools. There are no significant differences

for parents regarding attitudes toward computers depending on school. Combining the mean ATSC scores for all three groups of respondents at a school, does reveal some significant differences in attitudes among locations (Figure 1, p. 64), but this combination perhaps gives undue weight to student scores which constitute approximately 50% of the population at each school (Table 48, p. 65). The only generalization that can be drawn is that junior/senior high schools are more likely than primary/upper elementary schools to have more positive attitudes, which is consistent with the previously discussed educators' attitudes according to grade level taught. More meaningful conclusions about possible relationships between location and attitudes toward school use of computers might have been drawn if respondents had been asked, for example, for information about the quantity and quality of computer hardware and software at each site, computer support personnel available on site, and the computer leadership exhibited by the school based administrators.

Regarding the combined attitudes toward school use of computers for educators, students, and parents according to community, there are some significant differences. See Table 52, p. 69. The business group was excluded from this analysis because many of the businesses surveyed, even though they may be physically located in one community, conduct business in more than one community throughout the area and do not identify themselves with one particular community. The attitudes toward computers of educators, students, and parents in the Town of Dixonville are significantly less positive than those in four of the five other communities in the Peace Country, and the attitudes toward computers are significantly higher than those in Berwyn, but, as mentioned previously

(p. 68), there do not appear to be any observable patterns such as size of community or geographical location. In general, the findings are not very meaningful because some communities have only one school (e.g. Dixonville), and in other communities, combining the schools of a community, hides some significant differences in attitudes among the schools of that community.

For business people, none of the variables used for that group only (i.e. business size, number of employees, type of business, whether they use computers in their business, and whether they hire PRSD graduates) are significant with regard to attitudes towards computers, as measured by the ATSC. One possible reason for not discovering any significant variables, if there are, in fact, any, would be that the sample size of the business group was rather small ($n=51$).

Perceptions About Computer Use

One of the major purposes of the study was to discover the perceptions of educators, parents, students, and business people regarding the present uses of computers in schools in PRSD. Two subsections of the questionnaire dealt with present use of educational computing: 10 Likert type statements about perceptions of computer use, and 11 statements about possible barriers to computer use in schools. The perception statements will be discussed first and then the barrier statements.

Table 93 shows the combined responses for all groups to each of the 10 statements ranked from most agree to least agree. On the questionnaire, some of the original statements were negatively worded, but for the purpose of ranking the statements, a couple of them have been rephrased in the positive. See p. 147 of the Teacher's

Questionnaire in Appendix A for the complete, original wording of the statements.

Looking first at the statement for which there is the most agreement, stakeholders in PRSD clearly feel that students need to learn keyboarding skills. Educators have the lowest score regarding the need for keyboarding, and the scores for the three other groups are significantly higher than educators', but even educators have a mean score of 3.7 on this item. See Table 58, p. 75 for mean scores by group. Obviously people feel that competence in keyboarding is a prerequisite to using computers in schools, and perhaps the implication is that students are not getting enough instruction in keyboarding when they first start to use computers. There is also general agreement, with no group significantly different from another (see Table 62, p. 78), that integrating computers into daily schooling should be a top educational priority. With an average score for all respondents halfway between neutral and agree ($M = 3.5$), stakeholders are somewhat positive about the present atmosphere for using computers in PRSD. But, while they feel that the atmosphere is acceptable, at the other end of the scale, they do not feel that there are sufficient computers so that students have adequate access to the technology.

Coupled with their disagreement with the statement that computers are taking scarce resources away from other important educational areas, it appears that stakeholders would like to see more Divisional resources committed to 1) provide more computer equipment, and 2) integrate computers into the curriculum. Considering that the study was conducted during the 1993/94 school year, at the time of severe provincial government funding cuts to education (and other areas), stakeholders' perceptions that there are not enough

computers, and that computers are not taking resources away from other important areas are even more meaningful.

Table 93

Mean Scores for Perceptions Statements for All Respondents.

Ordered from Most Agree to Least Agree

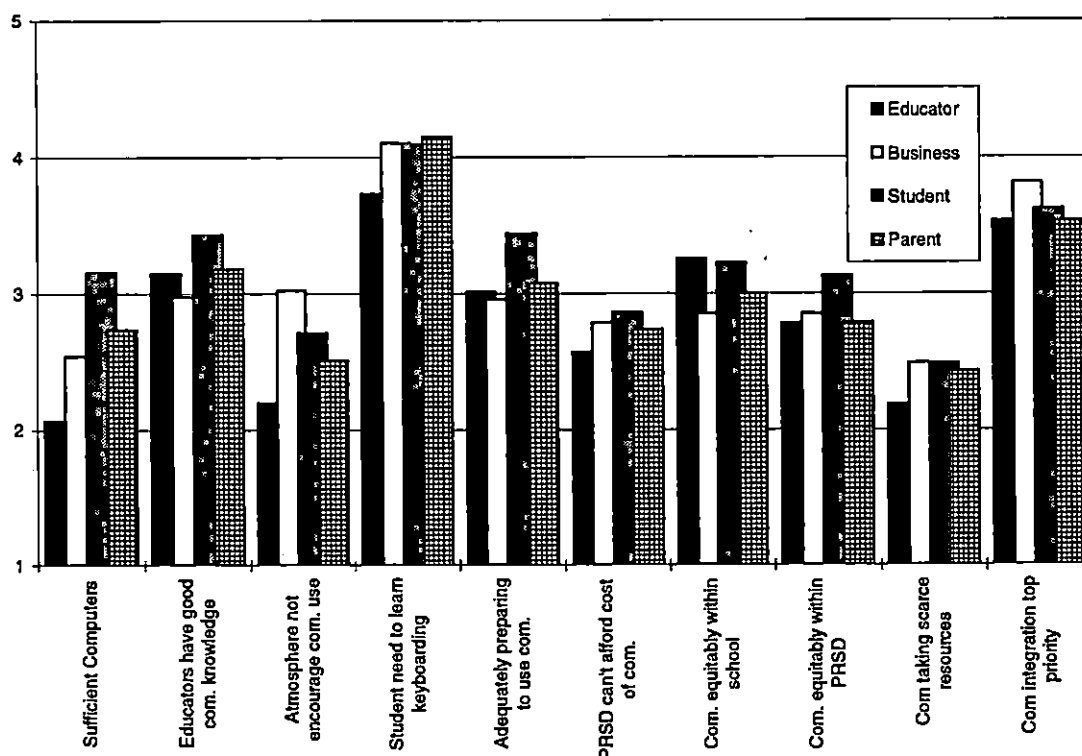
Statement	<i>N</i>	Mean	<i>SD</i>
Students need to learn keyboarding	491	4.0	1.1
Computer integration should be top priority	488	3.6	1.1
Atmosphere encourages computer use	486	3.5	1.1
Educators have good computer knowledge	486	3.3	.9
PRSD can afford cost of computers	485	3.3	1.1
Adequately preparing students to use computers	487	3.2	1.1
Computers equitably distributed within school	478	3.2	1.1
Computers equitably distributed within PRSD	476	3.0	.9
Have sufficient computers	487	2.7	1.3
Computers taking away scarce resources	487	2.4	1.0
Average of 10 statements		3.2	1.1

Figure 16, with the original positive and negative wording for the statements, shows the responses to the 10 perception statements broken into the four groups of respondents. For all of the statements, except the one regarding whether integrating computers should be a top priority, there are some significant differences among the groups, but no patterns emerge indicating that any one group has either more positive or negative perceptions about computer use in PRSD. One possible generalization is that students seem to have the most positive perceptions about computer use, with significantly

higher scores than educators, parents, and business people in three areas: sufficient computers, educators having good computer knowledge, and being adequately prepared to use computers.

