WORD PROCESSORS AND THE TEACHING OF WRITTEN COMPOSITION: A STUDY OF HIGH SCHOOL ENGLISH TEACHERS' ATTITUDES, PERCEPTIONS, AND EXPERIENCES

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ABSTRACT

In 1989, Herrmann reported that the lack of computer use in schools is not because the schools are not purchasing computers, but because computers "...in classes, such as English, ... are not being used as effectively as they might be" (p. 112). Thus, this current thesis is a relational study that sought to understand how high school English teachers' attitudes towards, perceptions of, and experiences with computers affected their reported implementation of word processors in the teaching of written composition. The findings of this study were based on the results of 52 surveys completed by high school English teachers teaching in a large urban centre. The survey was a combination of multiple-choice, Likert-scale, and open-ended questions and the data were analysed to note relationships between and trends among variables.

Ninety percent of the respondents reported spending no time teaching written composition with a word processor, and only 3% of the respondents said they felt confident in their ability to integrate computers into the teaching of written composition. Further data analysis indicated that these teachers exhibited varying and conflicting attitudes, perceptions, and experiences. Teachers' "Readiness to Implement" (i.e., their willingness to receive word processors in the classroom and some self-reports of present computer-related practices) produced the strongest correlation with "Current Practice" (e.g., teaching the writing process and using the word processor to teach pre-writing, drafting, revising, and editing), while "Attitude," "Perception," and "Professional Development Experience" showed limited and localized effects (correlating with some gender, age, or years of experience groups and not others). Consistent with the findings of previous studies, only negligible differences were noted between male and female respondents. However, the two respondents over the age of 60 scored higher (M =4.4) on the "Attitude" scale than their junior colleagues, and the one respondent with 0-1 year of experience scored lower (M = 2.0) than her colleagues with more English-Language Arts teaching experience. Respondents in this study reported a limited amount of access to computer labs and a weak infrastructure for supporting implementation.

Table of Contents

List of Tables

List of Figures

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I: Introduction

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Problem Statement

In recent studies, it was concluded that even though the ratio of students to computers in American schools has dramatically decreased in the past 10 years, few teachers are comfortable using these technologies in the classroom (Dorman, 2001). It was also reported that most teachers use computers at home more than at school (Cuban, 1999), and that "What appears to be lacking in many schools is the infrastructure to support and maintain computer implementation by individual teachers" (Dupagne & Krendl, 1992, p. 425). Accordingly, this study

[1] For a note of permission written by Mary C. Suggett (Permissions Director), please see Appendix A

hypothesized that a greater understanding of what was hindering the implementation of word processors into the teaching of written composition was required before a successful infrastructure for schools could be created. This study aimed to understand to what extent teachers' perceptions of, attitudes towards, and experiences with computers obstructed their implementation of the word processor into their teaching of written composition.

Thesis Literature Review

The literature reviewed in this study is divided into four main components that address word processors and the teaching of written composition. The first element is research on how the word processor affects pedagogical practices and students' composition. The review addresses the capacity of the word processor:

1. To affect the way students think,
2. To improve students' attitudes towards composition,
3. To help students understand the fluidity of text,
4. To encourage students to write and revise more,
5. To help students become aware of audience, and
6. To decentralize the classroom.

It also addresses the word processors' pedagogical limitations:

1. The word processor is no longer a novelty,
2. Students see their text as a series of parts, and
3. Students' writing quality is questionable.

Additionally, Chapter II presents an overview of the research on teachers' attitudes towards, perceptions of, and experiences with computers. This research suggests that teachers' attitudes, perceptions, and experiences are generally positive, but are less positive than the general

public's. Thus, the review also shows why understanding teachers' attitudes, perceptions, and experiences concerning the relevance of word processors is a prerequisite to expanding computer application in secondary English classrooms. Finally, Chapter II identifies problems with the research in this area, and suggests a need for more teacher support and a need for change in high school English teachers' pedagogical practices.

Thesis Rationale

Although studies and literature reviews on teachers' attitudes towards (Dupagne & Krendl, 1992; Koszalka, 2001) perceptions of (Woodrow, 1991; Stevens, 1980) and experiences with (Bradley & Russell, 1997) computers and technology already exist, research dealing specifically with high school English teachers' attitudes towards, perceptions of, and experiences with word processors is scarce. This distinction is significant because research indicates, "... teachers who teach technical or scientific subjects tend to have more positive attitudes toward the implementation of computers in the classroom than do other teachers" (Dupagne & Krendl, 1990, p. 424). Similarly, Adams (2001) found that innovation is more likely in primary schools and suggests,

> It is in this phase of education that there is the most scope for innovation, and perhaps because the teachers are 'generalists', all teaching subject areas in which they may not be experts, they often feel more at ease with new approaches and concepts than their secondary colleagues who are more reliant on 'schooled knowledge' and learning. (p. 32)

Although studies exploring teachers' attitudes towards and experiences with computers have been conducted with K-12 teachers (Graham & Russell, 1997; Koszalka, 2001; Woodrow, 1991) and with Education students (Griswold, 1995; Reed, 1990; Violato, Marini & Hunter, 1999), a study dealing specifically with high school English teachers was not found. This distinction is also significant since literature proposes that teachers be educated according to their specific needs and attitudes if change is expected (Graham & Russell, 1997).

Research Questions

How do high school English teachers' attitudes towards, perceptions of, and experiences with computers affect the implementation of word processors in their teaching of written composition?

- What are high school English teachers' attitudes towards, perceptions of, and experiences with computers?
- Are high school English teachers using word processors to teach written composition to their students? If so, *how* are they using word processors to teach written composition?
- What is the relationship between high school English teachers' self-reported computer-related attitudes, perceptions, and experiences, and how they use word processors to teach written composition?

Methodology

The design of this study is relational; information was gathered via a questionnaire (Appendix B). A questionnaire was chosen since it allows substantial quantities of data to be analysed in an efficient manner. These data also made it possible to generalize the findings of this study and to determine relationships among variables.

Definitions

Attitudes: refers to teachers' self-described feelings of comfort and anxiety when using and discussing computers. Attitudes, as used in this study, also reflect teachers' self-reported resistance towards or acceptance of computers.

Perceptions: refers to self-reports of how strongly teachers believe computers to be an effective and a necessary tool in the teaching of written composition. Perceptions also refer to what teachers believe regarding the power and potential of the computer and how it is used.

Experiences: refers to teachers' self-reported positive and negative experiences involving computers for personal or professional purposes.

Implementation: refers to teachers' self-reported use of the word processor as a teaching tool to guide students through the writing process and the act of written composition. Implementation also includes teachers' self-reports of the support, or lack of support, in schools to implement word processors.

Word processor: refers to a computer program that provides the user with tools needed to write, edit, and format text. This program is generally included in the purchase of a computer (e.g., Microsoft "Word", "ClarisWorks") and is also referred to as a desktop publisher.

Delimitations

This study was delimited to the understanding of the attitudes towards, perceptions of, and experiences with the word processor of high school English teachers teaching in a large urban school district. It did not explore the effects of these factors on the Internet. The Internet carries with it many ethical and controversial considerations that were beyond the scope of this study. To keep within the scope of this study, methodology was delimited to the use of a questionnaire; no classroom observations or interviews were conducted. The sample of this study was also

delimited to teachers' self-reports; it did not examine students' or administrators' perspectives on the subject.

Assumptions

Since the scope of this study did not permit a qualitative analysis of the participants' classroom practices, this study assumed that the respondents did not misinterpret any of the questions asked in the questionnaire. Additionally, this study assumed that the scope of its questionnaire allowed respondents the space to reflect accurately and record their classroom practices. Throughout the literature on word processors and written composition as well as throughout this study, researchers assume that taking a process-oriented and student-centred approach to teaching students written composition is an effective practice. According to Sommers (1985), " ... we teach writing as a process because twenty years of research have taught us a great deal about how writers actually work" (p. 5).

Thesis Outline

As previously mentioned, Chapter II presents a review of the literature pertinent to this study. Chapter III discusses the research methodology used, the development of the questionnaire, and the findings of two pilot studies. Chapter IV presents the findings of this study, and Chapter V summarizes, draw conclusions and suggest implications for further research and practice.

II: Literature Review

The advent of word processors has brought with it considerable changes to our students' writing and academic lives. Palmquist, Kiefer, Hartvigsen & Goodlew (1998) reported that in a span of eight years, the percentage of students entering college composition classes with a knowledge of word processing skills had increased by 85% and that "... more and more students learn to type and use a mouse in elementary school" (p. 210). As they become increasingly dependent on this technology, some students feel "profoundly disadvantaged" when asked to write by hand (Schwartz, Fitzpatrick & Huot, 1994), while others feel that the writing they are asked to do in class is wasted energy, since they retype their work once they return home (Palmquist et al., 1998). In 2001, a survey reported that in a span of 10 years, the ratio of students to computers has decreased from 1 computer to 26.7 students, to a recent ratio of 1 computer to every 5.7 students (Dorman, 2001).

Despite these evident changes, Cuban (1999) discloses that 4 to 5 out of 10 teachers never use computers in the classroom and Herrmann (1989) informs that only 2% of students in grades 9 to 12, in the U.S., use word processors in their English classes. The Second National Survey of Instructional Uses of School Computers reports that the lack of computer use in schools is not because the schools are not purchasing computers, but because computers "...in classes, such as English, ... are not being used as effectively as they might be" (Herrmann, 1989, p. 112). What is more, Palmquist et al. (1998) explain,

> Even though the composition classroom would seem the logical place for word processors, they are not yet extensively used there. At colleges and universities where students have regular access to microcomputers, growing numbers of students learn the advantages of text editors as writing and typing tools on their own, or as a fringe benefit in a computer science course. (p. 382)

These findings suggest that as students are becoming increasingly reliant on word processors, and schools are becoming better equipped with related hardware and software, English teachers

continue to be somewhat reluctant to embrace these changes; this review will discuss why this conflict is problematic. It will present research that discusses the benefits of implementing word processors into the teaching of written composition, as well as cautionary notes regarding both the implementation of word processors and the research conducted in this field. It will describe how word processors change the dynamics of the classroom, and it will discuss the role and needs of English teachers, in addition to the role of researchers.

