

**CURRICULUM SCOPE AND SEQUENCE FOR TEACHING APPLICATIONS:  
INFORMATION COMMUNICATION TECHNOLOGY EDUCATION  
KINDERGARTEN TO GRADE 7  
IN BRITISH COLUMBIA, CANADA**

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DEDICATION

To Ron and Patrick

## ABSTRACT

This project consists of two components: The first component in print form provides rationale, background, related literature and survey information. The second component is the development of a scope and sequence website. This website, the main product of this project, is available on the attached CD Rom. The question which provided the genesis for this project was: Which skills, content, assessment strategies, time frame and format will provide the most practical and productive scope and sequence for implementation of the two Integrated Resource Packages, (now called Resource Books): *Applied Skills K to 7: Technology Education Component* and *Information Technology K to 7*, mandated for use in public schools by the British Columbia Ministry of Education? These Resource Books do not provide a scope and sequence framework. They contain limited teaching strategies, assessment information and resources. A review of current literature and information from two teacher and two student surveys, indicated the need for a practical framework of scope and sequence. My search for existing information for such a scope and sequence led to print sources and websites throughout British Columbia and Canada, and into the U.S.A. I wrote my scope and sequence as a website using the following three sources, with permission, as basis: Mountain Brook City Schools Technology Scope & Sequence; Learning Outcomes: School District No. 5 Scope & Sequence; School District No. 6 Paired Activities for Simplified Technology Skills Scope & Sequence. The grids, descriptors, examples of teaching strategies, assessment information and additional resources on the website will allow teachers to understand the continuum of skill and concept introduction, reinforcement and independent use. Also outlined are attainable

implementation goals, with practical suggestions. It is my hope that this scope and sequence website will prove useful to teachers for curriculum and professional development planning and will truly enhance learning through technology.

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## TABLE OF CONTENTS

DEDICATION.....	iii
ABSTRACT.....	iv
ACKNOWLEDGEMENTS.....	vi
LIST OF FIGURES.....	ix
CHAPTER I INTRODUCTION.....	1
CHAPTER II LITERATURE REVIEW.....	3
Defining Scope and Sequence.....	3
Information Communication Technology Education in Elementary School.....	4
Teacher and Student Self-efficacy and Proficiency Levels.....	6
Integration of Information Communication Technology Education.....	6
Promoting Use of the Scope and Sequence.....	7
Summary.....	8
CHAPTER III SURVEY INFORMATION.....	10
Surveys Used.....	10
Administration and Collation.....	11
Strengths and Weaknesses.....	11
Interpretation of Data.....	11
Implications.....	20
CHAPTER V SCOPE AND SEQUENCE.....	22
Website on CD Rom.....	23

CHAPTER VI CONCLUSION.....	24
References.....	26
APPENDICES.....	31
A. Survey: Self-evaluation of Technology Proficiencies for Teachers.....	31
B. Survey: Self-evaluation of Technology Proficiencies for Students.....	35
C. Survey: Computer Self-efficacy Survey for Teachers.....	36
D. Survey: Computer Self-efficacy Survey for Students.....	40

## LIST OF FIGURES

Figure 1.0	Teacher Proficiencies Survey Part 4 - Q1.....	12
Figure 1.1	Teacher Proficiencies Survey Part 4 - Q3.....	13
Figure 1.2	Teacher Proficiencies Survey Part 1 - Q1.....	14
Figure 1.3	Teacher Proficiencies Survey Part 1 - Q2.....	14
Figure 1.4	Teacher Proficiencies Survey Part 5 - Q1.....	15
Figure 2.0	Grade 7 Student Proficiency Survey Part 3 - Q3.....	16
Figure 3.0	Grade 6 Student Proficiency Survey Part 3 - Q3.....	16
Figure 1.5	Teacher Proficiencies Survey Part 5 - Q2.....	17
Figure 2.1	Grade 7 Student Proficiency Survey Part 3 - Q2.....	17
Figure 3.1	Grade 6 Student Proficiency Survey Part 3 - Q2.....	18
Figure 1.6	Teacher Proficiencies Survey Part 5 - Q6.....	19
Figure 2.2	Grade 7 Student Proficiency Survey Part 3 - Q6.....	19
Figure 3.2	Grade 6 Student Proficiency Survey Part 3 - Q6.....	20

# CHAPTER I

## INTRODUCTION

A website providing a scope and sequence for information communication technology education for use in Kindergarten to Grade 7 in British Columbia is the main product of this project. A copy of the website is available on the attached CDROM.

A review of current literature indicated that while the British Columbia Ministry of Education has provided two Integrated Resource Packages, (now called Resource Books): *Applied Skills K to 7: Technology Education Component* and *Information Technology K to 7*, with mandates for teachers, these books provide little in the way of practical direction. Support in the form of a user-friendly framework was needed. Practical support was also clearly needed for the essential task of integrating information communication technology in educational programs. Information from surveys of teachers and senior students in one elementary school confirmed that there is a wide range of abilities, interests and comfort levels with information communication technology education. With a scope and sequence framework teachers could better appreciate the continuum of skills and concepts related to information communication technology education, and see how long and short term goal planning, for curriculum and for professional development, could enhance learning.

The original intent of this project was to have it written specifically for one elementary school. I have changed this to expand the opportunities for use to all elementary schools in B.C. This was also done to protect the anonymity of the staff and students who participated in the surveys. The scope and sequence with related examples

of teaching strategies, assessment information and resource material has been written as a website to provide the most practical availability for teachers. The website information on the attached CDROM will be posted on School District No. 5 website ([www.sd5.bc.ca](http://www.sd5.bc.ca)) beginning in September, 2000.

## CHAPTER II

### LITERATURE REVIEW

This chapter begins with a definition of scope and sequence leading to an understanding of how this is set up as a practical framework for teachers to use. Next I identify the need for information communication technology education in our elementary schools, providing the mandates in the two documents from the British Columbia Ministry of Education. I then examine the need to determine the self-efficacy and proficiency levels of staff and students for optimum use of the scope and sequence and discuss opinions supporting the idea that integration must be a primary consideration in planning the scope and sequence. Lastly I look at factors that will promote teacher use of the scope and sequence.

#### Defining Scope and Sequence

Scope and sequence is an organizational framework that indicates to teachers when each skill or concept “should be introduced, reinforced or at what point a student should become an independent user” (Mountain Brook City Schools, 2000). The organization is best done in two parts. The first part is comprised of grids that graphically illustrate the time frames suggested for each skill or concept. In the second part descriptors are provided, divided by grade level or subject area and include examples of teaching strategies. The scope and sequence framework needs to be user-friendly while at the same time providing consistency for curriculum planning and direction for professional development planning. Scope and sequence frameworks, “like myths and metaphors, help us make sense of our world” (Ryder, 2000).