Figure 16

Mean Perceptions Regarding Computer Use by Group



Expectations About Computer Use

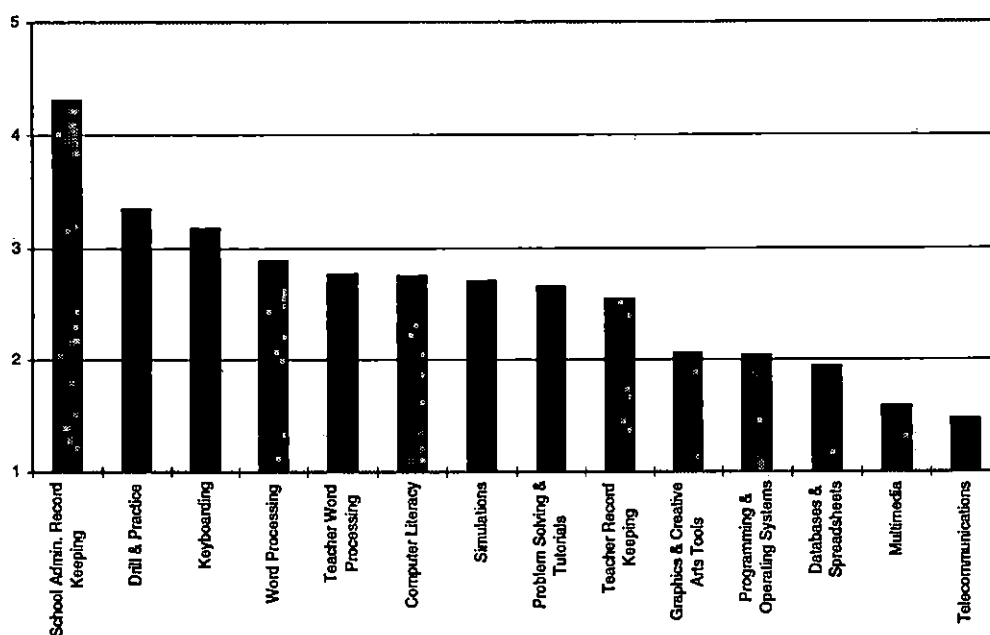
The present study attempts to discover stakeholder's expectations about computer use in PRSD, by making a comparison between perceptions of current computer use and how people think computers should be used (i.e. ideal use). Educators, parents, students, and business people were asked to rate current and ideal computer use in 14 different areas. See p. 150 of the Teacher's Questionnaire in Appendix A and p. 174 of the Business Questionnaire in Appendix D for the 14 computer uses. As discussed in more

detail in the Introduction to the Expectations About Computer Use section (p. 103), for current computer uses (but not for ideal uses), students, parents, and business people had a “Don’t know” choice, while educators did not. Since a large percentage of respondents in those three groups selected this alternative or didn’t respond to the statements, it was obviously necessary to include it, but this situation means that the discussion about current computer uses and comparisons between current and ideal computer uses are possible for only the educator’s group. For the ideal computer use section, all respondents had identical choices (i.e. no groups had a “Don’t know” alternative), and thus a comparison about expectations for the future of computer use in PRSD is possible.

Regarding current computer uses, as can be seen in Figure 17, educators rate only

Figure 17

Educators’ Mean Current Computer Uses Scores, Ranked from Most Widespread Use to Least Widespread Use

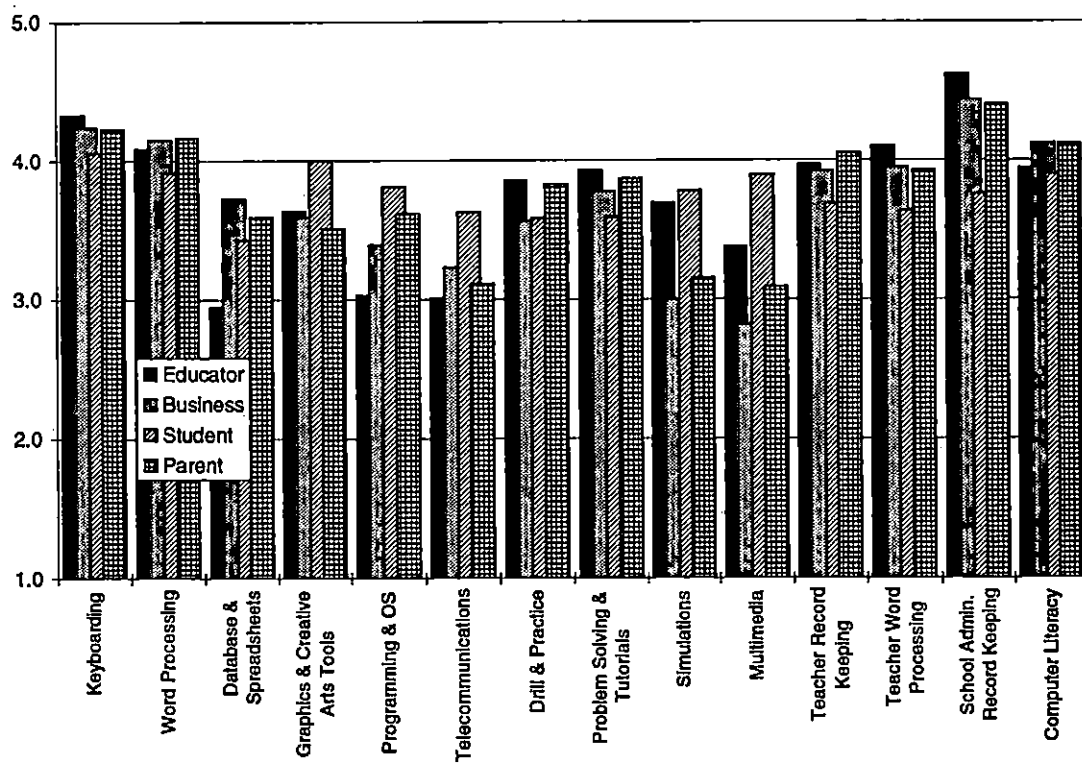


one use (i.e. school administrative record keeping) as seeing more than general use, and only two other uses (i.e. drill and practice, and keyboarding) as presently experiencing more than moderate use. There are five current computer uses which educators describe as seeing limited or less use. In general, the current computer use in PRSD, as described by educators, is fairly limited with most use concentrated in very traditional areas.

Figure 18 summarizes the scores of the responses for all groups for the areas of ideal computer uses, and there are a few generalizations which can be drawn from the

Figure 18

Mean Ideal Computer Uses Scores for All Groups



data. In areas that could be classed as administrative (i.e. teacher record keeping, teacher word processing, and school administrative record keeping), educators appear to want the

widest use of computers in schools. In areas that might be considered newer, more recent, uses of computers such as simulations, multimedia, graphics and arts tools, and telecommunications, students appear to desire the widest use. Concerning keyboarding, drill and practice, and problem solving and tutorial uses, areas which relate to the day-to-day classroom, educators want the widest use. And with database and spreadsheet uses, two computer uses which are widespread in the work place, business people recognize a need for computer uses in schools in these areas.