The Benefits of Word Processors

Word Processors Affect the Way Students Think.

Bridwell and Duin (1985) warn that by leaving their pedagogical practices unchanged, writing teachers cannot expect to provide students with the skills they need to function as literate members of our technologically-supported society. This need for change is substantiated by researchers' reports that word processors change the way we think (Schwartz et al., 1994; Cross, 1990; Trotter, 1998; Montague, 1990). Based on Vygotsky's belief that "Thought is not merely expressed in words, [but] comes into existence through them" (p. 138), Schwartz et al. (1994) state, "Any tool that facilitates the ability to write down thoughts has the potential to enhance the facility to think" (p. 138). Since the word processor allows a writer to compose more quickly, research indicates that when writers use a word processor, their writing is "...no longer separate from the mind" because the word processor can create an instantaneous bond between the writer's thought and the writing surface (Schwartz et al., 1994; Marcus, 1987; Montague, 1990). This added speed frees the writer's short-term memory and allows the mind to concentrate on logic, organization and clarity (Snyder, 1993).

They Improve Student Attitudes.

As the burden on short-term memory is mitigated, and students watch their thoughts appear on the monitor with increasing speed, they also develop more positive attitudes towards writing (Palmquist et al., 1998; Montague, 1990) and revising (Owston, et al., 1991; Wresch, 1987; Sommers, 1985). By eliminating the drudgery and physical tedium often associated with writing and by providing immediate results, composing on the word processor is more enjoyable to students than composing with pen and paper (Snyder, 1993; Daiute, 1985; Bridwell & Duin, 1985).

In Owston et al.'s study (1991) of four eighth grade classes experienced in word processing, attitudes were assessed using the Fitch Attitude Toward Writing Survey. The results of this survey indicated "both general attitude toward writing and attitude toward editing were very significant in favor of writing on the computer compared to writing by hand" (p. 77). Akin to this study, Breese (1993) found that when 23 mixed ability students were each given a laptop as "personal property" and were granted the freedom to take these laptops home, and to compose all their writing on the word processor, there was an increase in motivation towards the writing process. Students wrote 30% more text and spent more time 'on task'. Breese found that even the reluctant students were likely to redraft. What is more, Sommers (1985) reports that although the novelty of working on a word processor serves as a motivating factor, students persist with the word processor because the act of writing is easier and the results are more immediate.

Alternatively, Curtis (1988) explains this increase of enjoyment as a sense of mastery; "...whether or not we are better writers on the machine, we feel we are more 'masterful' producers of writing" (p. 337). Teachers who have used word processors to teach written

composition report that as students feel more masterful, their attitudes and confidence increase (Palmquist et al., 1998), they begin to take more risks (Gerrard, 1987), and feel more confident about playing with language (Klem & Moran, 1991). When composing at a computer, students feel that they are doing something more important, more 'adult,' than when they are composing with a pen and paper (Wresch, 1987). Researchers have explained that the perception that text looks better in print may be culturally conditioned since print is most often associated with professional writing and wide readership and that this perception alone will stimulate writing at any age (Daiute, 1985). These changes in attitude are especially noteworthy because theorists believe that if students are enjoying writing, then their skills will also eventually improve (Daiute, 1985).

Students Better Understand the Fluidity of Text.

One could argue that the word processors' ability to reduce students' anxiety towards writing is its greatest contribution. As they watch their words moving and scrolling across the screen, students discover the fluidity of writing and no longer perceive their writing to be "carved in stone" (Klem & Moran, 1991). When using word processors, students see their writing as a place where items are collected, stored, altered and rejected (Curtis, 1988; Marcus, 1987; Cox, 86; Montague, 1990), not a place where words are etched. This is especially valuable because as Daiute (1983) explains, "...people do not grow as writers unless they take risks and make changes in their text" (p. 9). As a result, Daiute (1985) suggests that the word processor is the perfect tool for a process approach to writing because it makes revising and recopying physically easier and because the blinking cursor is a constant reminder that the program is waiting to do more.

Students Write and Revise More.

Whether it is the power of the "blinking cursor" or the word processor's ability to make writing a less laborious task, researchers consistently report that when using a word processor, students produce more text (Palmquist et al., 1998; Snyder, 1993; Trotter, 1998; Wresch, 1987; Monteith, 1993; Schwartz et al., 1994). At least some of this additional text can be attributed to the necessity to save computer-based documents at regular intervals. Williams (1991) reports that this enforced break encourages the writer either to re-read the text that remains on the screen, which is usually followed by a "bout of editing", or it encourages the writer to "pause for thought", which often drives the writer along a different route (p. 204).

In general, researchers agree that the word processor encourages more surface-level revision (Snyder, 1993; Gerrard, 1987; Shostak, 1982; Sommers, 1985), even among the most reluctant re-drafters (Monteith, 1993). The word processor's ability to produce text which is professional in appearance not only eliminates students' difficulty of keeping track of their own "messy" writing (Wresch, 1987), but also entices students to return to their papers five and six times to eliminate any imperfections (Sommers, 1985). While students previously handed in papers marred with errors because they could not bear the thought of typing them a final time (Gerrard, 1985), this professional appearance of text "engenders a desire for perfection" in some students (Sommers, 1985, p. 49).

Students Become Aware of An Audience.

Researchers also report this heightened awareness of imperfections when students work collaboratively to create text. They explain that as "backseat writers," students suddenly develop higher standards of spelling and punctuation, finding mistakes easier to detect when looking over the shoulder of a peer (Daiute, 1985). Moreover, Palmquist et al. (1998) report that the

monitor's ability to project the text in an upright manner encourages students to share their writing with peers, thereby producing more task-related talk in the classroom (Sommers, 1985; Rodrigues & Rodrigues, 1986; Palmquist et al., 1998). Finally, Owston et al., (1991) report, "When it is neatly printed, rather than illegibly handwritten," (p. 68) students are motivated to share.

In addition to collaboration, the monitor and printed text also enhance students' awareness of audience. As students see their compositions appear on the monitor before them, they are forced into the role of observer (Snyder, 1993) and find it easier to be objective as their words appear in text rather than in their own handwriting (Daiute, 1985).

Word Processors De-Centralize the Classroom.

In turn, this objectivity has the potential to reinforce the relationship of students and teachers as collaborators by promoting more teacher-student conferences. The computer monitor projects a student's text into a neutral space, allowing the student and teacher to share the text without the awkwardness of sharing a piece of paper (Palmquist et al., 1998). Additionally, teachers report that because of the projection capabilities of the computer monitor, they are able to conduct more on-the-spot instruction (Lindemann & Willert, 1985) and are better able to identify students having writing difficulties (Palmquist et al., 1998). Finally, teachers who teach written composition in computer-supported classrooms report that their role transforms from evaluator to coach (Barker, 1990) as students pay greater attention to their comments, no longer finding the altering of text a chore (Sommers, 1985).

The Word Processors' Pedagogical Limitations

In light of all these positive findings, one must also recognize and pay close attention to the pedagogical limitations of the word processor. People should not lose sight of the fact that the word processor is only a machine and can "only count to one" (Palmquist et al., 1998). Additionally, an awareness of the ambiguities and limitations found in the research on word processors in the English classroom is also crucial. Unfortunately, the word processor cannot be seen as a panacea; it is not an invention that will rid writing students and English teachers of all their struggles, and the research makes this quite clear.

No Longer a Novelty.

With so many students skilled in word-processing when they first enter the classroom, the likelihood that they will enjoy writing simply because they are using a word processor is increasingly unlikely. What is more, Thiesmeyer (1989) suggests that in many of the reports on the word processor's ability to transform students' attitudes towards writing, "It is entirely possible that the change is owing to increased energy and enthusiasm shown by writing instructors, or to a sense of being specially privileged by access to new technology, and not any uses of word processing as such" (p. 87).

Students See their Text as a Series of Parts.

Akin to this apparent change in students' attitudes towards writing, the literature demonstrates that computer monitor projection capabilities actually lure students into seeing their text in parts, as opposed to an expanding, single text (Snyder, 1993). Since some versions of word processors continue to display less text on the screen than traditional writing methods do, students find it more difficult to follow the overall development of their texts (Wresch, 1987). Additionally,

research found that scrolling is not as successful in aiding revision as browsing through pages (Snyder, 1993).

Writing Quality Is Questionable.

Although students compose more text on the word processor because it is physically easier, the text they produce is "verbose" (Williams, 1991) and "unstructured" (Gerrard, 1985). Students have difficulties moving beyond obsessive editing of surface errors (Snyder, 1993; Gerrard, 1987) and often alter their text but add little to its development or coherence (Daiute, 1985).

Daiute's (1986) study of 57, seventh- to- ninth graders (all with extensive word processing experience) found that although students added words to the ends of drafts and corrected more word and sentence-level errors, they did not make more global text revisions. In contrast, Owston et al.'s (1991) study of 100 eighth grade students, in a middle-class suburban school, found that essays composed on the computer scored significantly higher than essays composed off the computer. These essays were scored on paragraphing, syntactic complexity, and types of misspelling; students with variability in keyboarding skills were encouraged to compose on screen. A review of the literature on computers and writing research demonstrates that writers simply transfer their existing strategies to the computer (Thiesmeyer, 1989; Conway, 1995; Herrmann, 1991; Cross, 1990) and that without proper instruction, inexperienced writers will simply substitute and delete rather than add or rearrange words (Snyder, 1993; Rodrigues & Rodrigues, 1986; Hawisher & Selfe, 1991).