## Information Communication Technology Education in Elementary Schools

The Ministry of Education in British Columbia has drafted a new five-year technology plan called *Conditions for Success*. The new direction in information communication technology education is focused on how computers are actually being used in the schools. “The use of technology provides new challenges and opportunities in education. Parents, teachers and the business sector have increased their expectations that schools ensure students are ‘Information and Communications Technology’ literate” (British Columbia Ministry of Education, 2000). The British Columbia Teachers’ Federation has been directly involved in the planning process. Their focus is:

that technology use in the schools should be consistent with the aims of a public education system preparing students to be technologically literate and socially responsible citizens who can participate in a democratic society and a changing work and social environment (British Columbia Teachers’ Federation, 2000).

Putting this into practice is the challenge. As Chris Dede points out:

One of the mistakes that we made in implementing educational technology was focusing first on students rather than teachers ... People begin to use technology when it is readily accessible ... if not, teachers who try to use technology usually burn out. Why? Because they didn’t have an infrastructure that supported them (Dede in O’Neil, 1995, p.7-9).

A practical scope and sequence framework can provide that needed support. The Telemation Project of the Far West Laboratory in 1995 also “showed that the systematic approach to implementation was the key to success with teacher-application of

telecommunications and Internet resources” (Cradler, 2000). It is important, however, to keep in mind that “no single model or framework is likely going to satisfactorily capture the complexity of pedagogical technical, organizational, and institutional issues inherent with Web-based learning” (Owston, 2000). The Ministry of Education in British Columbia has provided two Resource Books, formerly called Integrated Resource Packages, to assist educators in B.C. with information technology education. *The Applied Skills K to 7: Technology Education Component* mandate is described as follows:

This Integrated Resource Package (IRP) contains learning outcomes and support materials for the Kindergarten to Grade 7 Technology Education curriculum. It has been designed to help teachers integrate technology education into other subjects to meet the requirements of the K to 12 Education Plan. It is organized to link the learning outcomes with the instruction and assessment strategies and learning resources (British Columbia Ministry of Education, 1995, p.1).

*The Information Technology K to 7* Resource Book states:

The aim of the Information Technology K to 12 curriculum is to help students develop information literacy and the lifelong learning patterns they need to live and work effectively in an information-rich technological society. To achieve this, the curriculum provides a framework for students to learn how to solve problems using information technology. Information technology is an integrated area of study from Kindergarten to Grade 10 (British Columbia Ministry of Education, 1996, p.1).

### Teacher and Student Self-efficacy and Proficiency Levels

Worzel (2000) found that a national study showed that about 55% of Canadian teachers have had some sort of training in new technology in the classroom, yet 75% reported that they didn't feel comfortable or competent using it. In a policy paper for the Council of Ministers of Education in Canada statements such as, "the differences among learners are increasing" and "the role of the teacher should be rethought" and "learning is changing rapidly" (Laferriere, 1997) also indicated the need to examine the stages teachers and learners are at for effective information communication technology planning. How new technology is adopted is generally related to the users' interest in doing what they do well in an even better way, and the users' interest in doing things of a different nature than the ones they are used to doing (TeleLearning Network, 1998). "Technology is interesting and empowering only when used in interesting and empowering ways and so it really does come back to who is using it, how, and why, and to what end" (Lovely, 1997).

### Integration of Information Communication Technology Education

The purpose of an information communication technology scope and sequence plan "is to give guidance and sequence in the development of skills and concepts, always keeping in mind that these are to be used in an integrated setting with other subjects, not to be taught in isolation only" (Blue Jay Elementary School, 1995, p.1). "The U.S. Office of Technology Assessment concluded that 'it is becoming increasingly clear that technology in and of itself, does not directly change teaching or learning. Rather, the critical element is how technology is incorporated into instruction'" (U.S. Congress

Office of Technology Assessment, 1995, p.57 in Owston & Wideman, 1998). It was found that to provide students with education that can prepare them for a technology-laden world the most relevant education programs have these three key features:

The technology supports student performance of an authentic task; the technology use is integrated into activities that are a core part of the classroom curriculum; technology is treated as a tool to help accomplish a complex task rather than a subject of study for its own sake (North Central Regional Educational Laboratory, 2000).

Not losing sight that an improved instructional program for students is the primary goal keeps the focus on integration when building technology programs (Brooks, 1999).

Teachers who use the technology must be the ones in charge of that use, not the outside technology experts (Miller & Olson, 1995, p.76). Teachers' past practice and what the teacher is trying to achieve, has more important effect on information technology education in the classroom than anything about the technology itself (Miller & Olson, 1994, p.123). Information technology education "should be integrated to ensure student participation, accommodate different learning styles, and support both individual and group learning processes," and, "educators will have to have the academic and technical knowledge, skills and resources to confidently and effectively integrate information technology education into teaching practices" (British Columbia Ministry of Education, 2000).

#### Promoting Use of the Scope and Sequence

The infusion of information technology education creates a zone of uncertainty for both teachers and learners, engaging them in a process of risk and exploration

(TeleLearning Network, 1998). Envisioning a range of desired outcomes, keeping in mind that every classroom is a unique learning environment with teacher and students at a variety of ability levels can be a starting place to get appropriate supports and motivators into effect (McCullen, 1999, p.48). With curriculum goals and technology uses outlined together in a framework such as the scope and sequence and with the related sections on teaching strategies, assessment and resources, teachers and students can begin the risk-taking. Although the Ministry of Education resource books do not contain practical, tested lesson plans to integrate information technology across the curriculum there are sources that do so. ITCC, the Information Technology Curriculum Consortium, is one such site. “The ITCC was formed to save unnecessary duplication of effort in B.C. school districts in meeting the new Ministry guidelines” (ITCC, 2000). Similarly, “‘Computers for Lunch’ is a cost-free, stress-free and relevant skill-building ‘class’ that teachers anywhere can work on in their own time and at their own pace to develop their computer skills, get help and support and advice” (Simon Fraser University, 2000). Another site that will encourage teachers to use the new technologies and to integrate computers into classroom work is “The Daybook,” a teacher-created searchable database for online lesson plans that reflect the K-7 British Columbia curriculum (Computer Using Educators of BC, 2000).

### Summary

From the review of the literature it is clear that a need exists for a user-friendly scope and sequence to provide consistency for curriculum planning and direction for professional development planning related to information communication technology

education. Also confirmed in the literature is the fact that teacher and student self-efficacy and proficiency levels vary considerably and this is a key element in planning for implementation of information communication technology planning in education. Similarly, the need to integrate the skills and concepts of information communication technology into curriculum rather than viewing it as a subject taught in isolation is substantiated in the literature, as is the need to provide practical support to promote the integrated use of these skills and concepts. Given these findings, the next step is to examine survey information to learn if teachers and students currently in the British Columbia elementary education system concur.