For current vs. ideal computer uses, it is, as mentioned above, only for the educator group that any comparisons will be made. For all 14 computer use areas, educators want ideally to see much more computer use in PRSD. Even their lowest ranked ideal computer use — databases and spreadsheets — receives a moderate use rating (Figure 14, p. 115), and eight other uses are above or very close to a general use rating. For the most part, educators would ideally like to see the widest use of computers in what would be described as conventional areas of computer use, such as record keeping, keyboarding, and word processing, but a large disparity is also apparent between the current reality of computer use in PRSD and the ideal use in less traditional or emerging areas, such as multimedia, graphics and creative arts tools, and telecommunications (Figure 15, p. 116).

Implications for Theory and Practice

In general, the present study provides a fairly thorough picture of educational computer use in Peace River School Division, and the most significant implication arising from the study is the indication that there is demand from the stakeholders in PRSD for schools to undertake some initiatives in the area of educational computers. Educators, students, parents, and business people all want more computers and more uses; they feel that integrating computers into daily schooling should be a top educational priority; and, since they don't feel that computers are taking scarce resources away from other important educational areas, they would also see the need to commit more Divisional resources to educational computing.

The perception is that educators in PRSD, given the existing lack of hardware, are doing an adequate job of teaching students to use computers, but there is a desire to expand the uses of computers, especially in traditional use areas, and at the same time there also is recognition by educators of the wide gap between present and ideal uses of school computers in most areas of use, including newer uses of computers.

Stakeholders feel that the most significant barrier to computer use in PRSD schools is the lack of hardware. Lack of teachers' time and not enough teacher training rank second and third respectively. So, yes, purchasing more equipment is recognized as necessary, but there is a realization that that acquisition must be coupled with providing educators with additional time and training. Educators, in general, do not perceive a lack of either school or Divisional administrative support for using computers.

The overall implication for PRSD is that, in general, all stakeholders have positive attitudes about using computers in schools, they perceive some primarily material barriers to educational computer use, they expect an increase in the number of computers, and they anticipate expanded computer uses.

Limitations of the Study

There are a number of factors, both external and internal to the study, that place some limitations on its usefulness.

Externally, during the 1993/94 school year, when the questionnaires were distributed and the interviews conducted, the Alberta government was undertaking substantial provincial cutbacks in all areas of the Alberta government and a restructuring of education in particular. This climate of financial restraint and educational uncertainty could have been a possible preoccupation that might have influenced the answers of all groups of respondents, but especially for many teachers, who were concerned about losing their jobs, and for parents, who were worried about the impact of the cutbacks on the quality of education for their children. This possible preoccupation with financial restraint and economic uncertainty might have led respondents to dismiss the questionnaire outright and thus have been a contributing factor to a lower response rate. The climate at the time might also have led respondents to react more negatively to the idea of computers in education than they might ordinarily have done because, with the preoccupation with educational cutbacks, they might have been more inclined to perceive educational computers as an unaffordable expense.

Another possible limitation of the study, with both external and internal influences, is that there was a time delay between when the educator and business questionnaires were completed and when the student and parent questionnaires and the interviews were conducted. The educator and business questionnaires were issued during October and November of 1993, while the student and parent questionnaires and all of the interviews were done during April, May and June of 1994. Attitudes, perceptions, and expectations could have changed during the six month interval, especially with the volatile provincial budgetary situation at the time.

When the present study was undertaken, it was hoped that the research would provide some guidelines for the implementation of school computers in Peace River School Division and other school jurisdictions with similar characteristics. But in retrospect, the conclusions must apply primarily to PRSD. Not only does PRSD have numerous unique characteristics such as its size, geography, community composition, etc., but it also has many specific idiosyncrasies (e.g. personnel, policies, and financial situation) which would make it difficult to draw many generalizations which might apply to other areas, even those with superficially similar characteristics.

While the overall response rate to the questionnaire is 61%, for some groups the low response rate is a concern. See Table 3: Questionnaire Response Rates (p. 29) for details. The response rates for business (34%) and parents (37%) are especially poor, and even for educators, where the average response is 64%, returns ranged, according to location, from 50% to 100%. Unfortunately, these low response rates, especially when further broken into groups by location, result in some small sample sizes (e.g. $n = 3$ and

$n = 6$ for the Dixonville School the Lloyd Garrison School parent groups respectively), and the chances of sampling error are thus increased. The design of the study should have included some type of follow up to the questionnaires, especially for business people and parents, to try to achieve a higher response rate.

One of the assumptions behind using a questionnaire to obtain the research data for the study was that respondents would have adequate knowledge about educational computer use in PRSD to be able to respond to the questions, but the low response rates for business and parents might indicate that one reason they didn't return the questionnaire was because they felt they didn't have enough information about the subject. For those parents and business people who did return questionnaires, there are, as mentioned above, a large percentage who answered "don't know" to numerous items or simply left items blank. Again, this situation would indicate that they didn't have the necessary knowledge. Schuttenberg et al. (1985) cited similar limitations regarding their respondent's lack of awareness of what was happening in schools.

A confounding factor in the study may have been the reading ability of some of the students, especially those in the elementary grades. The ATSC was developed initially for use with university students, and, although minor modifications were made to some of the wording in an attempt to make it more understandable for school age children, while the questionnaires were being administering, there were a number of questions from students asking for clarification and explanation. However, for all of the questionnaires administered to students, the researcher was present in the classroom for the entire time they completed the questionnaire, and at the start of the session, students were

encouraged to ask any questions they might have at any time. Perhaps a pilot study of the questionnaire with some elementary students would have been useful. For all respondents, there may have been a lack of understanding of some terms (e.g. multimedia and telecommunications) used in other sections of the questionnaire.

In two subsections of the questionnaire, barriers to computer use and current uses of computers, there were different responses depending on the group. Parents, students, and business people had a "Don't know" alternative, but educators did not. While this difference in responses was probably necessary given the apparently limited knowledge by parents and especially business people about computer use in PRSD, it made examination of the data using analysis of variance impossible.

Possible bias might also be a limitation of the study. With the present study, it's possible that some minor bias could have been introduced by the fact that the author was also the administrator responsible for computers in PRSD. Because the study was being conducted by an administrator at the School Division central office, and even though procedures were put in place to assure respondents of anonymity, there might have been a perception of bias which might have influenced respondents' answers.

Implications for Future Research

Many of the findings of the present study indicate the influence of location (i.e. school) in helping to determine attitudes, perceptions, and expectations about school computer use. A study that focused on which factors at locations (e.g. grade level, size, geographical location, ages of teachers, administrative leadership, and on site support) could be helpful in clarifying the situation.

The present study is perhaps too broad in scope in that it attempts to ascertain the influence of a fairly large number of variables on attitudes, perceptions, and expectations about computer use in schools. A more focused study concentrating on specific aspects of the problem (e.g. present computer uses compared to ideal computer uses) would be appropriate.