Peacock and Najarian (1993) explain this transferring of habits with the following analogy:

> If children are given an increase in their pocket money, do we seriously expect them to begin to use the extra cash to buy something good for themselves instead

> of an extra fistful of sweets? To expect pupil writers (or anyone) to do what is good for them just because it is possible is a little naïve.(p. 70)

Additional research supports Peacock and Najarian (1993) as it reports that an absence of appropriate instruction can not only reinforce unproductive strategies in inexperienced writers but can also exacerbate the problems (Snyder, 1993; Beach & Bridwell, 1984; Hult, 1986). A study of six classes of first- and second-year secondary school pupils revealed that both experienced and inexperienced word processing pupils had a tendency to develop "more nonchalant attitudes of writing when using a word processor" (Peacock & Najarian, 1993). Similarly, in a study of college composition students who used word processing for composing, Bridwell, Sirc and Brooke (1985) found that the polished look of their writing lures some students into thinking they are further along than they are.

A Criticism of the Research

Some of the main criticisms of the literature conducted on word processors' effects on students' composition indicate a lack of detail in most studies. More specifically, the length of the study and how much familiarity or skill students had in using the computer is often unclear (Owston, et. al, 1991). Hawisher (1989) argues that the findings of revision-based studies are inconclusive because in several instances participants were asked to compose drafts by hand and then use the word processor to revise the same drafts. Bridwell and Duin (1985) add that in other studies, teacher-participants neglected to emphasise the importance of revision when writing. For instance, although Dalton and Watson's (1986) study of 80 seventh-graders' writing process found that relatively low achievers scored significantly better when using word processors and that word processors were ineffective for high achievers, their findings were also tempered by the

observation of teacher-participants who spent less time encouraging revision than conventional classroom teachers.

Research Is Dated.

Reviewing the literature on the word processors' effects on student writing, one begins to discover that the very question of the word processors' effect on the quality of students' writing is problematic. Questioning word processors' effect on writing suggests a response of binary opposites: positive or negative; yes or no; and the answer is much more complex. Following the trend of literature on this subject, one finds a great deal of research conducted in the mid-eighties when computers raised droves of questions and concerns and far fewer studies conducted in the nineties and beyond.

Measuring Data Is Problematic.

There are a number of things that can be quantified from a final product (the ratio of spelling errors to word count; length; organization; etc.). However, none of these items fully describes writing improvement (Cohen, 1987; Thiesmeyer, 1989). This has not stopped researchers from using quantitative studies to report on how word processors improve (Snyder, 1993; Owston et al., 1991) or degenerate (Gerrard, 1987) students' writing.

Herrmann (1990) explains that there is little information "... to suggest the degree of importance among linguistic features in the development of writing skills or to indicate the patterns of change that presumably takes place in the writer's ability to manipulate these features over time, culminating in writing maturity" (p.129). Bridwell and Beach (1990) add that since the definition of a mature writer or mature text is difficult to describe, problems in identifying their characteristics as they evolve are inescapable.

In an attempt to illuminate this problem in the research, Cohen (1987) satirically suggests that researchers lack a unit of measure called the "writon". With said unit, Cohen explains researchers will have the ability to say, "...the computer improved 14 writons more than traditionally written papers," (p. 120) determining whether the computer has a positive or negative effect on students' writing, quantitatively. Furthermore, he explains that this deficient element in the research is further compounded by the fact that individuals who are soliciting researchers to measure writons "...don't really know what they are asking for; just that they want it" (p. 120). He suggests that these writon-seekers do not demand that the researchers "...formally establish the writon's validity," just that the researchers persuade them "...that the definition is reasonable" (p. 120).

Cohen's objections, not withstanding, research in the area of written composition has been conducted at length, with varying degrees of success. To suggest that research in this area is inconclusive because it lacks definition or a "writon" would mean that all research in the field of written composition is inconclusive.

Costly Research Conditions

The pressure from the "writon-seekers" sparked a great deal of research in the area of computers and composition in the mid-eighties; as previously mentioned, this enthusiasm has relaxed considerably since. Many of the studies conducted in the mid-eighties were conducted over short periods of time (Hawisher, 1989). This is problematic because teachers who have worked with word processors have reported that it takes time to reap the benefits of the computer-aided composition (Bridwell & Duin, 1985).

As a result, researchers have expressed a need for studies that extend over one academic year and a need for a team of researchers to be employed in order to avoid a distorted reading of the data (Hooper, 1987). As Thiesmeyer (1989) explains:

> The reasons few seem to be gathering such evidence may be its high cost: since writing quality is not quantifiable (Cohen, 1987), measuring the effectiveness of writing tools calls for extended labor by expert readers.(p. 89)

Improvements In Research

More recently, Palmquist et al. (1998) began to fill these gaps in the literature as they conducted an extensive qualitative and quantitative study in the academic year of 1993 to 1994. In their study, the same teachers taught both traditional college composition classes and computer-supported college composition classes at Colorado State University. The same texts and assignments were used in all courses and the students selected their method of instruction. These researchers found that by the end of their study, students in computer-supported composition classes' confidence towards writing increased significantly more than the students' confidence in the traditional composition classes. They also explained that the critical difference between the two classes is that the computer class was where writing was done and the traditional class was where it was discussed. Furthermore, they reported that teachers adapted their teaching styles to suit the computer-supported classrooms and that some teachers even carried these new practices over to their traditional classrooms.

Even with such extensive and structured studies, one wonders if a definite solution can ever be found regarding the word processor's effect on students' writing. To assess accurately the effects of the word processor on students' writing, one would need to locate participants that

have the same level of writing competency, and the same level of proficiency in their instrument of choice, in addition to the same quantity and quality of experience in said instrument.

Present Limitations in Practice

Despite the ambiguities in research regarding the effects of word processors on students' writing, one must recognize that word processors comprise an influential component in students' writing. Subsequently, in order to keep abreast of students' writing habits, researchers warn that English teachers must begin to incorporate word processors into their curricula (Beach & Bridwell, 1984; Rodrigues & Rodrigues, 1986; Montague, 1990; Kaplan, 1991; Klem & Moran, 1991; Williams, 1991; Hawisher & Selfe, 1989). Daiute (1995) adds that by resisting the implementation of word processors in their teaching, teachers may in fact be "... widening the educational gap between children whose families have computers at home and those whose families do not" (p. 15).

If students are expected to benefit from the automatic features of the word processor, we have to continue to help students learn what good writing is and how to improve their drafts (Daiute, 1986). Research confirms that the various stages of the writing process require a great deal of human input (Holland, 1996) and that the use of word processors "... cannot exist in a pedagogical vacuum. [Rather], it must be accompanied by good teaching of the writing process" (Snyder, 1993, p. 56; see also Conway, 1995; Hooper, 1987; Thoms, 1987). Thus, the presence of the teacher is critical when students compose with a word processor.

Snyder (1993) reports, "When an effective teaching model is employed, writers using word processors achieve at a higher level" (p. 61). According to researchers in this field, this effective model implies that teachers evaluate their practices and include changes inspired by the word processor. Researchers suggest that since students presently do most of their drafting on the

screen, there is no real "first draft" and teachers should rethink the practice of requiring evidence of multiple drafts (Snyder, 1993). Teachers are reminded that if students do not see the relationship between writing and the tasks assigned, they will not work willingly in any class, whether it is computer-supported or not (Palmquist et al., 1998; Conway, 1995). Similarly, they are reminded to teach group dynamics and to provide effective models of collaboration that enhance the benefits of word processors. In 1995, Conway found that in 75% of the groups she studied, the most proficient typist, not necessarily the best writer, became the leader.

While some researchers will argue that word processing skills need to be automatic before students begin to compose, others will argue that students do not need to master their keyboarding skills before they begin to reap the benefits of the word processor (Snyder, 1993; Sommers, 1985; Palmquist et al., 1998) and that keyboarding skills have little effect on the quality of students' writing (Schwartz et al., 1991; Owston, et al., 1991). Most researchers, however, agree that keyboarding skills are best taught as the need arises (Snyder, 1993).

Since some students are not comfortable sharing their writing, teachers are also asked to asses which writing assignments can be better served by pen and paper composition (Snyder, 1993; Daiute, 1985). Since word processors promote a writer's detachment from his/her own text, fiction and writing of a more personal nature (e.g., journals) may be better composed by hand because "... handwriting, much more than typewriting, highlights connections in the self" (Daiute, 1985, p. 41).

Finally, when implementing word processors in their teaching of written composition, teachers are asked to relinquish control over the pacing of the class and allow it to follow the students'

individual processes (Palmquist et al., 1998). When teachers introduce word processors into their classroom, they are forced to "...give up the title of classroom expert, previously awarded by divine right of tradition, and are asked to become more open to student ideas. Such changes do not occur automatically" (Kaplan, 1991, p.114).

The Role of Researchers

In order to help teachers make these changes in their classrooms, researchers need to assess English teachers' present attitudes towards, perceptions of, and experiences with computers. Fullan (2001) explains, "As implementation is the essence of change, it follows that the teacher as implementer is central" (p. 12). Research dealing specifically with English teachers in this area is still scarce. As a result, this portion of the thesis will take a selective look at the literature that identifies general teachers' attitudes towards, perceptions of, and experiences with computers, and will explain why understanding and identifying these factors are essential to expanding the use of computers in the classroom.

Teachers' Attitudes Towards Computers

The study of teachers' attitudes towards computers is voluminous; however, some attitudes make more consistent appearances throughout the literature than others. Dupagne and Krendl (1992), in a review of the literature on teachers' attitudes toward computers, report that "Overall, teachers have expressed positive attitudes regarding the implementation of computers in the classroom and the curriculum" (p. 420). However, they also report that educators exhibit less favourable attitudes towards computers than does the general public and that 55% of educators see computer technology as a dehumanizing tool.

The fact that educators appear to hold a less favourable attitude towards computers than the general public is supported by a MCI Nationwide Poll on the Internet in Education (1998) where 31% of teachers, in comparison to 58% of the general public responded positively to the statement: "Computers have helped improve student learning a great amount." Moreover, Smith (1989) reports, "Teachers generally make positive statements regarding computers, but tend to be far less positive regarding their own participation in computer projects" (p. 199). Similarly, Griswold (1985) reports that education majors generally believe that computers are useful but will not necessarily consider using them in their own classrooms.