## CHAPTER III

### SURVEY INFORMATION

The surveys were an important step in the development of the information communication technology education scope and sequence. It is, however, important to not lose sight of the fact that the goal of this project was the development of the scope and sequence website found on the attached CD Rom. The main project result is the website.

This chapter begins with rationale for conducting the surveys, then provides a description of the surveys used, details of the administration and collation process, a discussion of the strengths and weaknesses of these documents and this process. The second part of the chapter will provide interpretation of the data, ending with a statement of the implications arising from the surveys.

#### Surveys Used

Four surveys were used in this study, two for staff and two for students in Grades Six and Seven. All surveys were given at one elementary school. The first survey was called, "Self-Evaluation of Technology Proficiencies." The staff survey (Appendix A) was the exact document provided by Patrick Robertson, Technology Education Coordinator for School District No. 5. The student survey (Appendix B) was adapted from the staff survey provided by Mr. Robertson. Both surveys were used with his permission. The second survey was called, "Computer Self-efficacy Scale." Both staff and student versions of this survey (Appendices C and D) were adapted from a scale used by Beaudin (1998) in her thesis project for the University of Lethbridge. Again, the scale was used with permission from Ms. Beaudin.

### Administration and Collation

Permission to administer these surveys was obtained from the University of Lethbridge Ethics Review Committee, School District Director of Instruction, School Principal, and parents where appropriate. Participation in the surveys was completely voluntary for all parties. Staff surveys were given to staff members to complete individually within a time period, and hand in. Student surveys were administered by the author during class time with the questions being read orally to the participating students. Collation was done using the computer program Microsoft Excel. It should be noted that although information regarding Child Care Workers appears on the Self-Evaluation of Technology Proficiencies for School Staff, that data was not used in this study. It remains included for use in future planning.

### Strengths and Weaknesses

A benefit of the use of the School District survey was that teachers did complete the survey and provided information, not only for my study, but also for school and district planning purposes. The student surveys conveyed to the senior students in the school that they were valued in the planning process for technology education and that was a benefit. A weakness noted in all these surveys was that the number of respondents was too few to make generalizations beyond the school level about proficiencies or self-efficacy. Another weakness noted is that contradictory responses appear frequently.

### Interpretation of Data

It is to be noted that the Computer Self-efficacy Scale results are based on a six point scale and the Self-evaluation of Technology Proficiencies Survey results are based

a five point scale. In both cases number one indicates strong disagreement, and the highest number, six or five, indicates strong agreement.

Generally, the survey data concurred with the findings of the literature review regarding the proficiencies and self-efficacy of staff and senior students with information communication technology education. The surveys indicated that teachers generally have some experience with computers; they mainly use word processing software packages; they own or have access to a computer; and have attended computer training courses. Student surveys confirm that the same is true for the students with the exception that generally students have not attended computer training courses. It is noted that there is very little difference between the responses of the Grade 6 and 7 students.

Teachers feel they have basic word processing skills as per in Figures 1.0 and 1.1.

#### **Part 4-Q1** Teacher Proficiencies Survey

Can create a simple word processing document and print.

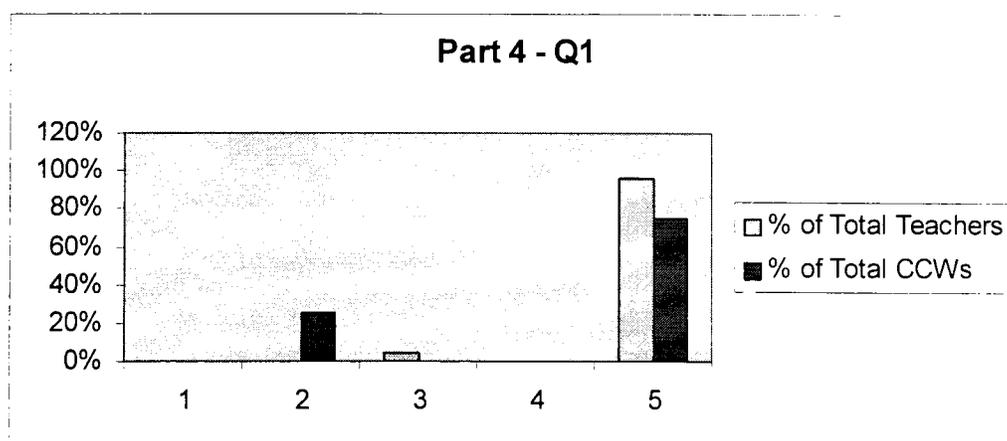


Figure 1.0

### Part 4-Q3 Teacher Proficiencies Survey

Can open an existing word processing document, enter and edit text, change fonts, save and delete files to a disk.

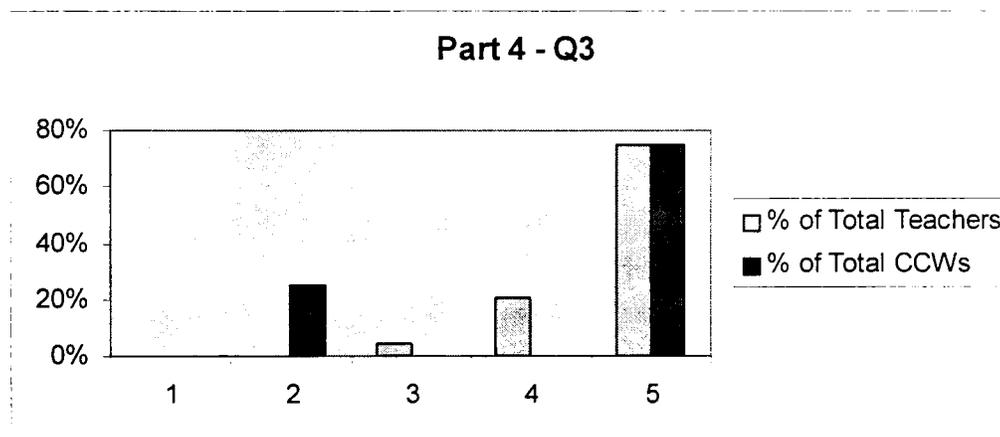


Figure 1.1

The above figures also support indications from the survey that the primary use of computers by teachers is for writing report cards and student exercises and that teachers primarily have their students use computers for writing assignments. Differences between teachers and students appeared in the surveys where students indicated a broader use of computers beyond word processing activities.