Concluding Statement

One of the major purposes of the study was to see if there were any differences in the attitudes, perceptions, and expectations about school use of computers in PRSD, and while there are some differences, there is much more agreement about the recognition that more needs to be done in the area of educational computing. The problem will be translating that recognition into action. One teacher sums it up quite succinctly in an added comment at the end of his questionnaire by saying, "There has to be the will — whether it be political, economic or even educational. Unless it is so, all does not matter." Perhaps this study can play a small part in starting the process.

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APPENDIX A

Teacher's Computer Attitude Questionnaire

Directions: Place check marks in the appropriate boxes. Please answer honestly; there are no right or wrong answers. Also remember to sign the consent form on the first page and return both items to your ETC representative. Thank you for your cooperation.

1. Sex

 Male Female

2. Age

 Under 30 40 - 49 60+ 30 - 39 50 - 59

3. Which of the following describes your educational position with PRSD? (Check all that apply)

 Classroom Teacher Teacher's Assistant School Librarian School-Based Administrator Central Office Administrator School Board Trustee

4. Your employment with PRSD is

 Full time Part time

5. What grade level(s) do you teach? (Check all that apply)

 Kindergarten Fifth Tenth First Sixth Eleventh Second Seventh Twelfth Third Eighth I Don't Teach Fourth Ninth

6. Including the current school year, for how many years have you been working as an educator?

 1 - 4 9 - 12 17 - 20 5 - 8 13 - 16 more than 20 years

7. What is the highest degree you have earned? (Check one)

 Associate degree or Voc. certificate Education Specialist or professional diploma
(at least one year beyond Master's) Bachelor's degree Doctorate (Ph.D. or Ed.D.) 2nd Bachelor's degree Professional degree (e.g., M.D., LLB.) Master's degree 2nd Master's degree No degree or diploma

8. Do you currently have a computer in your home which you personally use?
 Yes No
9. How many hours of courses or workshops in the use of computers have you taken? (Check one)
 Zero 20 - 29 40 - 49
 1 - 9 30 - 39 50+
 10 - 19
10. What are the number of times you have personally used a computer for any reason in the past 14 days? (Check one)
 None 5 - 9 times 15 - 19 times
 1 - 4 times 10 - 14 times 20+ times
11. When was the last time you initiated an instructional activity in school that required students to use computers? (Check one)
 Within the last 7 days More than 8 months ago
 Between 1 and 4 weeks ago Never
 Between 1 and 8 months ago
12. At what school or location do you work? (Check the primary location)
 Nampa Public School Peace River H. S.
 T. A. Norris Jr. H. S. Springfield School
 McGrath School Kennedy Elem. School
 Grimshaw Jr/Sr H. S. Lloyd Garrison School
 Dixonville School Manning Elem. School
 Paul Rowe H. S. PRSD Central Office

Teacher's Computer Attitude Questionnaire

To what extent do each of the following phrases characterize your own feelings and attitudes about computers and their use in schooling? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale	1 = Strongly Disagree 4 = Agree	2 = Disagree 5 = Strongly Agree	3 = Neutral		
	Strongly Disagree	Neutral			Strongly Agree
	1	2	3	4	5
1. Training teachers to use computers should be a high priority.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Using computers in school management will improve the operation of most schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. With computers we have the opportunity to improve instruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The evil of computers in schooling is that they will eventually replace a lot of good teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. School students would find learning with computers challenging and interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Using computers to learn will diminish the physical fitness of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Most any educator can find a substantial use for a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Most school administrators should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. A computer is nothing more than a glorified typewriter attached to an electric calculator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Lessons on computers can be effective because they can correct student errors immediately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Learning through the use of computers is dull and repetitious.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Using computers in the classroom will create cold classroom atmospheres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The use of computers in schooling will erode the privacy of teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Using computers in schooling is just another fad that will be replaced with some other fad sooner or later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Using computers to teach is not any more effective than using good books so why go to the expense of putting computers in schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Effective administrators do not need computers to operate school effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Teacher's Computer Attitude Questionnaire

	Strongly Disagree		Neutral		Strongly Agree
	1	2	3	4	5
17. Most teachers should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. If computers are used in schooling, students will not develop basic skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Computers will only put more work on the shoulders of school administrators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Students who learn using computers will have a definite advantage in life over students who have not learned to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The use of computers in schooling will erode the privacy of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Effective teachers do not need to use computers in their teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Using computers with young children will destroy their ability to develop good keyboarding skills and we will end up with a world full of people who "hunt and peck".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Computers can be used in courses such as English, Art, Music, and Creative Writing just as well as with courses in Science and Mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. With computers, educators have the opportunity to transform outmoded methods presently used for schooling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Students who use computers to learn with will become passive students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. If we had better trained teachers we would not have to worry about using computers in education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lessons on computers can be effective because they can correct student errors in a private, impersonal way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. With the right computer learning, students could learn to take greater responsibility for their own progress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. With the right computer learning, students could develop more confidence in their ability to learn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Many teachers will not be able to learn to use computers no matter how they try.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. I feel confident that I could organize instruction for my students using computer programs that "instruct".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How would you rate the following factors as present BARRIERS to computer use in your school.

Scale	1 = Not a Barrier 4 = Moderate Barrier	2 = Limited Barrier 5 = Major Barrier	3 = Neutral		
	Not a Barrier	Neutral	Major Barrier		
1. Lack of software (i.e., quantity of software)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Poor quality of software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Lack of hardware (e.g., computers, printers, peripherals, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Poor quality of hardware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Lack of teachers' time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Not enough teacher training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Too few guidelines for using computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Location of computers in school (i.e. labs, classrooms, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Low teacher interest in computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Lack of school administrative support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Lack of School Division administrative support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. When was the most recent occasion that some students in your class did computer work during class time? (Check one)
- Never
 - More than 3 weeks ago
 - More than 2 weeks ago but within the last 3 weeks
 - More than 3 days ago but within the last 2 weeks
 - Within the last 3 school days.
 - Not applicable (i.e. not a classroom teacher).
 - Other: _____
15. Which of the rules for apportioning computer time do you think is most commonly used by teachers at your school? (Check all that apply)
- Equal time for all students in a class.
 - More time for the slower-learning students.
 - More time for students who complete their other work first.
 - More time for students who do not have a computer at home.
 - More time for students who have more interest in computers.
 - Other: _____
16. How many minutes per week does the average student in your typical class use computers during class time?
- | | | |
|---|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 30 - 59 minutes | <input type="checkbox"/> 90 - 119 minutes |
| <input type="checkbox"/> Less than 30 minutes | <input type="checkbox"/> 60 - 89 minutes | <input type="checkbox"/> 120 minutes or more |
17. What is the total number of computers for student use in your school?
- | | | |
|---------------------------------------|----------------------------------|-------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 10 - 19 | <input type="checkbox"/> 30 - 39 |
| <input type="checkbox"/> Less than 10 | <input type="checkbox"/> 20 - 29 | <input type="checkbox"/> 40 or more |

Current use of computers compared to ideal use. For the following computer uses, indicate in the left hand column your perceptions about how you think computers are currently being used in your school (i.e., the actual use). In the right hand column, indicate your expectations about how you think computers should be used in your school (i.e., the ideal use). Please rate each use from 1 (No Use) to 5 (Wide Spread Use). Place a check in the appropriate box. For each computer use, you should place a check in the left column (Current Use) and a check in the right column (Ideal Use).