Whereas Dupagne and Krendl's review (1992) concluded that, for the most part, personal characteristics have little impact on teachers' attitudes towards computers, Bradley and Russell (1997) found computer anxiety to be positively correlated with a "preference for a stable lifestyle" (p. 267). Similarly, although Bradley and Russell (1997) show male educators to have a slightly more favourable attitude towards computers than female educators, Dupagne and Krendl's (1992) review of the literature identifies six studies that report no or little difference on the basis of gender. Dupagne and Krendl's review (1992) also suggests that the grade level taught has little bearing on attitude towards computers but that teachers of technical or scientific subjects tend to have more positive attitudes toward the implementation of computers in the classroom than other teachers do. Bradley and Russell (1997) further support these findings by reporting that low mechanical aptitude, dislike of technology, mathematics anxiety, and distrust of change are all correlated with computer anxiety.

The Need for Specific and Localized Research

The wide spectrum of teachers' attitudes towards computers necessitates a closer study of the teachers in question when trying to discern the best method to help teachers implement

computers into their pedagogical practices. The diversity of findings suggests that educating teachers is not a case where *one size fits all,* and that mathematics teachers should be educated differently from English teachers, individuals who resist change differently from those who embrace it. However, in spite of the apparent complexity, the importance of understanding teachers' attitudes towards computers should not be overlooked. Since it is the attitudes held by teachers toward computers that will ultimately determine the success or failure of any computer curriculum, ignoring these attitudes will prolong the limited educational utilization of computers in schools (Fullan, 2001; Woodrow, 1997). Zehr (1998) maintains that teachers have to believe what they are doing is legitimate, and they have to want to teach this way.

Teachers' Perceptions of the Necessity for Computers

When Woodrow (1997) surveyed 92 teachers and asked them to rate their perceived computer needs and those of their students, she found that "...the ability to use a computer as a word processor is the most pressing computer need both for teachers and students" (p. 475). In contrast, Callister (1986) and Moskowitz (1984) reported that teachers believed computers to be a threat to their role as educators, and Griswold (1984) found education majors to have a less favourable attitude towards computers than business majors and were more likely to view computers as dehumanizing tools that make mistakes and have an unfavourable personal impact on individuals. Although teachers' perceptions of the usefulness of computers have improved in the past decade, when these perceptions are coupled with the results of the MCI Nationwide Poll on the Internet in Education (1998), it can be concluded that educators continue to hold less favourable views of the role of computers in education than the general public does.

Teachers' Self-Perceived Ability to Implement Computers

Stevens' (1980) study entitled "How Educators Perceive Computers In the Classroom" found that more than 80% of teachers do not know how to use computers as an instructional tool and that 40% felt uncomfortable when others were talking about computers. Stevens also found that more than 88% of teachers indicate their training to use computers is inadequate and that more than 50% of the teachers indicated a need for training. The remaining teachers admitted that they were uninterested in training regarding computers.

In a more recent study, Dorman (2001) concluded that 33% of teachers felt well prepared to use computers for classroom instruction and that less experienced teachers felt better prepared to use computers than did more experienced teachers. Hence, one can deduce that although teachers' use of computers in the classroom has not radically altered in the past 20 years, new teachers' confidence regarding their preparation to implement computers is on the rise.

Extrinsic Factors Impeding Implementation

Since the advent of computers when futurists predicted a world where traditional teachers and classrooms would become obsolete has not materialised, some teachers maintain reservations regarding the lasting effects of computers (Cooley & Johnston, 2000). Furthermore, since the early 1980's, researchers have reported contradictory advice regarding what constitutes a computer literate student (e.g., knowledge in programming in the early 1980's, computer applications in the late 1980's). When teachers experience changes to their practice, alongside "intractable working conditions, demands from others, the inherent unreliability of technology, and policymakers' disrespect for teachers' opinions" (Cuban, 1999, p.68), it is reasonable for teachers to be apprehensive and perhaps even resistant about implementing computers into their

present practices when research has not proven that word processors benefit their students' writing.

The Reliability of Surveys

It should be noted that the majority of research on teachers' attitudes towards (Griswold, 1985; Koohang, 1992) and perceptions of (Woodrow, 1997; Stevens, 1980) computers has been conducted using surveys of practicing teachers (Woodrow, 1997; Stevens, 1980). Unfortunately, surveys provide researchers only with what their subjects believe and perceive and not necessarily how they perform according to their beliefs and perceptions. What is more, although studies akin to Griswold's study of education majors versus business majors' attitudes are successful in drawing comparisons between different populations, the use of education majors as participants is less effective in representing the attitudes of teachers, since attitudes often change when one begins to practice on a permanent basis. The results of surveys indicate how teachers' attitudes towards, perceptions of, and experiences with computers affect their *likelihood* of implementation, and not necessarily what they implement. It would be interesting to discover how or if teachers' attitudes and perceptions change once they put these same beliefs to paper.

The Need for Collegial Support

In 2001, Koszalka engaged teachers in list server discussions, finding that social interactions among teachers enhanced motivation, attitude, and comfort level regarding the acquisition of technological expertise. She also found that any level of conversation, whether among only a few or several teachers, has an affect on attitude. This finding supports Fullan's (2001) belief that teachers "... need to have one-to-one and group opportunities to receive and give help and more simply to *converse* about the meaning of change" (p. 124) for implementation to be successful. Unfortunately, the findings of both Koszalka and Fullan have yet to be recognized

by administrators at the level they deserve. A number of studies show that the present infrastructure for teachers to discuss their challenges and achievements with the implementation of computers is weak (Fullan, 2001; Bradley & Russell, 1997; Cooley & Johnston, 2000) or non-existent (Dupagne & Krendl, 1992).

The Need for Effective Computer-Related Professional Development

In addition to building stronger infrastructures that provide teachers with the opportunity to engage in supportive and constructive talk regarding the success and challenges of implementing computers into their practices, research also indicates that teachers continue to need well-developed professional development workshops (Stevens, 1980; Rogers, 1995; Dupagne & Krendl, 1990). The structure of these workshops requires careful consideration based on the attitudes, perceptions, and needs of its participants since additional computer experience may simply lead to further computer avoidance (Rosen & Maguire, 1990). Research indicates that for professional development to be successful, workshops relating to computer usage should be conducted with peers, and in a relaxed environment (Dupagne & Krendl, 1990). They should encourage extensive hands-on work, be task-related, pleasant, rewarding, and allow participants the freedom to experiment at a leisurely pace (Graham & Russell, 1997). However, according to the teachers in Dorman's study (2001), "... integration of technology applications within existing teacher preparation courses is most desirable and has a greater effect on the use of technology in practice" (p. 83).

Change

In *The New Meaning of Educational Change*, Fullan (2001) advocates for the need to educate teachers when he explains:

> It isn't that people resist change as much as they don't know how to cope with it. The answer is for individuals, especially in interaction with others, to arm themselves with knowledge of the change process and to refine it continually through reflective action, and to test what they know against the increasingly available knowledge in the literature on change. (xii)

Fullan's work suggests it is essential that teachers be provided with the knowledge to make informed decisions regarding the implementation of computers if one wishes to expand the use of computers in education. He also explains that this information will be most effectively presented if time is taken to understand fully what teachers believe, perceive, and understand about computers and act accordingly.

If teachers choose not to implement the word processor in their teaching of written composition, researchers argue that they risk "... seeming as anachronistic as a piece of parchment paper" (Curtis, 1988, p. 344), and they risk being compared to those who resisted the invention of the fountain pen and printing press for fear of weakening the mind (Williams, 1991). Additionally, teachers will continue to give life to public perceptions such as the following:

> If all the computers in an advanced society, such as that of the UK, were suddenly to go down overnight, everything would come to a standstill - banking, transport, hospitals and the like - what would continue without much hindrance would be schooling: the schools would go on doing the same old things, in the same old ways. (Adams, 2001, p. 26)

Since teachers are working to help students prepare for the future, it would appear that they should prepare students with the tools they are bound to encounter.

Conclusion

This review of the literature demonstrates that word processors possess the potential to improve students' attitudes and quality of writing. The ease of deleting, copying, and moving text

encourages students to write and experiment more, and the speed and neatly printed text encourages revision and collaboration.

However, research shows that when students independently use a word processor, without the aid of an effective teacher, existing problems remain the same or are exacerbated. Computer monitors guide students to see their text as a series of parts rather than a whole, and without instruction, students' revisions remain mostly at a superficial level.

Yet, statistics show that while students' use of and access to computers is climbing, teaching practices are showing a minimal response. Thus, if we expect and encourage our students to use this writing tool, we also need to teach them strategies to exploit its potential. As a machine, the word processor's capacity is limited; as humans working with computers, the capacity of teachers and students is boundless. As gatekeepers of knowledge, teachers must decide if the word processor merits exploitation.

III: Methodology

This chapter outlines the research design and methodology used in this study. It also describes the development of the questionnaire, data analysis procedure, and presents the findings of a pilot study that was conducted based on the preliminary questionnaire.

Sample

The sample for this thesis was comprised of 94 high school English teachers working for a large urban school district. The return rate of these questionnaires was 59% or 52 questionnaires. One of the schools selected failed to return the questionnaires despite numerous contacts; thus the school and its 10 questionnaires were eliminated from the study. The data of this study are based on the results of 52 questionnaires from eight different schools.

The schools were selected based on the willingness of administrators and teachers to participate in the study, and their location. After consulting with teachers who knew this district well, efforts were made to ensure that the schools in this study represented the schools in this greater urban centre. Schools from the different social strata were selected (highly academic, inner-city, working-class, and middle-class) and the distribution of schools per strata corresponds with the distribution of schools found in this greater urban city. To facilitate the data collection process, a staff member at each school agreed to act as the administrator of questionnaires for his/her respective school. In six of the nine schools selected, the contact was also the English teacher leader. These contacts were asked to approach members of their English departments for consent to participate in the study. The preliminary letter to teacher contacts limited the study's participants to English teachers who were teaching, or in the past had taught, at least two sections of English/Language Arts. Permission to use teachers as participants was obtained from the UBC

Behavioural Research Ethics Board (Appendix C), the School Board, and the individual principals of the selected schools.