Figures 1.2 and 1.3 confirm that teachers surveyed are aware of responsible and ethical use of technology and practice responsible, ethical and legal use of technology, information and software. This was not a part of the student surveys as it related specifically to teacher practice.

**Part 1-Q1** Teacher Proficiencies Survey

Aware of responsible, ethical use of technology

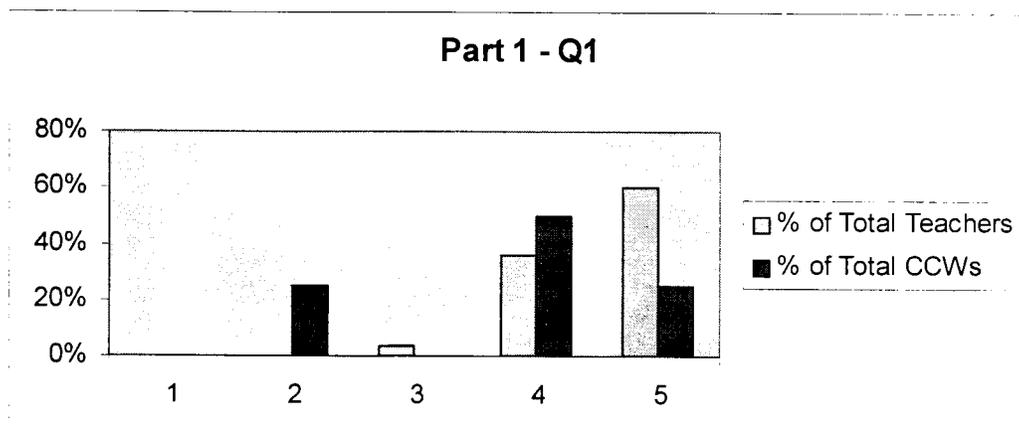


Figure 1.2

**Part 1-Q2** Teacher Proficiencies Survey

Practice responsible, ethical and legal use of technology, information and software.

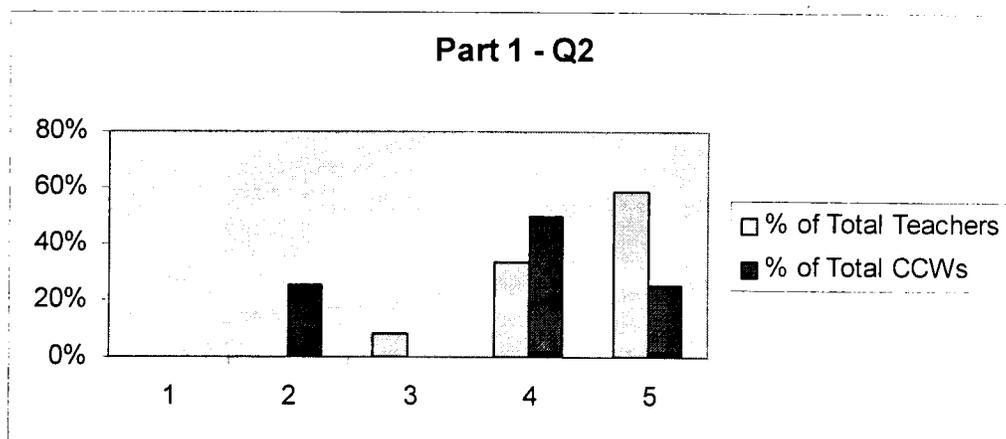


Figure 1.3

Differences between teachers and students appeared when students indicated a broader use of computers beyond word processing activities. In questions of using advanced word processing skills and desk top publishing, teachers indicated less confidence and less competence than students in either grade. This was also true for questions relating to organizing files, designing and maintaining databases and especially with network skills. Examples of differences between staff and students show up with basic e-mail proficiencies as per Figures 1.4, 2.0 and 3.0. Differences between staff and students in web-browsing proficiencies are shown in Figures 1.5, 2.1, and 3.1.

#### Part 5-Q1 Teacher Proficiencies Survey

Can compose and send e-mail messages.

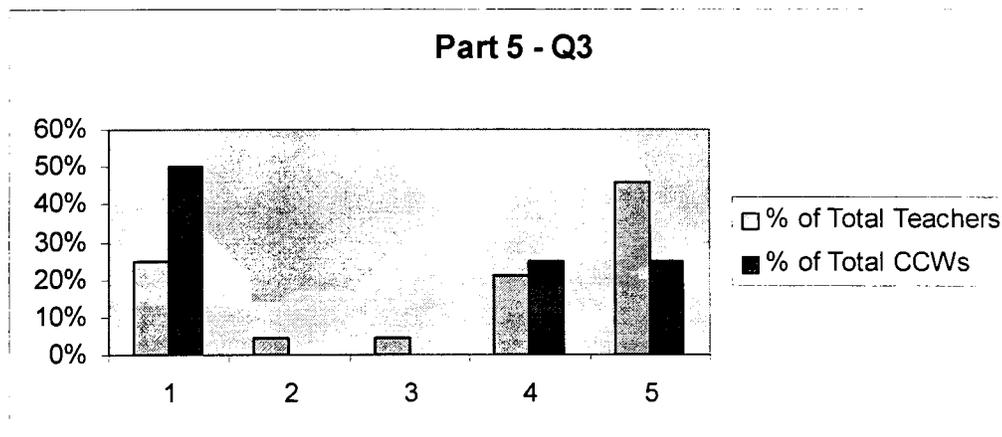


Figure 1.4

**Part 3-Q3 Gr. 7 Student Proficiencies Survey** Can compose and send e-mail messages.

<b>Results</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	5%	5%	0%	15%	75%

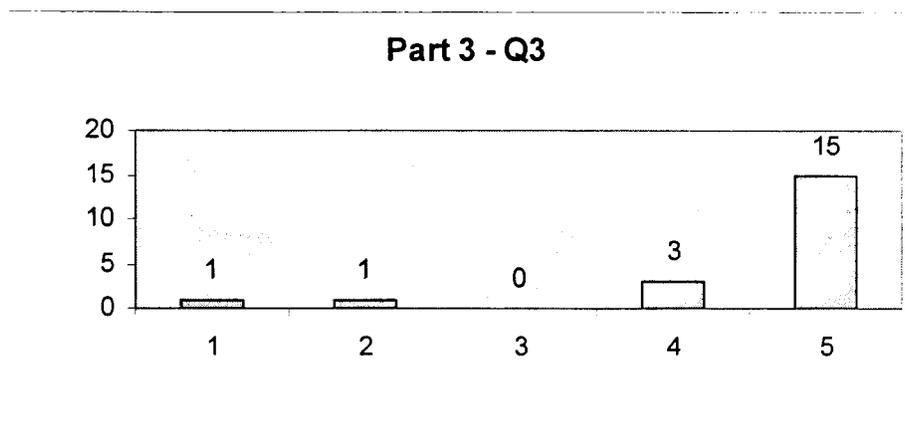


Figure 2.0

**Part 3-Q3 Gr. 6 Student Proficiencies Survey** Can compose and send e-mail messages.

<b>Results</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	5%	5%	0%	15%	75%