Scale 1 = No Use 2 = Limited Use 3 = Moderate Use
 4 = General Use 5 = Wide Spread Use

Current Use					Computer Uses	Ideal Use				
No Use	Moderate Use		Wide Use	No Use		Moderate Use		Wide Use		
1	2	3	4	5		1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Keyboarding (learning proper keyboarding techniques)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Databases and spreadsheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Graphics and creative arts tools (e.g., desk top publishing, drawing, drafting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Programming and operating systems (e.g. BASIC, Logo, MS-DOS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Telecommunications (e.g., on-line databases, public bulletin boards, electronic mail)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Drill and practice programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Problem solving and tutorial programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Simulations (e.g., instructional games, microworlds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. Multimedia (e.g., videodisks, full motion video)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Teacher record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Teacher word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. School administrative record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Computer literacy (learning about computers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments (if any) Your comments are most welcome and will be added to my database of information.

Please remember to sign the consent form at the bottom of the first page and return it and the questionnaire to your Educational Technology Committee representative who will then separate the forms and return them to me.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the Instructional Materials Centre, 624-3515, or at home, 624-1199.

Thanks again,

Richard Smith

APPENDIX B

Student's Computer Attitude Questionnaire

Directions: Place check marks in the appropriate boxes. Please answer honestly; there are no right or wrong answers. Also remember to sign the consent form on the first page and return both items. Thank you for your cooperation.

1. Sex

 Male Female

2. What grade are you in?

 Kindergarten Fifth Tenth First Sixth Eleventh Second Seventh Twelfth Third Eighth Fourth Ninth

3. Do you currently have a computer in your home which you personally use?

 Yes No

4. What are the number of times you have personally used a computer for any reason, either at home or in school, in the past 14 days? (Check one)

 None 5 - 9 times 15 - 19 times 1 - 4 times 10 - 14 times 20+ times

5. What school do you attend? (Check one)

 Nampa Public School Peace River H. S. T. A. Norris Jr. H. S. Springfield School McGrath School Kennedy Elem. School Grimshaw Jr/Sr H. S. Lloyd Garrison School Dixonville School Manning Elem. School Paul Rowe H. S.

To what extent do each of the following phrases describe your own feelings and attitudes about computers and their use in schooling? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale	1 = Strongly Disagree 4 = Agree	2 = Disagree 5 = Strongly Agree	3 = Neutral		
	Strongly Disagree		Neutral		Strongly Agree
	1	2	3	4	5
1. Training teachers to use computers should be a high priority.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Using computers in school management (i.e. school offices) will improve the operation of most schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. With computers we have the opportunity to improve instruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The evil of computers in schooling is that they will eventually replace a lot of good teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. School students would find learning with computers challenging and interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Using computers to learn will reduce the physical fitness of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Most any teacher can find a good use for a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Most school administrators (principals, vice-principals) should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. A computer is nothing more than a glorified typewriter attached to an electric calculator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Lessons on computers can be effective because they can correct student errors immediately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Learning through the use of computers is dull and repetitious.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Using computers in the classroom will create cold classroom atmospheres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The use of computers in schooling will reduce the privacy of teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Using computers in schooling is just another fad that will be replaced with some other fad sooner or later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Using computers to teach is not any more effective than using good books so why go to the expense of putting computers in schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Disagree	Neutral			Strongly Agree
	1	2	3	4	5
16. Effective administrators (principals, vice-principals) do not need computers to operate school effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Most teachers should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. If computers are used in schooling, students will not develop basic skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Computers will only put more work on the shoulders of school administrators (principals & vice-principals).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Students who learn using computers will have a definite advantage in life over students who have not learned to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The use of computers in schooling will reduce the privacy of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Effective teachers do not need to use computers in their teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Using computers with young children will destroy their ability to develop good keyboarding skills and we will end up with a world full of people who "hunt and peck".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Computers can be used in courses such as English, Art, Music, and Creative Writing just as well as with courses in Science and Mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. With computers, teachers have the opportunity to transform outmoded (i.e. out dated) methods presently used for schooling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Students who use computers to learn with will become passive (inactive) students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. If we had better trained teachers we would not have to worry about using computers in education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lessons on computers can be effective because they can correct student errors in a private, impersonal way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. With the right computer learning, students could learn to take greater responsibility for their own progress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. With the right computer learning, students could develop more confidence in their ability to learn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Many teachers will not be able to learn to use computers no matter how they try.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Teachers should be able to organized instruction for me using computer programs that "instruct" me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To what extent do each of the following phrases describe your own *perceptions or feelings about computers and their use in your school in particular or in Peace River School Division (P.R.S.D.) schools in general*? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale	1 = Strongly Disagree	2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree
		Strongly Disagree	Neutral	Strongly Agree	
1. My school has a sufficient number of computers so students have adequate access to computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Teachers in my school have a good general knowledge of computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The atmosphere in my school does not encourage the use of computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Students need to learn appropriate keyboarding skills when they start to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. My school is adequately preparing students to use computers in continuing their education and/or in their adult lives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Peace River School Division cannot afford the cost of computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Computer resources are distributed fairly within my school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Computer resources are distributed fairly throughout Peace River School Division.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Computers are taking scarce resources away from other important educational areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Integrating computers into daily schooling should be a top educational priority.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. When was the most recent occasion that you did computer work during class time? (Check one)
- Never
 - More than 3 weeks ago
 - More than 2 weeks ago but within the last 3 weeks
 - More than 3 days ago but within the last 2 weeks
 - Within the last 3 school days.
15. Which of the rules for apportioning (splitting up) computer time do you think is most commonly used by teachers at your school? (Check all that apply)
- Equal time for all students in a class.
 - More time for the slower-learning students.
 - More time for students who complete their other work first.
 - More time for students who do not have a computer at home.
 - More time for students who have more interest in computers.
 - Other: _____
16. How many minutes per week, on average, do you use computers during class time?
- | | | |
|---|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 30 - 59 minutes | <input type="checkbox"/> 90 - 119 minutes |
| <input type="checkbox"/> Less than 30 minutes | <input type="checkbox"/> 60 - 89 minutes | <input type="checkbox"/> 120 minutes or more |
17. What is the total number of computers for student use in your school?
- | | | |
|---------------------------------------|----------------------------------|-------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 10 - 19 | <input type="checkbox"/> 30 - 39 |
| <input type="checkbox"/> Less than 10 | <input type="checkbox"/> 20 - 29 | <input type="checkbox"/> 40 or more |

Current use of computers compared to ideal use. For the following computer uses, indicate in the left hand column your feelings about how you think computers are currently being used in your school (i.e., the actual use). In the right hand column, indicate your expectations about how you think computers should be used in schools (i.e., the ideal use). Please rate each use from 1 (No Use) to 5 (Wide Spread Use). Place a check in the appropriate box. For each computer use, you should place a check in the left column (Current Use) and a check in the right column (Ideal Use). If you don't have enough information regarding "Current Use", please check the "Don't Know" box.