Data Collection

The researcher requested an invitation to attend an English department meeting to discuss, administer, and collect the questionnaires personally. Alternatively, the teacher contacts were asked to administer the questionnaires themselves. Since the teacher contacts knew the individual requesting their participation on a personal level, it is assumed that greater care was taken in the administration and collection of the data. Similarly, since the teachers were asked to participate by their teacher leader or colleague, it is assumed that there was an incentive to participate. The teacher contacts were supplied with copies of the questionnaires and consent forms, in addition to a self-addressed, stamped envelope.

The Questionnaire

Since one school misunderstood the initial contact instructions, and another principal asked that question 47 (The computer contact in my school is approachable.) be deleted from the questionnaire, three slightly different versions of the questionnaire were used to collect data. Moreover, since the school that requested the questionnaire be modified was also the school eliminated from the study, the data were based on only two of these three versions. Both versions of the questionnaire contained 60 questions of which 47 were Likert-scale in design (Appendix B). The Likert-scale questions asked the respondents to rate statements on a five-point scale. A response of one denoted a statement with which the respondent strongly disagreed and five, a statement with which the respondent strongly agreed. All Likert-scale responses were divided into two levels where a score above the scale's mid-point resulted in a positive rating,

and a score below the scale's mid-point resulted in a negative rating. More specifically, the following classification of ratings was used to discuss the data:

Very Strongly Disagree	1.0 – 1.3	Mildly Agree	3.5 – 3.8
Strongly Disagree	1.4 – 1.7	Agree	3.9 – 4.2
Disagree	1.8 – 2.1	Strongly Agree	4.3 – 4.6
Mildly Disagree	2.2 – 2.5	Very Strongly Agree	4.7 – 5.0
Neutral	2.6 – 3.4		

Questions 15, 19, 24, 25, 32, 36, 41, 50, and 55 were analysed using reversed polarization; a high rating of these questions displayed less favourable attitudes towards, perceptions of, or experiences with computers. The remaining 13 questions were comprised of three open-ended questions, six multiple-choice questions, and four fill-in-the-blank questions.

Table 3.1 provides a breakdown of the questions in the questionnaire. Although many of the questions apply to more than one category, for clarity, one category was selected for each question.

Table 3.1

Categories

Categories	Corresponding Questions (#)
Demographic	1, 2, 3, 4, 5
Attitudes	16, 17, 20, 23, 27, 28, 29, 30, 31, 40, 41, 42, 50, 57
Perceptions	13, 14, 15, 19, 21, 22, 24, 25, 26, 32, 36, 39, 54, 55
Experiences	7, 8 (a – c), 9 (a – e), 43, 44, 45, 46, 47, 48, 49, 51, 56
Implementation	6, 10, 11, 12,18, 34, 35, 37, 38, 52, 53, 58, 59, 60

In order to increase the accuracy of the data analysis, these categories were then divided into Comfort and Anxiety; Reservation and Keenness; Personal and Professional Uses; Professional Development Experience and Professional Support; Responsibility and Teaching Practices, respectively. Table 3.2 displays a breakdown of these subcategories.

The questionnaire was developed based on a review of the literature. The draft questionnaire was reviewed by two members of the thesis committee and piloted for a class project that prompted a number of revisions. A second, smaller pilot was conducted before the revised questionnaires were administered to the participants.

Table 3.2

Sub-Categories

Sub-Categories	Corresponding Questions (#)
Comfort	16, 17, 23, 27, 28, 29, 30, and 31
Anxiety	20, 40, 41, 42, 50, and 57
Reservation	14, 15, 22, 24, 25, 36, and 55
Keenness	13, 19, 21, 26, 32, 33, 39, and 54
Personal and Professional Uses	7 (a,b) and 8 (a-e)
Professional Development Experience	9 (a-e)
Professional Support	43, 44, 45, 46, 47, 48, 49, 53, and 56
Responsibility	18, 51, and 52
Teaching Practices	10, 11, 12, 34, 35, 37, and 38

Both pilots of the questionnaire resulted in a completion time of approximately 15 minutes. This finding supports the questionnaire's capacity to ask a series of questions regarding teachers' attitudes towards, perceptions of, and experiences with computers in a short amount of time. Since, various dimensions of variables were assessed while addressing a large population of teachers, the findings of this study should be representative of high school English teachers teaching in this large urban area.

The following questions were asked of the respondents, based on the related research:

Attitudes

To assess the respondents' comfort level with computers:

16. I do my banking on-line.

17. I am comfortable making purchases on-line.

23. I check my e-mail daily.

27. I use a word processor when I want to write creatively.

28. I use a computer to keep student records.

29. I use the Internet to search for new teaching ideas.

30. When I encounter a problem with a computer, I ask someone for help.

31. When I encounter a problem with a computer, I try to figure it out on my own.

These questions regarding respondents' personal use of the computer are significant because research suggests, "...the way teachers use computers has a direct influence on their attitudes" (Dupagne & Krendl, 1992, p. 422).

To assess the respondents' anxiety level, the following statements were included:

20. I feel confident about my ability to integrate computers into my present writing program.

40. I have strong mathematical skills.

41. I am not comfortable with change.

42. I am comfortable not being the "expert" in the class.

50. I am afraid of appearing ignorant in front of my students.

57. I have experienced positive results when implementing word processors in my writing program.

Question 40 was posed in order to determine whether or not, as the research suggests, a correlation between math anxiety and computer anxiety exists (Graham & Russell, 1997). Subsequently, questions 41 and 42 were posed in an attempt to assess the respondents'

acceptance of innovation and change. Since Adams (2001) believes that secondary school teachers are less likely to embrace innovation and that teaching is a profession which values tradition, an attempt was made to relate these feelings to the changes brought forth with unprecedented speed associated with the computer.

Perceptions

Woodrow (1991) believes, "... if teachers regard computers negatively or with suspicion, the educational utilization of computers will be limited" (p. 471). The following statements were posed in an attempt to assess the level of respondents' reservation regarding the use of computers:

14. I would like to learn more about how to incorporate computers into my English program.
15. Word processors help produce lazy writers.
22. I look forward to a time when more English teachers are using word processors to teach written composition.
24. I will do as little work with computers as possible.
25. Computers dehumanize society.
36. Students should use word processors only to publish their work.
55. Students should be encouraged to compose writing by hand, with a pen or pencil.

Woodrow (1991) also explains, "Teachers are more reluctant to modify their existing teaching strategies and programs, unless they are convinced that a new program will address fundamental needs" (p. 475). Thus, the following questions were asked to measure their level of keenness:

13. Knowing how to use a word processor is a worthwhile and necessary skill.

19. Integrating computers into the teaching of written composition has more disadvantages than advantages.

21. English teacher training should include instructional applications of computer courses.

26. Knowledge of word processors will improve students' writing.

32. Too much emphasis is placed on the importance of computers in education.

33. Research demonstrates that computers develop better writers.

39. Word processors help to reduce writing apprehension.

54. Without knowledge about word processing, all students will have limited job opportunities.

Experiences

Since the first step in accepting innovation is to gain a better understanding of the innovation (Koszalka, 2001), the following questions were asked in an attempt to assess the level of respondents' computer use for personal and professional purposes:

7. In a blank space provided, please print the approximate number of hours, per day, you use a computer for the following reasons (Note: Please use "0" where applicable).

   a. Personal (including E-mail) _____

   b. Teaching-related (including E-mail) _____

8. In the blank space provided, please print an approximate, total number of hours you have spent in the following computer-related professional development workshops. (Note: Please use "0" where applicable).

   a. Workshops offered by your administrators or colleagues _____

   b. Workshops run by your Board or Ministry _____

In the blank space provided, please print the total number of credits you have earned in computer-related

c. Faculty of Education courses or workshops _____

Additionally, the following ratings were requested to determine the nature of the respondents' experiences with computer-related professional development:

9. Please rate the following statements based on your experiences with computer-related professional development on a scale of *1 to 5 where 1 is Strongly Disagree and 5 is Strongly Agree.*

   a. My experiences encouraged extensive hands-on work.

   b. My experiences were based on collaborative learning activities.

   c. My experiences were self-initiated.

   d. My experiences were highly relevant.

   e. My experiences were pleasant, overall.

Question 9 addresses the need for teachers to have quality experiences with computer-related professional development since research indicates, "... additional computer experience may simply exacerbate the problem and lead to further computer avoidance" (Bradley & Russell, 1987, p. 267).

Given that research also indicates that "... without support from their superiors and peers, teachers may have their reservations and apprehensions regarding computers reinforced" (Bradley & Russell, 1987, p. 267), the following questions were asked in an attempt to understand the level of professional support the respondents believed was available to them:

43. Insufficient access to computers is impeding the implementation of word processors in my English program.
44. My administrators encourage the implementation of computers in the classroom.
45. There are plenty of opportunities for computer-related professional development offered in our district.
46. I often discuss the use of computers with my colleagues.
47. The computer contact in my school is approachable.
48. Many of my colleagues integrate computers in their writing programs.
49. Greater release time is needed to learn more about computer integration.
53. There are plenty of resources available to help me integrate computers into my present writing program.
56. My administrator attends workshops related to the use of computers in the classrooms.

Implementation

An attempt was also made to assess how responsible teachers felt with regards to implementing computers and word processors into their classrooms.

18. Teaching word processing skills is the responsibility of the English teacher.
51. As an English teacher, I am obligated to incorporate computers into my writing program.
52. The ministry advocates strongly for the use of computers in English classes.

Finally, in an attempt to understand current practice in this large urban centre's high school English classes, the following answers were sought:

10. How many hours of class time do you spend, per week, on average, in each of your English classes,

    a. Teaching written composition? _____

    b. Using computers to teach written composition? _____

11. Please rank the top three techniques you use the most frequently to teach written composition:

    _____ Writing Workshop _____ Lecture

    _____ Student-Teacher Conference _____ Other

And the following Likert ratings were requested:

12. I teach my students techniques for the various stages of the writing process.
34. I teach students how to use the word processor for their pre-writing stage.
35. I teach students how to use the word processor to draft their writing.
37. I teach students how to revise and edit using a word processor.
38. I expect all final products to be composed on a word processor.