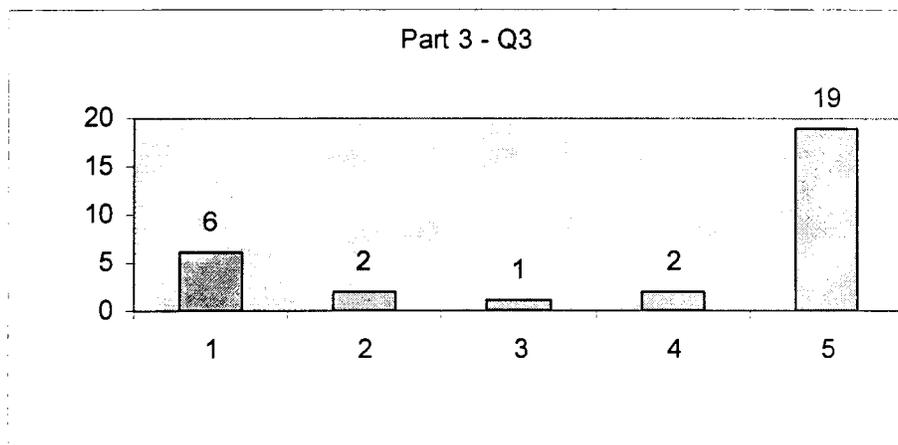


Figure 3.0

**Part 5-Q2** Teacher Proficiencies Survey

Can browse the web.

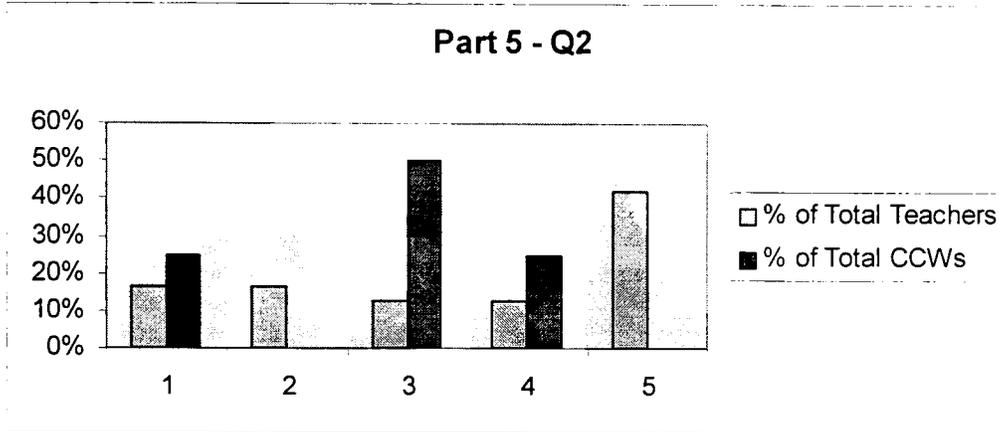


Figure 1.5

**Part 3 - Q2** Grade 7 Student Proficiencies Survey

Can browse the web.

Results	1	2	3	4	5
	10%	0%	0%	5%	85%

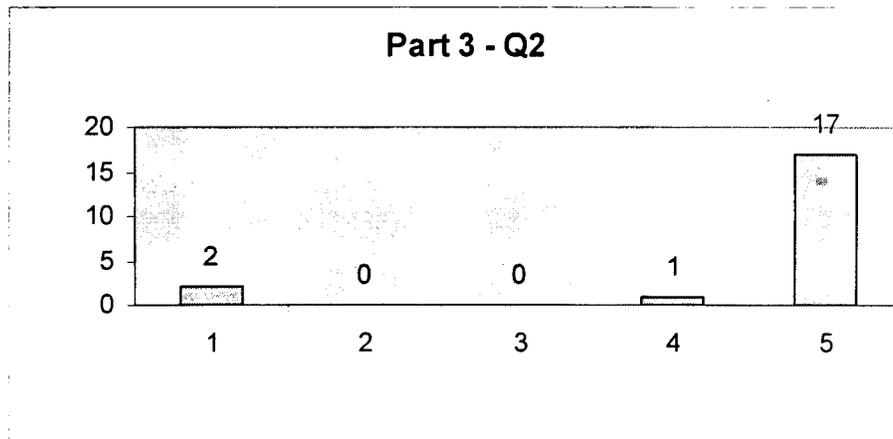


Figure 2.1

### Part 3 - Q2 Grade 6 Student Proficiencies Survey

Can browse the web.

<b>Results</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	10%	0%	0%	5%	85%

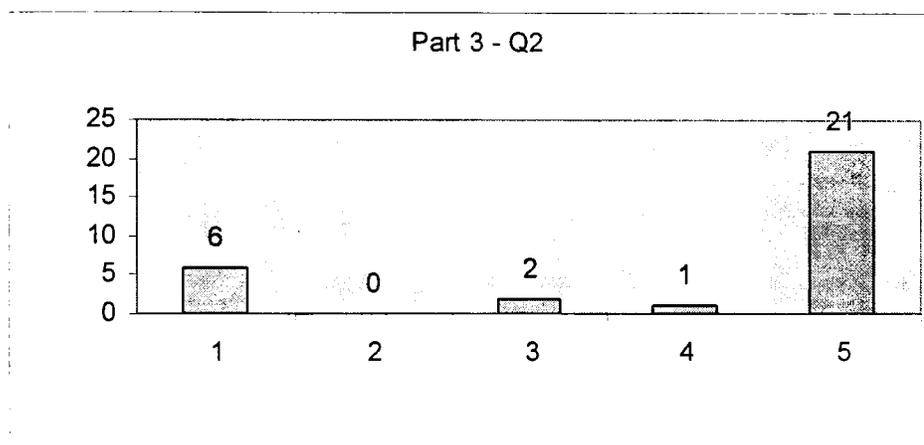


Figure 3.1

Significant differences, and especially significant deficiencies in teacher proficiency, became clear when questions were about use of other aspects of the Internet. Figures 1.5, 2.2, and 3.2 indicate only 4% of the teachers feel they have proficiency in this area whereas the student range is from 25% to 40% in these areas.