Scale					1 = No Use	2 = Limited Use	3 = Moderate Use							
					4 = General Use	5 = Wide Spread Use								
Current Use					Computer Uses					Ideal Use				
No Use	Moderate Use		Wide Use	Don't Know						No Use	Moderate Use		Wide Use	
1	2	3	4	5						1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	Keyboarding (learning proper keyboarding techniques)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	Word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	Databases and spreadsheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	Graphics and creative arts tools (e.g., desk top publishing, drawing, drafting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	Programming and operating systems (e.g. BASIC, Logo, MS-DOS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	Telecommunications (e.g., on-line databases, public bulletin boards, electronic mail)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	Drill and practice programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	Problem solving and tutorial programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	Simulations (e.g., instructional games, microworlds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	Multimedia (e.g., videodisks, full motion video)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.	Teacher record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.	Teacher word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.	School administrative record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.	Computer literacy (learning about computers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.	Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Additional comments (if any). Your comments are most welcome and will be added to my database of information.

Please remember to sign the consent form at the bottom of the first page. Separate the consent form from the questionnaire and return both to me.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the Instructional Materials Centre, 624-3515, or at home, 624-1199.

Thanks again,

Richard Smith

APPENDIX C

Parent's Computer Attitude Questionnaire

Directions: Place check marks in the appropriate boxes. Please answer honestly; there are no right or wrong answers. Also remember to sign the consent form on the first page and return both items to your child's school office. Thank you for your cooperation.

1. Sex

 Male Female

2. Age

 Under 30 40 - 49 60+ 30 - 39 50 - 59

3. What is the highest educational degree you have earned? (Check one)

 Associate degree or Voc. certificate Professional diploma Bachelor's degree (at least one year beyond Master's) 2nd Bachelor's degree Doctorate (Ph.D., Ed.D., etc.) Master's degree Professional degree (e.g., M.D., LL.B.) 2nd Master's degree No degree or diploma

4. Do you currently have a computer in your home which you personally use?

 Yes No

5. How many hours of courses or workshops in the use of computers have you taken? (Check one)

 Zero 20 - 29 40 - 49 1 - 9 30 - 39 50+ 10 - 19

6. What are the number of times you have personally used a computer for any reason, either at home or at work, in the past 14 days? (Check one)

 None 5 - 9 times 15 - 19 times 1 - 4 times 10 - 14 times 20+ times7. What school does your child who brought home the questionnaire attend? (Check one) Nampa Public School Peace River H. S. T. A. Norris Jr. H. S. Springfield School McGrath School Kennedy Elem. School Grimshaw Jr/Sr H. S. Lloyd Garrison School Dixonville School Manning Elem. School Paul Rowe H. S.

To what extent do each of the following phrases characterize your own feelings and attitudes about computers and their use in schooling? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale	1 = Strongly Disagree	2 = Disagree	3 = Neutral			
	4 = Agree	5 = Strongly Agree				
			Strongly Disagree	Neutral	Strongly Agree	
			1	2	3	
			4	5		
1.	Training teachers to use computers should be a high priority.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Using computers in school management will improve the operation of most schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	With computers we have the opportunity to improve instruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	The evil of computers in schooling is that they will eventually replace a lot of good teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	School students would find learning with computers challenging and interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Using computers to learn will diminish (reduce) the physical fitness of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Most any educator can find a substantial use for a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Most school administrators should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	A computer is nothing more than a glorified typewriter attached to an electric calculator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Lessons on computers can be effective because they can correct student errors immediately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Learning through the use of computers is dull and repetitious.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Using computers in the classroom will create cold classroom atmospheres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	The use of computers in schooling will erode the privacy of teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Using computers in schooling is just another fad that will be replaced with some other fad sooner or later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Using computers to teach is not any more effective than using good books so why go to the expense of putting computers in schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Effective administrators do not need computers to operate school effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Disagree	Neutral			Strongly Agree
	1	2	3	4	5
17. Most teachers should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. If computers are used in schooling, students will not develop basic skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Computers will only put more work on the shoulders of school administrators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Students who learn using computers will have a definite advantage in life over students who have not learned to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The use of computers in schooling will erode the privacy of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Effective teachers do not need to use computers in their teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Using computers with young children will destroy their ability to develop good keyboarding skills and we will end up with a world full of people who "hunt and peck".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Computers can be used in courses such as English, Art, Music, and Creative Writing just as well as with courses in Science and Mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. With computers, educators have the opportunity to transform outmoded methods presently used for schooling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Students who use computers to learn with will become passive students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. If we had better trained teachers we would not have to worry about using computers in education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lessons on computers can be effective because they can correct student errors in a private, impersonal way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. With the right computer learning, students could learn to take greater responsibility for their own progress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. With the right computer learning, students could develop more confidence in their ability to learn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Many teachers will not be able to learn to use computers no matter how they try.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. I feel confident that instruction could be organized for my child(ren) using computer programs that "instruct".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. When was the most recent occasion that your child did computer work during class time? (Check one)
- Never
 - More than 3 weeks ago
 - More than 2 weeks ago but within the last 3 weeks
 - More than 3 days ago but within the last 2 weeks
 - Within the last 3 school days.
15. Which of the rules for apportioning computer time do you think is most commonly used by teachers at your child's school? (Check all that apply)
- Equal time for all students in a class.
 - More time for the slower-learning students.
 - More time for students who complete their other work first.
 - More time for students who do not have a computer at home.
 - More time for students who have more interest in computers.
 - Other: _____
16. How many minutes per week, on average, does your child use computers during class time?
- | | | |
|---|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 30 - 59 minutes | <input type="checkbox"/> 90 - 119 minutes |
| <input type="checkbox"/> Less than 30 minutes | <input type="checkbox"/> 60 - 89 minutes | <input type="checkbox"/> 120 minutes or more |
17. What is the total number of computers for student use in your child's school?
- | | | |
|---------------------------------------|----------------------------------|-------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 10 - 19 | <input type="checkbox"/> 30 - 39 |
| <input type="checkbox"/> Less than 10 | <input type="checkbox"/> 20 - 29 | <input type="checkbox"/> 40 or more |

Current use of computers compared to ideal use. For the following computer uses, indicate in the left hand column your perceptions about how you think computers are currently being used in your child's school (i.e., the actual use). In the right hand column, indicate your expectations about how you think computers should be used in schools (i.e., the ideal use). Please rate each use from 1 (No Use) to 5 (Wide Spread Use). Place a check in the appropriate box. For each computer use, you should place a check in the left column (Current Use) and a check in the right column (Ideal Use). If you don't have enough information regarding "Current Use", please check the "Don't Know" box.

Scale 1 = No Use 2 = Limited Use 3 = Moderate Use
 4 = General Use 5 = Wide Spread Use

Current Use						Computer Uses					Ideal Use					
No Use	Moderate Use		Wide Use	Don't Know		No Use	Moderate Use		Wide Use		No Use	Moderate Use		Wide Use		
1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Keyboarding (learning proper keyboarding techniques)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Databases and spreadsheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Graphics and creative arts tools (e.g., desk top publishing, drawing, drafting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Programming and operating systems (e.g. BASIC, Logo, MS-DOS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Telecommunications (e.g., on-line databases, public bulletin boards, electronic mail)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Drill and practice programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Problem solving and tutorial programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Simulations (e.g., instructional games, microworlds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. Multimedia (e.g., videodisks, full motion video)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Teacher record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Teacher word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. School administrative record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Computer literacy (learning about computers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments (if any). Your comments are most welcome and will be added to my database of information.