Data Analysis

The data from the Likert-scale and multiple-choice questions of the thesis study were coded and categorized into Attitudes (Comfort and Anxiety); Perceptions (Reservation and Keenness); Experiences (Personal and Professional Uses); and Implementation (Responsibility and Teaching Practices). The Likert-scale questions in each of these sub-categories were then clustered and entered into SPSS 10.0, a statistical analysis program designed for the social sciences, to determine their reliability as a scale. Since there was a great deal of within subject variability, all of the clusters, except for Professional Development Experience, exhibited low reliability ratings (Appendix F). Thus, SPSS 10.0 deemed the defined clusters unreliable.

In light of this new information, a factor analysis of the data was conducted. Since a factor analysis identifies the questions that correlate well with each other, it designated five components to replace the eight components (sub-categories) originally introduced. The following five categories are statistically more reliable than the previous eight sub-categories.

Table 3.3

New Categories

Category	Corresponding Questions (#)[1]
Attitude	16,17,23,40,41,42,50
Perception	15, 25, 32, 33, 44, 48, 52, 56
Professional Development Experience	9 (a-e)
Readiness to Implement	13,14,19,20,21,22,26,27,28,29,39,46,49,51,54
Current Practice	12, 34, 35, 37

Attitude

Reliability Rating: 0.67

16. I do my banking on-line

17. I am comfortable making purchases on-line.

23. I check my e-mail daily.

40. I have strong mathematical skills.

41. I am not comfortable with change.

42. I am comfortable not being the "expert" in the class.

50. I am afraid of appearing ignorant in front of my students.

Perception

Reliability Rating: 0.96

15. Word processors help produce lazy writers.

[1] Note: All of the questions in the new categories are Likert-Scale questions.

25. Computers dehumanize society.

32. Too much emphasis is placed on the importance of computers in education.

33. Research demonstrates that computers develop better writers.

44. My administrators encourage the implementation of computers in the classroom.

46. I often discuss the use of computers with my colleagues.

48. Many of my colleagues integrate computers in their writing programs.

52. The ministry advocates strongly for the use of computers in English classes.

56. My administrator attends workshops related to the use of computers in the classroom.

Professional Development Experience (Unchanged)

Reliability Rating: 0.85

9. Please rate the following statements based on your experiences with computer-related professional development on a scale of *1 to 5 where 1 is Strongly Disagree and 5 is Strongly Agree.*

   a. My experiences encouraged extensive hands-on work.

   b. My experiences were based on collaborative learning activities.

   c. My experiences were self-initiated.

   d. My experiences were highly relevant.

   e. My experiences were pleasant, overall.

Readiness to Implement

Reliability Rating: 0.77

13. Knowing how to use a word processor is a worthwhile and necessary skill.

14. I would like to learn more about how to incorporate computers into my English program.
19. Integrating computers into the teaching of written composition has more disadvantages than advantages
20. I feel confident about my ability to integrate computers into my present writing program.
21. English teacher training should include instructional applications of computer courses.
22. I look forward to a time when more English teachers are using word processors to teach written composition.
26. Knowledge of word processors will improve students' writing.
27. I use a word processor when I want to write creatively.
28. I use a computer to keep student records.
29. I use the Internet to search for new teaching ideas.
39. Word processors help to reduce writing apprehensions.
46. I often discuss the use of computers with my colleagues.
49. Greater release time is needed to learn more about computer integration.
51. As an English teacher, I am obligated to incorporate computers into my writing program.
54. Without word processing skills, all students will have limited job opportunities.

Current Practice

Reliability Rating: 0.73

12. I teach my students techniques for the various stages of the writing process.
34. I teach students how to use the word processor for their pre-writing stage.

35. I teach students how to use the word processor to draft their writing.

37. I teach students how to revise and edit using a word processor.

Additionally, several of the remaining Likert-scale questions were analysed individually for patterns and themes among the teachers' responses.

Informed Consent

The UBC Behavioural Research Ethics Board approved this study, (Appendix C) and an informed consent form (Appendix D) accompanied the questionnaires outlining the rights of the participants. Participants were advised that consent was granted by filling out the questionnaire.

Confidentiality/ Anonymity:

In order to ensure confidentiality, documents were identified by code number and kept in a locked cabinet until the data analysis was completed. Five years past the completion of this study, the data will be destroyed. My advisor, Dr. Joe Belanger, and I were the only individuals with access to the data. Teachers, administrators, schools, and the school district remain unidentifiable throughout this study.

Generalizability

This study's sample of 52 high school English teachers in various socio-economic neighbourhoods throughout the greater urban city studied allows the findings to be generalized formally to a population of this district's high school English teachers. While these findings appear to be representative of other teachers of large urban cities teaching in a similar context with similar backgrounds, they cannot be generalized formally beyond the population sampled. This study suffers from the problem of return rate of questionnaires common to this type of

research. Although the return rate was 59%, there is a problem of not being able to determine how the others might have reported.

The Pilot Study

At the time of the pilot study, the questionnaire (Appendix E) was comprised of 57 questions, 48 of which were Likert in nature. The remaining 11 questions were multiple-choice.

Limitations

Several factors limited the generalizability of the data from the pilot study. First, the questionnaire was designed for secondary English teachers, but only 2 of the 17 respondents reported that they were teaching at least one section of English-Language Arts. Although 11 of the 17 participants did indicate a history of teaching English or Language Arts, the majority of participants (n = 7) responded that they preferred to teach at the primary level (grades K – 6) and two participants left this question unanswered. Additionally, generalization of this study is restricted because the participants were students at the end of a semester-long course on Integrating Computers into Language Arts. Since this sample was small, difficulties were encountered when trying to assess the relationships between variables.

Data Analysis

SPSS 10.0 was used to analyse the data. After creating and defining variables, an attempt was made to determine a bi-variate correlation between clusters of questions. In this pilot study, as well as in the larger thesis, a relationship that is too weak to be useful is indicated by a Pearson correlation coefficient (r) that was < .25. Twelve of the thirteen combinations from the pilot study were too weak to be useful.

Findings

One combination that did result in a strong correlation ($r = .55$) was an individual's level of Perception to his/her implementation of computers in the classroom. In this study, Perception was defined by the following questions:

10. Knowing how to use a word processor is a worthwhile and necessary skill.
13. Word processors help students write more creatively.
20. Integrating computers into the teaching of written composition has more disadvantages than advantages. * [2]
27. Knowledge of word processors will improve students' writing.
35. Research demonstrates that computers develop better writers.
40. Word processors help to reduce writing apprehension.
56. Without knowledge about word processing, all students will have limited job opportunities.

And Implementation was defined by:

9. On average, how many hours per month of class time, do you use computers when teaching written composition?

   Never 1-2 hours 3-5 hours more than 5 hours

36. Students should use word processors in their pre-writing stages.
37. Students should use word processors in their drafting process.
38. Students should use word processors only to publish their work. *
39. Students should use word processors to revise and edit their work.

In retrospect, it was realised that questions 36 – 39 may be better indicators of teachers' perceptions, rather than their willingness to implement word processors.

[2] All questions analysed using reversed polarization are marked with an asterisk.

The pilot study's findings are shown graphically in Appendices F to I. The following conclusions can be drawn:

- In general, the participants did not feel threatened when others talked about computers, and were confident in their ability to learn about computers.
- They spent a considerable amount of time in computer-related professional development courses and/or workshops, and the most common locale for this development was a faculty of education.
- Their perceptions of computers were positive.
- Thirty-five percent reported never using computers in their teaching of written composition, and only 18% reported using the computer in their classrooms three or more hours per month. However, as a limitation of this finding, only 2 of the 17 participants were presently teaching at least one section of English/Language Arts and 22% of the data were missing.

Conclusions

The results of this pilot study reinforced what was previously known and predicted: the participants were avid and confident users of computers. On average, they used the computer for teaching related matters 9.5 hours per week. The most common use of the computer was to check E-mail regularly, and the second most common use was to search for teaching-related suggestions.

Although the results of this study must be tempered by the limitations discussed earlier, this pilot study reinforced the need to understand why teachers, despite their positive attitudes, resisted implementing the word processor into their teaching of written composition.

IV: Findings

This chapter examines the findings of this study. First it presents the demographics, detailing the computer use of respondents collectively, by gender, by age, and by years of experience. Tables include number of respondents (*n*), means (*M*), standard deviations (*SD*), and the percentages of respondents who recorded "0" [Ans. = 0 (%)], indicating no hours of activity. Subsequently, this chapter discusses the correlations of categories defined in Chapter III ("Attitude," "Perception," "Professional Development Experiences," "Readiness to Implement," and "Current Practice") and the results of the open-ended response section of the survey. Notes regarding respondents' marginalia are also included throughout this chapter.

Demographics

Table 4.1 displays the demographics of the study. Of the 52 surveys completed, there was a fairly even distribution of male (*n* =21) and female (*n* =27) respondents. Forty-four percent of the participants (*n* = 23) were between the ages of 41 and 60 years of age. Fifty-six percent of the respondents (*n* = 29) had more than 10 years of experience teaching English-Language Arts, and there was a fairly even distribution of preference for the junior (*n* =24) and senior (*n* =28) secondary grades throughout the sample. The results of the data analysed will be based on the complete sample and on gender, age, and years of experience.

Personal Uses, Professional Uses, Computer-Related Professional Development, and the Teaching of Written Composition

Respondents' personal (Q. 7a) and professional (Q. 7b) uses of the computer (including E-mail), the extent of their computer-related professional development (Q 8a-c); and the number of hours they spent teaching written composition (Q.10a), and teaching written composition with a word processor (Q.10b) are summarized in Table 4.2.

In these questions, respondents were asked to enter the number of hours per day (h/day), the number of hours per week (h/week), the total number of hours (h), or the number of credits (credits) they spent or earned using the computer for personal and professional purposes. In questions 10 a and b, respondents were asked to enter the number of hours spent teaching written composition (10a) and teaching written composition with a word processor (10b) per week, in each of their English classes. Table 4.3 to Table 4.5 examine these results by gender (Table 4.3), by age (Table 4.4) and by years of experience (Table 4.5).