In comparing the Grade 6 and 7 students surveyed with the British Columbia Ministry of Education prescribed learning outcomes the following were of significance: Only 30% of Grade 6 students and 35% of Grade 7 students indicated proficiency with use of scanner, digital camera, and video camera. These skills are included at the Grades 4-5 levels of the Ministry learning outcomes checklist.

**Part 5-Q6** Teacher Proficiencies Survey

Can download text and install sounds, pictures, and programs available from the Internet.

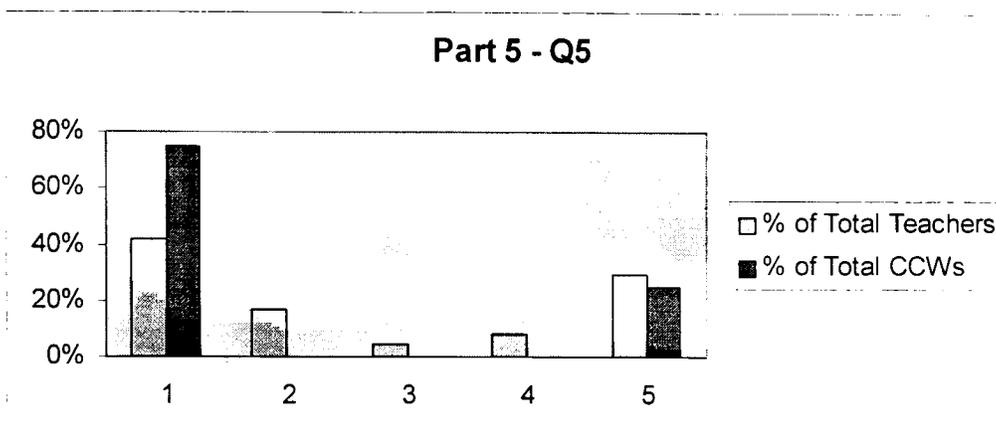


Figure 1.6

**Part 3-Q6** Grade 7 Student Proficiencies Survey

Can download text and install sounds, pictures, and programs available from the Internet.

Results	1	2	3	4	5
	10%	5%	30%	30%	25%

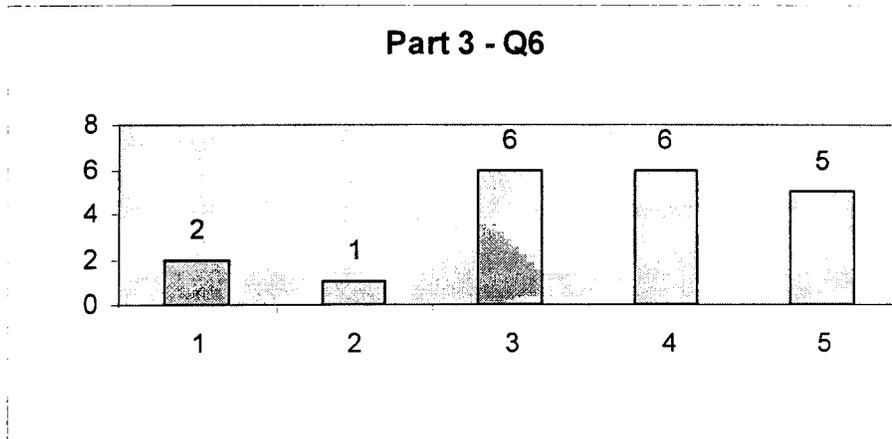


Figure 2.2

### Part 3-Q6 Grade 6 Student Proficiencies Survey

Can download text and install sounds, pictures, and programs available from the Internet.

Results	1	2	3	4	5
	33%	0%	20%	7%	40%

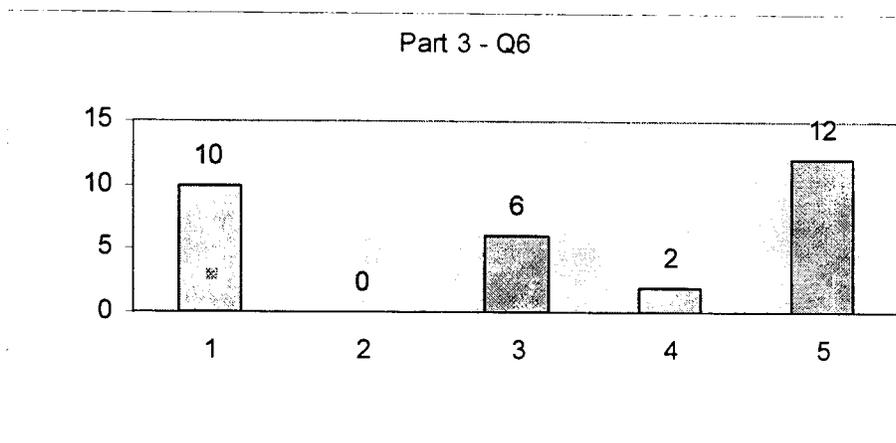


Figure 3.2

Similarly, although more proficient than the teachers, the majority of students in Grades 6 and Grade 7 are not proficient with the use of presentation software such as PowerPoint or HyperStudio although these skills are also on the Ministry checklist for Grades 4-5. Also of interest was the information that individual student differences were more significant than the grade level differences of the students.

#### Implications

Teachers are in need of support and assistance to move beyond word processing activities to the integration of a wider spectrum of information communication technology skills into their daily curriculum. A framework such as my scope and sequence website, with the related support information and activities, will be a useful tool

for teachers to begin this expansion process. The scope and sequence website will also assist teachers to determine where their students are at regarding these skills, regardless of where they should be at according to the Ministry learning outcomes. It will also provide a basis for discussion on controversial issues such as the introduction of formal keyboarding skills and the degree of use of the Internet.