Please remember to sign the consent form at the bottom of the first page and return it and the questionnaire to your child's school secretary who will then separate the forms and return them to me.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the Instructional Materials Centre, 624-3515, or at home, 624-1199.

Thanks again,

Richard Smith

APPENDIX D

Business Computer Attitude Questionnaire

Directions: Place check marks in the appropriate boxes. Please answer honestly; there are no right or wrong answers. Also remember to sign the consent form on the first page and return both items in the enclosed, stamped envelope. Thank you for your cooperation.

1. In what community is your business located? (Check the primary location)

- | | |
|------------------------------------|--------------------------------------|
| <input type="checkbox"/> Nampa | <input type="checkbox"/> Peace River |
| <input type="checkbox"/> Grimshaw | <input type="checkbox"/> Berwyn |
| <input type="checkbox"/> Brownvale | <input type="checkbox"/> Dixonville |
| <input type="checkbox"/> Manning | <input type="checkbox"/> Other |

2. How would you describe the size of your business?

- Small Medium Large

3. What is the number of employees in your company in the Peace Country:

- | | | |
|-------------------------------------|-----------------------------------|------------------------------------|
| <input type="checkbox"/> 10 or less | <input type="checkbox"/> 31 to 40 | <input type="checkbox"/> 50 to 100 |
| <input type="checkbox"/> 11 to 20 | <input type="checkbox"/> 41 to 50 | <input type="checkbox"/> 100+ |
| <input type="checkbox"/> 21 to 30 | | |

4. Please indicate your company's or organization's primary business activity:

- Retailer/Distributor
 - Agriculture/Construction/Mining/Oil/Transportation/Utilities
 - Manufacturer/Communications
 - Finance/Banking/Insurance/Real Estate/Accounting
 - Government (all levels)/Education
 - Health/Medical/Legal Service/Engineering/Architecture
 - Food Services
 - Other business or service (please specify below)
-

5. Does your business use computers in its operations?

- Never Occasionally Always
 Rarely Usually

6. Do you hire Peace River School Division students or graduates as employees?

- Yes No

7. Do you personally have a computer in your home which you personally use?

- Yes No

8. How many hours of courses or workshops in the use of computers have you taken? (Check one)

- | | | |
|----------------------------------|----------------------------------|----------------------------------|
| <input type="checkbox"/> Zero | <input type="checkbox"/> 20 - 29 | <input type="checkbox"/> 40 - 49 |
| <input type="checkbox"/> 1 - 9 | <input type="checkbox"/> 30 - 39 | <input type="checkbox"/> 50+ |
| <input type="checkbox"/> 10 - 19 | | |

9. What are the number of times you have personally used a computer for any reason in the past 14 days? (Check one)

- | | | |
|--------------------------------------|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 5 - 9 times | <input type="checkbox"/> 15 - 19 times |
| <input type="checkbox"/> 1 - 4 times | <input type="checkbox"/> 10 - 14 times | <input type="checkbox"/> 20+ times |

To what extent do each of the following phrases characterize your own feelings and attitudes about computers and their use in schooling? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale	1 = Strongly Disagree 4 = Agree	2 = Disagree 5 = Strongly Agree	3 = Neutral		
	Strongly Disagree		Neutral		Strongly Agree
	1	2	3	4	5
1. Training teachers to use computers should be a high priority.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Using computers in school management will improve the operation of most schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. With computers we have the opportunity to improve instruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The evil of computers in schooling is that they will eventually replace a lot of good teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. School students would find learning with computers challenging and interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Using computers to learn will diminish the physical fitness of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Most any educator can find a substantial use for a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Most school administrators should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. A computer is nothing more than a glorified typewriter attached to an electric calculator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Lessons on computers can be effective because they can correct student errors immediately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Learning through the use of computers is dull and repetitious.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Using computers in the classroom will create cold classroom atmospheres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The use of computers in schooling will erode the privacy of teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Using computers in schooling is just another fad that will be replaced with some other fad sooner or later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Using computers to teach is not any more effective than using good books so why go to the expense of putting computers in schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Effective administrators do not need computers to operate school effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Disagree	Neutral			Strongly Agree
	1	2	3	4	5
17. Most teachers should learn to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. If computers are used in schooling, students will not develop basic skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Computers will only put more work on the shoulders of school administrators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Students who learn using computers will have a definite advantage in life over students who have not learned to use computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The use of computers in schooling will erode the privacy of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Effective teachers do not need to use computers in their teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Using computers with young children will destroy their ability to develop good keyboarding skills and we will end up with a world full of people who "hunt and peck".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Computers can be used in courses such as English, Art, Music, and Creative Writing just as well as with courses in Science and Mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. With computers, educators have the opportunity to transform outmoded methods presently used for schooling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Students who use computers to learn with will become passive students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. If we had better trained teachers we would not have to worry about using computers in education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lessons on computers can be effective because they can correct student errors in a private, impersonal way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. With the right computer learning, students could learn to take greater responsibility for their own progress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. With the right computer learning, students could develop more confidence in their ability to learn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Many teachers will not be able to learn to use computers no matter how they try.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. If I were a teacher, I feel confident that I could organize instruction for my students using computer programs that "instruct".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To what extent do each of the following phrases characterize your own *perceptions about computers and their use in Peace River School Division schools*? Please rate each phrase from 1 (Strongly Disagree) to 5 (Strongly Agree). Place a check in the appropriate box.

Scale 1 = Strongly Disagree 2 = Disagree 3 = Neutral
 4 = Agree 5 = Strongly Agree

	Strongly Disagree		Neutral		Strongly Agree
1. Schools in P.R.S.D. have a sufficient number of computers so students have adequate access to computers.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
2. Educators in P.R.S.D. schools have a good general knowledge of computers.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
3. The atmosphere in P.R.S.D. schools does not encourage the use of computers.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
4. Students need to learn appropriate keyboarding skills when they start to use computers.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
5. P.R.S.D. schools are adequately preparing students to use computers in continuing their education and/or in their adult lives.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
6. Peace River School Division cannot afford the cost of computers.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
7. Computer resources are distributed equitably within P.R.S.D. schools.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
8. Computer resources are distributed equitably throughout Peace River School Division.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
9. Computers are taking scarce resources away from other important educational areas.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
10. Integrating computers into daily schooling should be a top educational priority.	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Current use of computers compared to ideal use. For the following computer uses, indicate in the left hand column your perceptions about how you think computers are currently being used in P.R.S.D. schools (i.e., the actual use). In the right hand column, indicate your expectations about how you think computers should be used in schools (i.e., the ideal use). Please rate each use from 1 (No Use) to 5 (Wide Spread Use). Place a check in the appropriate box. For each computer use, you should place a check in the left column (Current Use) and a check in the right column (Ideal Use). If you don't have enough information regarding "Current Use", please check the "Don't Know" box.