Table 4.1

Demographics of Respondents

Demographic Information		*n*	Percentage
Gender	Male	21	40
	Female	27	52
	Gender Not Noted	4	8
Age	22-30	7	13
	31-40	20	39
	41-60	23	44
	>60	2	4
Years Experience	0-1	1	2
	2-5	11	21
	6-10	11	21
	>10	29	56
Grade Level Preference	K-7	0	0
	8-10	24	46
	11-12	28	54
No. of Eng-LA sections presently teaching	0	2	4
	1-2	8	15
	3-6	22	42
	>6	20	38

Note. Percentages were rounded to the nearest whole number. "Gender Not Noted" represents the respondents who did not record their gender.

The data in Table 4.2 indicate that teaching written composition is practiced most commonly without a word processor. When asked to rank the top three techniques respondents most

frequently used to teach written composition, respondents gave preference to the use of writing workshops (56%), followed by the use of lectures (23%) and student-teacher conferences (6%). Other teachers expressed difficulties in conducting student-teacher conferences, "No time for this (esp. with high % of ESL in classes)" [1] and "At marks time, perhaps (or Writing 12)." The remaining 15% of the responses were a mixture of "no answer" (n = 2) and "other" (n = 6).

Table 4.2

Personal Uses, Professional Uses, Computer-Related Professional Development and the Teaching of Written Composition for the Complete Sample

Demographic Information	*n*	*M*	*SD*	Ans. = 0 (%)
Personal Purposes (h/day)	48	0.8	1.1	19
Professional Purposes (h/day)	51	1.2	1.8	20
P.D. by Admin. or Colleagues (h)	49	4.6	5.6	20
P.D. by Board or Ministry (h)	49	2.6	5.0	57
P.D. at Faculty of Ed. (credits)	48	0.7	1.7	83
Teach Written Comp. (h/week)	48	3.8	5.2	2
Teach Written Comp. With a word processor (h/week)	50	0.1	0.3	90

Note. "Ans. = 0 (%)" denotes the percentage of respondents who recorded "0" for the number of hours spent, or credits earned, with each activity; percentages were rounded to the nearest whole number. The following abbreviations were used professional development = "P.D.;" administrators = "Admin.;" education = "Ed.;" composition = "Comp.;" and hours = "h." "H/week" refers to the average number of hours, per week, in each English class.

According to the data presented in Table 4.2, 90% of the sample does not spend any time teaching written composition with a word processor, and 83% of the sample has not earned any credits of computer-related professional development at a Faculty of Education. Administrators and colleagues conducted the most popular computer-related professional development workshops (M = 4.6 h). In the calculation of the mean and standard deviation for hours in attendance at administrators or colleagues' professional development workshops, an anomalous case which reported 100 hours was removed to avoid a misrepresentation of the remaining data. The respondent who reported 100 hours was female, between the ages of 41 and 60, and had more than 10 years experience teaching English-Language Arts. It should also be noted that

[1] Written responses have not been edited for spelling or grammar.

another respondent recorded, "Many hours at the Academy of Learning, own time, own cost," in answer to the number of credits earned at a Faculty of Education, which was not an option provided in the questionnaire.

Table 4.3

Personal Uses, Professional Uses, Computer-Related Professional Development and the Teaching of Written Composition by Gender

Demographic Information	Gender	*n*	*M*	*SD*	Ans. = 0 (%)
Personal Purposes (h/day)	Male	20	1.2	1.5	15
	Female	25	0.6	0.3	16
	Gender Not Noted	3	0.1	0.1	67
Professional Purposes (h/day)	Male	21	1.4	1.8	14
	Female	26	1.3	1.9	15
	Gender Not Noted	4	0.5	1.0	75
P.D. by Admin. Or Colleagues (h)	Male	21	3.8	4.8	24
	Female	24	5.8	6.5	17
	Gender Not Noted	4	2.1	2.2	25
P.D. by Board or Ministry (h)	Male	21	3.0	5.7	52
	Female	25	2.4	4.7	60
	Gender Not Noted	3	0.7	1.2	64
P.D. at Faculty of Ed. (credits)	Male	21	0.6	1.6	86
	Female	24	0.8	1.8	79
	Gender Not Noted	3	0.0	0.0	100
Teach Written Comp. (h/week)	Male	21	2.9	4.1	5
	Female	26	4.7	6.0	0
	Gender Not Noted	1	1.0	0.0	0
Teach Written Comp. With a word processor (h/week)	Male	20	0.0	0.1	90
	Female	26	0.1	0.4	88
	Gender Not Noted	4	0.0	0.0	100

Note. "Ans. = 0 (%)" denotes the percentage of respondents who recorded "0" for the number of hours spent, or credits earned, with each activity; percentages were rounded to the nearest whole number. The following abbreviations were used professional development = "P.D.;" administrators = "Admin.;" education = "Ed.;" composition = "Comp.;" and hours = "h." "H/week" refers to the average number of hours, per week, in each English class; "Gender Not Noted" refers to the respondents who did not record their gender.

According to the data presented in Table 4.3, male respondents (M = 1.2 h/day) reported spending more time on the computer than female respondents (M = 0.6 h/day) for personal

purposes. However, female respondents reported spending more time teaching written composition (M = 4.7 h/week) and teaching written composition with a word processor (M = 0.1 h) than males (M = 2.9 and 0.0 h/week, respectively). Female respondents also reported attending more "P.D. by Admin. or Colleagues," (M = 5.8 h) than male respondents (M = 3.8 h).

Table 4.4

Personal Uses, Professional Uses, and Computer-Related Professional Development and the Teaching of Written Composition By Age

Demographic Information	Age	*n*	*M*	*SD*	Ans. = 0 (%)
Personal Purposes (h/day)	22-30	7	0.8	0.3	0
	31-40	20	0.6	0.3	10
	41-60	19	1.1	1.6	32
	>60	2	0.5	0.7	50
Professional Purposes (h/day)	22-30	7	1.3	1.0	0
	31-40	20	1.0	0.7	15
	41-60	22	1.5	2.6	27
	>60	2	0.5	0.7	50
P.D. by Admin. or Colleagues (h)	22-30	7	4.0	5.1	14
	31-40	18	4.3	4.8	17
	41-60	22	5.0	6.6	27
	>60	2	6.3	5.3	0
P.D. by Board or Ministry (h)	22-30	7	3.7	4.8	57
	31-40	19	2.1	5.7	68
	41-60	22	2.5	4.6	55
	>60	1	3.0	-	0
P.D. at Faculty of Ed. (credits)	22-30	7	0.4	1.1	86
	31-40	19	0.8	2.0	84
	41-60	21	0.6	1.6	86
	>60	1	1.0	-	0
Teach Written Comp. (h/week)	22-30	7	1.3	1.2	0
	31-40	19	4.2	5.7	0
	41-60	21	4.3	5.6	5
	>60	1	5.0	-	0
Teach Written Comp. With a word processor (h/week)	22-30	7	0.0	0.0	100
	31-40	20	0.2	0.5	80
	41-60	21	0.0	0.2	95
	>60	2	0.0	0.0	100

Note. Age groups correspond to the categories presented in question 2 of the survey. Dashes (-) have been introduced to indicate an incalculable standard deviation; "Ans. = 0 (%)" denotes the percentage of respondents who recorded "0" for the number of hours spent, or credits earned, with each activity. Percentages are rounded to the nearest whole number. The following abbreviations were used "professional development = "P.D.;" administrators = "Admin.;" education = "Ed.;" composition = "Comp.;" and hours = "h." "H/week" refers to the average number of hours, per week, in each English class; "Gender Not Noted" refers to the respondents who did not record a gender.

The data in Table 4.4 indicate that respondents over the age of 60 used the computer for professional purposes the least (M = 0.5 h/day), and respondents between the ages of 41 and 60 used the computer for personal (M = 1.1 h/day) and professional purposes (M = 1.5 h/day) the most. The two respondents over the age of 60 also reported attending the most computer-related professional development workshops offered by their administrators or colleagues (M = 6.3 h). Workshops run by administrators and colleagues were also the workshops that yielded the highest mean in female respondents (M = 5.8 h; Table 4.3) and across the entire sample (M = 4.6 h; Table 4.2). Respondents in the 31-40 age group reported teaching the most hours of written composition with a word processor (M = 0.2 h/week).

The inferences which can be made from the data in Table 4.5 indicate that the respondent with 0-1 year of experience did not participate in professional development, taught written composition the least (M = 1.0 h/week), and never with a word processor. This lack of experimentation could be a reflection of a lack of security first year teachers often experience, however, the low number of respondents (n = 1) tempers these inferences. The data in Table 4.5 also indicate that respondents with more than 10 years of experience recorded the most time spent on the computer for personal (M = 1.0 h/day) and professional (M = 1.4 h/day) purposes, in addition to the most time spent in professional development workshops run by administrators or colleagues (M = 5.8 h) and by the Board or Ministry of Education (M = 3.1 h). However, a greater percentage of respondents with 2-5 years of experience (91%) used a word processor to teach written composition.