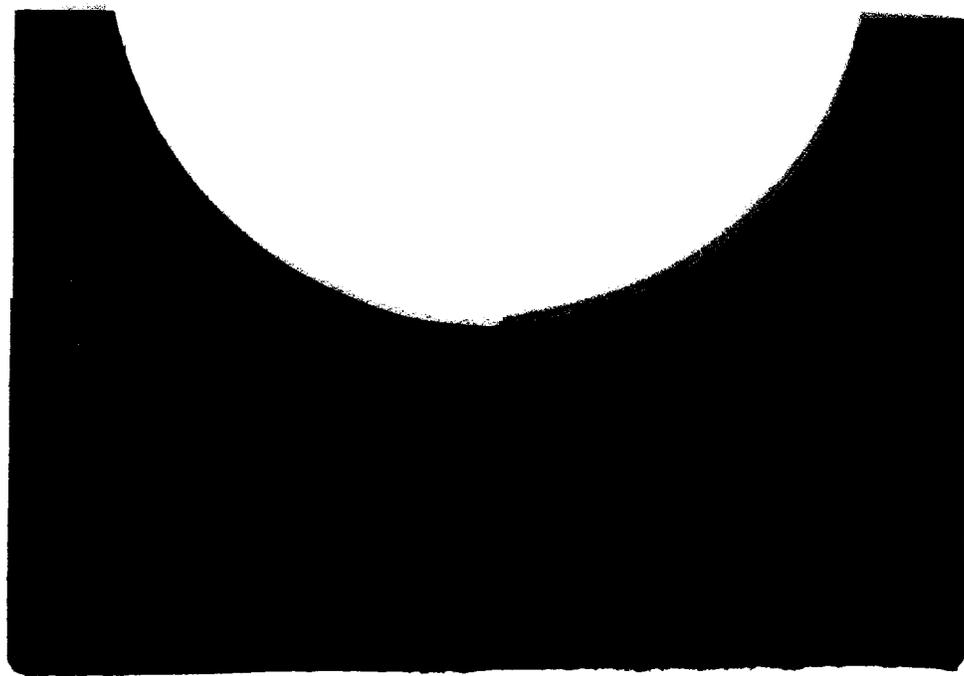
The surveys also indicate the variance in student ability levels, and the fact that several senior students have skill levels exceeding those of their teachers. This provides an opportunity to identify a group of expert students and the option of introducing peer and teacher instruction by students. A further implication of the surveys is that the philosophy of widely held expectations for any grade level must be viewed in light of individual differences, especially in the area of information communication technology education. The three levels of my scope and sequence, introduce, reinforce, and independent use, will assist students and teachers in individually moving through the continuum while maintaining a clear picture of what has come before and what will follow. Finally, the surveys provide direction for staff inservice and professional development, both long and short term.

Interpretation of the data provided by these surveys will begin to address in a small way, the fact noted in the Teaching, Learning and Education Technology Advisory Committee report, *Conditions for Success*, “that actual research in the educational use of computer technology is severely lacking in B.C.” (British Columbia Ministry of Education, 1999).

## CHAPTER IV

### SCOPE AND SEQUENCE

It is essential to view the website on the attached CD Rom to understand the extent of practical information available to teachers on this website. There are five main components of the website. The first are grids for Kindergarten to Grade 7 indicating information communication technology skills and concepts and where each should be introduced, reinforced or used independently. Next are individual grade sites with descriptors of the skills and concepts for that grade level with practical activities suggested, and links to further support activities for those specific skills and concepts. Also provided is a checklist for School District No. 5 (Southeast Kootenay) information communication technology learning outcomes for Kindergarten to Grade 7 with cross references to the earlier grids and descriptors. I have also provided several links to assessment sites, to British Columbia Ministry of Education planning documents, and to sites with curricular activities for teachers.



## CHAPTER V

### CONCLUSION

The information communication technology education scope and sequence website that I have put together is intended to assist teachers in fulfilling the mandate of the British Columbia Ministry of Education. This scope and sequence is a practical framework that allows teachers to graphically and sequentially organize the learning outcomes from the Ministry documents into viable curriculum plans for their classrooms. The provision of examples of teaching strategies, assessment information and resource materials further enhances the practicality of this tool.

Elementary teachers are concerned about several aspects of information communication technology education, not the least of which is the concern that they are being asked to add-on to an already too full curriculum. My scope and sequence website indicates how information communication technology skills and concepts can be integrated into current practice in a systematic way, at a pace suited to teacher and students. Knowledge of the continuum, as provided in my scope and sequence, is essential for setting attainable goals and in avoiding the stress created by lack of direction. It is my hope that the use of this scope and sequence website and the related information provided will help to significantly reduce the attitude that computers get in the way of learning.

The challenge to keep this website as a usable product for teachers lies in the intrinsic challenges of Internet use. Systematic checking is required to ensure that links posted continue to be available. Change is the reality of the Internet and without website

maintenance the site will not be kept current. It is essential also to add sites as new and more relevant information appears. Vetting, limiting, adding and deleting are factors of life on the Internet. I am committed to keeping my information communication technology education website current, practical and available for teachers in British Columbia.

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## APPENDIX A

### Self-evaluation of Technology Proficiencies for Teachers

Please read the following descriptions and award yourself the points (5 being the highest) for all items that describe your level of technology proficiency.

#### Part 1: General

1      2      3      4      5

Aware of responsible, ethical use of technology

1      2      3      4      5

Practice responsible, ethical and legal use of technology, information, and software

1      2      3      4      5

Can describe the basic development and important trends affecting the evolution of technology and its probable future roles in society

1      2      3      4      5

Can implement basic trouble shooting techniques for multimedia computer systems

1      2      3      4      5

Can comfortably lead other teachers through Entry, Adoption, and Adaptation stages

#### Part 2: Application to Curriculum

1      2      3      4      5

Use technology to enhance classroom instruction

1      2      3      4      5

Aware of resources for adaptive devices for students with special needs

1      2      3      4      5

Understand and apply the specific-purpose electronic devices (such as graphing calculator, scientific probes) in appropriate content areas

1      2      3      4      5

Design, deliver, and assess student learning activities that integrate computers/technology for a variety of student grouping strategies and for diverse student populations

1      2      3      4      5

Develop instructional units that involve compiling, organizing, analyzing, and synthesizing of information and use technology to support these processes

### Part 3: Use of Hardware

1      2      3      4      5

Able to turn computer on and off

1      2      3      4      5

Use a computer more than once a month

1      2      3      4      5

Use a computer on average of four times a month

1      2      3      4      5

Use a computer more than four times a month

1      2      3      4      5

Have basic mouse skills (point, click, drag)

1      2      3      4      5

Operate a multimedia computer with printer

1      2      3      4      5

Use imaging devices such as a scanner, digital camera, video camera with computer and software

### Part 4: Use of Software

1      2      3      4      5

Can create a simple word processing document and print

1      2      3      4      5

Can open and close programs properly

1      2      3      4      5

Can open an existing word processing document, enter and edit text, change fonts, save and delete files to disk

1      2      3      4      5

Use presentation software such as Power Point or HyperStudio

1      2      3      4      5

Use advance features of word processing and desk top publishing to develop professional products such as newsletters, flyers, column documents etc.