Scale 1 = No Use 2 = Limited Use 3 = Moderate Use
 4 = General Use 5 = Wide Spread Use

Current Use						Computer Uses					Ideal Use				
No Use	Moderate Use			Wide Use	Don't Know		No Use	Moderate Use			Wide Use				
1	2	3	4	5			1	2	3	4	5				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Keyboarding (learning proper keyboarding techniques)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Databases and spreadsheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Graphics and creative arts tools (e.g., desk top publishing, drawing, drafting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Programming and operating systems (e.g. BASIC, Logo, MS-DOS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Telecommunications (e.g., on-line databases, public bulletin boards, electronic mail)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Drill and practice programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Problem solving and tutorial programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Simulations (e.g., instructional games, microworlds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. Multimedia (e.g., videodisks, full motion video)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Teacher record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Teacher word processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. School administrative record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Computer literacy (learning about computers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Additional comments (if any) Your comments are most welcome and will be added to my database of information.

Please remember to sign the consent form at the bottom of the first page and return it and the questionnaire in the enclosed stamped envelope.

If you have any questions about the questionnaire or the study in general, you may contact me at the School Division's Instructional Materials Centre, 624-3515.

Thank you again,

Richard Smith

APPENDIX E

Teacher's Covering Letter

October 27, 1993

Dear Colleague,

As you may know, last year I took an educational leave to do the course work for a Master's degree in the faculty of education at the University of Victoria, and I am now working on my thesis. The goal of my research is to examine the attitudes of parents, students, educators, and business people toward the use of computers in Peace River School Division. This study has been approved by the School Division.

The attached questionnaire will form the basis of the research for my Master's thesis. I am sending similar questionnaires to all educators in PRSD and hope that I can achieve a 100% return. I will also be sending questionnaires to parents, students, and business people. After the questionnaires are completed, to enhance the data, I will also ask a small random selection of participants to be briefly interviewed, but completion of the questionnaire is in no way an agreement to be interviewed.

Although I would very much appreciate your help, you are under no obligation to participate in this study. It is completely voluntary and non-participation will have no effect on your employment. Your name will not appear in the study. All information obtained will be kept strictly confidential and will be stored in a locked file cabinet in a locked office.

Please complete the attached questionnaire as soon as possible. Sign the consent form at the bottom of the page and return it and the questionnaire to your school's Educational Technology Committee representative who will then separate the forms and return them to me.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the Instructional Materials Centre, 624-3515, or at home, 624-1199.

Thank you very much for your cooperation,

Richard Smith

I, the undersigned, give my permission to participate in the study described above. I understand that anonymity is assured (My name will not be used on any report.) and that the information given is confidential.

(sign here please)

(date)

Student's Covering Letter

<enter date field>

Dear Student,

I am a teacher with Peace River School Division, and I am also undertaking a graduate program in the faculty of education at the University of Victoria. The attached questionnaire will form the basis of my Master's thesis. The goal of my study is to examine the attitudes of parents, students, educators, and business people toward the use of computers in Peace River School Division. This study has been approved by the School Division. You and your parents are one of approximately 300 students and parents from throughout the Peace River District that have been randomly selected to participate in the study.

I will also give you a questionnaire similar to the one you fill out to take home to your parents, and I would ask you to please return your parent's completed questionnaire to your school secretary.

Although I would very much appreciate your help, you are under no obligation to complete this questionnaire. It is completely voluntary. Your name will not appear in the study. All information obtained will be kept strictly confidential and will be stored in a locked file cabinet in a locked office. After the questionnaires are completed, to enhance the data, I would also like to interview a small random selection of participants, but completion of the questionnaire is in no way an agreement to be interviewed.

Please sign the statement of permission below to indicate your willingness to participate in the study. Before you hand in your questionnaire please separate the permission statement from the questionnaire so I will not be able to associate your name with a specific questionnaire.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the School Division's Instructional Materials Centre, 624-3515 or at home, 624-1199.

Thank you very much for your cooperation,

Richard Smith

I, the undersigned, give my permission for participation in the study described above. I understand that anonymity is assured (My name will not be used on any report.) and that the information given is confidential.

(sign here please)

(date)

Parent's Covering Letter

<center date field>

Dear Parent(s),

I am a teacher with Peace River School Division, and I am also undertaking a graduate program in the faculty of education at the University of Victoria. The attached questionnaire will form the basis of my Master's thesis. The goal of the study is to examine the attitudes of parents, students, educators, and business people toward the use of computers in Peace River School Division. This study has been approved by the School Division. You and your child are one of approximately 300 parents and students from throughout the Peace River District that have been randomly selected to participate in the study. Your child completed a similar questionnaire at school, and I am now asking you to please also participate in the study. I have also previously sent questionnaires to educators and business people.

Although I would very much appreciate your help, you are under no obligation to complete this questionnaire. It is completely voluntary. Your name will not appear in the study. All information obtained will be kept strictly confidential and will be stored in a locked file cabinet in a locked office. After the questionnaires are completed, to enhance the data, I would also like to interview a small random selection of participants, but completion of the questionnaire is in no way an agreement to be interviewed.

Please complete the attached questionnaire as soon as possible and return it, along with the signed statement of permission, to the school secretary in your child's school. The school secretary will separate the permission statement from the questionnaire so I will not be able to associate your name with a specific questionnaire.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the School Division's Instructional Materials Centre, 624-3515 or at home, 624-1199.

Thank you very much for your cooperation,

Richard Smith

I, the undersigned, give my permission for participation in the study described above. I understand that anonymity is assured (My name will not be used on any report.) and that the information given is confidential.

 (sign here please)

 (date)

Business Covering Letter

<enter date field>

«business_name»
 Attn: «person_full_name»
 «address»
 «town», AB
 «postal_code»

Dear «salutation»,

I am a teacher with Peace River School Division, and I am also undertaking a graduate program in the faculty of education at the University of Victoria. The attached questionnaire will form the basis of my Master's thesis. The goal of the study is to examine the attitudes of parents, students, educators, and business people toward the use of computers in Peace River School Division. This study has been approved by the School Division. Your business is one of approximately 150 businesses from throughout the Peace River District that has been randomly selected to participate in the study. I am also sending similar questionnaires to educators, parents, and students.

Although I would very much appreciate your help, you are under no obligation to complete this questionnaire. It is completely voluntary. Your name will not appear in the study. All information obtained will be kept strictly confidential and will be stored in a locked file cabinet in a locked office. After the questionnaires are completed, to enhance the data, I would also like to interview a small random selection of participants, but completion of the questionnaire is in no way an agreement to be interviewed.

Please complete the attached questionnaire as soon as possible and return it, along with the signed statement of permission, in the stamped envelope provided.

If you have any questions about the questionnaire or the study in general, please don't hesitate to contact me at the School Division's Instructional Materials Centre, 624-3515.

Thank you very much for your cooperation,

Richard Smith

I, the undersigned, give my permission for participation in the study described above. I understand that anonymity is assured (My nor my business' name will not be used on any report.) and that the information given is confidential.

 (sign here please)

 (date)

VITA

Surname: Smith

Given Names: Richard Walker

Place of Birth: Evanston, Illinois, United States

Educational Institutions Attended:

University of Victoria	1992 to 1995
McGill University	1973 to 1974
University of Pennsylvania	1966 to 1970

Degrees Awarded:

B.Sc.	University of Pennsylvania	1970
Diploma in Education	McGill University	1974

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Title of Thesis:

Attitudes of Stakeholders Toward Computer Use in Schools

Author



Richard Walker Smith
December 9, 1995