1      2      3      4      5

Can install and uninstall software packages

1      2      3      4      5

Can troubleshoot basic software problems

1      2      3      4      5

Can understand, install, and maintain virus protection software

1      2      3      4      5

Use File Manager or Windows Explorer to organize files

1      2      3      4      5

Can design and manipulate databases and generate custom reports

## Part 5: Network Skills

1      2      3      4      5

Can check e-mail

1      2      3      4      5

Can browse the web

1      2      3      4      5

Can compose and send e-mail messages

1      2      3      4      5

Can use at least one search engine such as Yahoo, Excite, AltaVista etc. to locate information on the Internet

1      2      3      4      5

Can send and save attachments in e-mail

1      2      3      4      5

Can download text and install sounds, pictures, and programs available from the Internet

1      2      3      4      5

Can access and use telecommunications tools and resources for information sharing, remote information access and retrieval, and multimedia/hypermedia publishing

1      2      3      4      5

Can create web pages using HTML editor like Netscape Gold

1      2      3      4      5

Can use advance feature of web browsing packages

1      2      3      4      5

Can create web pages using advanced programming language such as Java and CGI scripting

## APPENDIX B

### Self-evaluation of Technology Proficiencies for Students

#### Part 1: General

1      2      3      4      5  
Can operate a multimedia computer with printer

1      2      3      4      5  
Can use imaging devices such as scanner, digital camera, video camera with computer and software

Part 2: Use of Software (same as staff survey Part 4)

Part 3: Network Skills (same as staff survey Part 5)

## APPENDIX C

## COMPUTER SELF-EFFICACY SURVEY For TEACHERS

The purpose of this survey is to examine the benefits and difficulties teachers experience when using computers. The survey is divided into three parts. In Part 1 you are asked to provide some basic background information about yourself and your experience with computers. Part 2 aims to elicit more detailed information by asking you to indicate the extent to which you agree or disagree with a number of statements provided. Part 3 is used to identify how you are currently integrating technology into your teaching.

## Part 1

A. Experience with computers (please place a tick by the appropriate response):

- |                 |       |
|-----------------|-------|
| none            | _____ |
| very limited    | _____ |
| some experience | _____ |
| quite a lot     | _____ |
| extensive       | _____ |

B. Please indicate (tick) the computer software packages you have used:

- |  |       |
|--|-------|
| word processing packages                 | _____ |
| spreadsheets                             | _____ |
| databases                                | _____ |
| presentation packages (e.g. Power Point) | _____ |
| statistics packages                      | _____ |
| desktop publishing                       | _____ |
| multi-media                              | _____ |
| other (specify)_____                     | _____ |

C. Do you own a computer?

- |     |       |
|-----|-------|
| yes | _____ |
| no  | _____ |

D. Do you have access to a computer when you are not in school or at work?

- |     |       |
|-----|-------|
| yes | _____ |
| no  | _____ |

E. Have you ever attended a computer training course?

- |     |       |
|-----|-------|
| yes | _____ |
| no  | _____ |

## Part 2

Next you will find a number of statements concerning how you might feel about computers. Please indicate the strength of your agreement/disagreement using the six point scale shown below where: **1 = strong disagreement and 6 = strong agreement**. There are no “correct” responses but it is important that you respond to each statement.

Q.1. Most difficulties I encounter when using computers, I can usually deal with.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 2. I find working with computers very easy.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 3. I am very unsure of my ability to use computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 4. I seem to have difficulties with most of the software packages I have tried to use:

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 5. Computers frighten me.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q.6. I enjoy working with computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q.7 I find computers get in the way of learning.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 8. Computers make me much more productive.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 9. I often have difficulties when trying to learn how to use a new computer package.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 10. Most of the computer packages I have had experience with have been easy to use.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 11. I am very confident in my abilities to use computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 12. I find it difficult to get computers to do what I want them to.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 13. At times I find working with computers very confusing.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 14. I would rather that we did not have to learn how to use computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 15. I usually find it easy to use a new software package.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 16. I seem to waste a lot of time struggling with computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 17. Using computers makes learning more interesting.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 18. I always seem to have problems when trying to use computers.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

Q. 19. Some computer software packages definitely make learning easier.

**Strongly Disagree**    1        2        3        4        5        6        **Strongly Agree**

- Q. 20. Computer jargon baffles me.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 21. Computers are far too complicated for me.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 22. Using computers is something I rarely enjoy.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 23. Computers are good aids to learning.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 24. Sometimes, when I am using a computer, things seem to happen and I don't know why.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 25. As far as computers go, I don't consider myself to be very competent.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 26. Computers help me to save a lot of time.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 27. I find working with computers very frustrating.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 28. I consider myself a skilled computer user.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**
- Q. 29. When using computers I worry that I might press the wrong button and damage it.  
**Strongly Disagree**    1       2       3       4       5       6       **Strongly Agree**

**Part 3**

Technology Integration Questions. Please check all the appropriate lines:

- A.    1. I have access to computers at school:
- yes    \_\_\_\_\_  
no    \_\_\_\_\_
2. There are computers available for my students during my classes:
- yes    \_\_\_\_\_  
no    \_\_\_\_\_
- B. At the time of completing this survey I teach the following grade(s): \_\_\_\_\_
- C. I use computers for the following instructional purposes:
- student marks \_\_\_\_\_
  - course outlines \_\_\_\_\_
  - test development \_\_\_\_\_
  - yearly professional development plans \_\_\_\_\_
  - instructional plans (unit or year plans) \_\_\_\_\_
  - lesson plans \_\_\_\_\_
  - student exercises \_\_\_\_\_
  - Internet activities related to my teaching \_\_\_\_\_
  - e-mail related to my teaching \_\_\_\_\_
  - report cards \_\_\_\_\_
  - other: (Please specify): \_\_\_\_\_
-

D. I require my students to use computers for the following:

writing assignments

engaging in research

solving problems

developing presentations

communicating outside the school

other: (Please specify):

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### *Thank You!*

You have now completed the survey. Thank you for your time and for helping with my research. Thanks also to Lorraine Beaudin, a graduate in the University of Lethbridge Masters' program who developed this survey and allowed me to use it.

Catherine Nelson

## APPENDIX D

## COMPUTER SELF-EFFICACY SURVEY For STUDENTS

Parts 1 and 2 of this survey are exactly the same as the teacher survey.

## Part 3

Technology Integration Questions. Please check all the appropriate lines:

A. 1. I have access to computers at school:

yes \_\_\_\_\_

no \_\_\_\_\_

2. There are computers available for my use during my classes:

yes \_\_\_\_\_

no \_\_\_\_\_

B. At the time of completing this survey I am in Grade: \_\_\_\_\_

C. I use computers for the following types of school work:

writing assignments \_\_\_\_\_

engaging in research \_\_\_\_\_

solving problems \_\_\_\_\_

developing presentations \_\_\_\_\_

communicating with students outside the school \_\_\_\_\_

other: (Please specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_