Table 4.5

Personal Uses, Professional Uses, and Computer-Related Professional Development and the Teaching of Written Composition By Years of Experience

Demographic Information	Years of Experience	*n*	*M*	*SD*	Ans. = 0 (%)
Personal Purposes (h/day)	0-1	1	0.5	-	0
	2-5	11	0.6	0.3	0
	6-10	11	0.6	0.4	9
	>10	25	1.0	1.4	28
Professional Purposes (h/day)	0-1	1	1.0	-	0
	2-5	11	1.0	0.8	0
	6-10	11	1.1	0.8	18
	>10	28	1.4	2.3	29
P.D. by Admin. or Colleagues (h)	0-1	1	0.0	-	0
	2-5	11	4.1	4.3	18
	6-10	10	2.5	1.9	10
	>10	28	5.8	6.7	21
P.D. by Board or Ministry (h)	0-1	1	0.0	-	0
	2-5	11	2.3	4.0	36
	6-10	10	1.6	2.3	60
	>10	27	3.1	6.1	56
P.D. at Faculty of Ed. (credits)	0-1	1	0.0	-	0
	2-5	10	0.6	1.3	50
	6-10	11	0.5	1.8	91
	>10	26	0.8	1.8	81
Teach Written Comp. (h/week)	0-1	1	1.0	-	0
	2-5	11	1.3	1.1	0
	6-10	10	5.9	7.4	0
	>10	26	4.2	5.1	4
Teach Written Comp. With a word processor (h/week)	0-1	0	0.0	-	100
	2-5	11	0.2	0.6	9
	6-10	11	0.1	0.2	82
	>10	27	0.1	0.2	93

Note. "Years of Experience" groups correspond to question 3 of the survey. Dashes (-) represent an incalculable standard deviation; "Ans. = 0 (%)" denotes the percentage of respondents who recorded "0" for the number of hours spent with each activity. Percentages were rounded to the nearest whole number. The following abbreviations were used professional development = "P.D.;" administrators = "Admin.;" education = "Ed.;" composition = "Comp.;" and hours = "h". "H/week" refers to the average number of hours, per week, in each English class.

Student Word Processor Use

Table 4.6 displays respondents' reports of the distribution of "English students who use the word processor without being required to." This question was included in the survey in an attempt to understand what percentage of the respondents believed their students to be using the

word processor without being required to. The categories were presented for the respondents in a multiple-choice format; unfortunately, the categories overlapped and offered two places where the numbers 30 and 60 could be recorded. The categories were selected in an attempt to distribute the data in thirds.

Table 4.6

Percentages of English Students Who Use the Word Processor Without Being Required To

Category	*n*	Percentage
0-30	14	27
30-60	20	38
60-100	17	33
?	1	2

Note. The categories in this table correspond to the multiple-choice options presented in question 6 of the survey. All percentages have been rounded to the nearest whole number.

Table 4.7 reports that teachers neither agreed nor disagreed[2] with the Likert-scale statement, "I expect all final products to be completed on a word processor," ($M = 2.7$). The results of this question recorded no difference of opinions between genders, but variation in responses divided by age and years of experience. Respondents aged 22-30 ($M = 3.0$) and 31-40 ($M = 3.1$); and respondents with 0-1 year of experience ($M = 3.0$) and 6-10 years of experience ($M = 3.1$) neither agreed nor disagreed with this statement, whereas respondents aged 41-60 ($M = 2.2$), the two respondents over the age of 60 ($M = 2.5$), and respondents with more than 10 years of experience ($M = 2.5$) mildly disagreed.

[2] When discussing the Likert-scale response means the following references are used:

Very Strongly Disagree:	1.0 – 1.3	Neutral:	2.6 – 3.4	Very Strongly Agree: 4.7- 5.0
Strongly Disagree:	1.4 – 1.7	Mildly agree:	3.5 – 3.8	
Disagree:	1.8 – 2.1	Agree:	3.9 – 4.2	
Mildly Disagree	2.2 – 2.5	Strongly Agree:	4.3 – 4.6	

Table 4.7

"I expect all final products to be completed on a word processor.:" Likert-Scale Ratings Reported For the Complete Sample, By Gender, By Age, and By Years of Experience

Demographic Variable		*N*	*M*	*SD*
All Respondents		50	2.7	1.2
Gender	Male	21	2.8	1.4
	Female	25	2.6	1.4
	Gender Not Noted	4	2.5	1.3
Age	22-30	7	3.0	1.4
	31-40	20	3.1	1.3
	41-60	21	2.2	1.4
	>60	2	2.5	0.7
Years of Experience	0-1	1	3.0	-
	2-5	11	2.6	1.4
	6-10	11	3.1	1.3
	>10	27	2.5	1.5

Note. Dashes (-) denote an incalculable standard deviation; and "Gender Not Noted" refers to respondents who did not record their gender.

Factor Analysis Categories and the Likert-scale Questions that Define Them

As discussed in Chapter III, the categories "Attitude," "Perception," "Professional Development Experiences," "Readiness to Implement," and "Current Practice" were created based on a factor analysis using SPSS 10.0. As a result of this factor analysis, clusters of Likert-scale questions were created based on their reliability as scales; these clusters were then given the aforementioned labels. The category labels are used, in this chapter, as a framework to discuss the data generated by the Likert-scale questions in each respective category. Respondents' marginalia have also been included.

The means of the factor analysis categories based on the complete sample, by gender, by age, and by years of experience will be presented in Table 4.8, Table 4.10, Table 4.12, Table 4.14 and Table 4.16. These tables indicate that there are no noteworthy differences (a difference of 1 point on the Likert scale) between male and female respondents, a finding that supports Dupagne and

Krendl's conclusion published in 1992. These tables also indicate that there are no noteworthy differences based on age or years of experience, with the exception of "Attitude."

Attitude

Table 4.8 presents the means of the category defined as "Attitude," where two differences were noted based on comparisons by age, and years of experience. The first instance is based on age where the two respondents over the age of 60 reported a higher score ($M = 4.4$) on "Attitude" than the remaining age groups. The second instance is based on years of experience where the respondent ($n = 1$) with 0-1 year of experience reported a lower score ($M = 2.0$) of "Attitude" than her colleagues. The low number of respondents in each case tempers both of these findings and greater emphasis should be placed on the means of the Likert-scale questions of the entire sample (Table 4.9)

As Table 4.9 indicates, in general, respondents disagreed that they were afraid of appearing ignorant in front of their students (Q.50; $M = 1.9$). One respondent who strongly disagreed with this statement added, "Nope – it happens everyday." The only respondents who were neutral in response to this statement were the respondents who did not note their gender (GNN respondents; $M = 3.3$). Respondents with two to five years of experience ($M = 1.6$); one respondent over the age of 60 ($M = 1.0$), and respondents between the ages of 22 and 30 strongly disagreed ($M = 1.6$) with this statement, whereas respondents with 6 to 10 years of experience mildly disagreed ($M = 2.3$).

Table 4.8

The Means of the Factor Analysis Category: "Attitude" For the Complete Sample, By Gender, By Age, and By Years of Experience

Demographic Variable		*N*	*M*	*SD*
Complete Sample		52	3.1	0.8
Gender	Males	21	3.2	1.3
	Females	27	3.1	1.3
	Gender Not Noted	4	3.1	1.3
Age	22-30	7	3.5	1.4
	31-40	20	3.1	1.2
	41-60	23	3.0	1.4
	>60	2	4.4	0.9
Years of Experience	0-1	1	2.0	1.2
	2-5	11	3.3	1.3
	6-10	11	3.0	1.4
	>10	29	3.2	1.3

Note. The "Attitude" mean was derived from the means of questions 16, 17, 23, 40, 41, 42, and 50. A copy of the survey can be found in Appendix B. "Gender Not Noted." denotes no gender recorded.

The data in Table 4.9 also indicate that many respondents were not uncomfortable with change (Q.41; $M = 2.2$). Although, "Yep - I am over 40!" is an example of marginalia which accompanied one of the responses to this statement, an analysis by age group does not lend its assumption support. The only group that reported being uncomfortable with change was the one respondent with 0-1 year of experience (rating = 4.0). Respondents between the ages of 22 and 30 ($M = 1.7$) and both respondents over the age of 60 ($M = 1.0$) strongly and very strongly disagreed with this statement.

Respondents mildly agreed with the statement, "I am comfortable not being the 'expert' in the class," (Table 4.9; Q. 42; $M = 3.6$). One of the two respondents over the age of 60 strongly agreed with this statement ($M = 5.0$) while the other respondent did not record an answer. However, one respondent who disagreed with this statement added, "I'm paid to be."

Table 4.9

Likert Response Means and Standard Deviations for "Attitude" For the Complete Sample, By Gender, By Age, and By Years of Experience

Q.	*N*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*n*	*M*	*SD*
				M	21	2.7	1.9	22-30	7	3.4	1.6	0-1	1	1.0	-
				F	25	2.3	1.6	31-40	19	2.2	1.5	2-5	11	2.5	1.6
16.	49	2.4	1.6	GNN	3	1.3	0.6	41-60	22	2.1	1.8	6-10	11	2.4	1.4
								>60	1	5.0	-	>10	26	2.4	1.9
				M	21	2.2	1.4	22-30	7	2.3	1.1	0-1	1	1.0	-
				F	25	2.2	1.5	31-40	19	2.1	1.5	2-5	11	2.3	1.5
17.	49	2.1	1.7	GNN	3	1.3	0.6	41-60	22	2.0	1.5	6-10	11	2.1	1.1
								>60	1	4.0	-	>10	26	2.2	1.5
				M	21	3.5	1.5	22-30	7	4.0	1.0	0-1	1	2.0	-
				F	27	3.0	1.5	31-40	20	3.3	1.4	2-5	11	3.5	1.4
23.	51	3.2	1.5	GNN	3	2.7	1.5	41-60	23	2.9	1.8	6-10	11	3.6	1.4
								>60	2	4.0	-	>10	28	3.0	1.6
				M	21	2.6	1.0	22-30	7	2.9	1.3	0-1	1	1.0	-
				F	27	2.3	1.2	31-40	20	2.6	1.0	2-5	11	3.0	1.2
40.	52	2.5	1.2	GNN	4	3.3	1.7	41-60	23	2.3	1.3	6-10	11	2.5	1.0
								>60	2	3.0	1.4	>10	29	2.4	1.2
				M	21	2.3	1.1	22-30	7	1.7	1.3	0-1	1	4.0	-
				F	27	2.2	1.2	31-40	20	2.4	1.0	2-5	11	1.9	0.9
41.	52	2.2	1.1	GNN	4	1.8	1.5	41-60	23	2.3	1.3	6-10	11	2.4	1.4
								>60	2	1.0	-	>10	29	2.2	1.1
				M	21	3.5	1.1	22-30	7	3.0	1.4	0-1	1	3.0	-
				F	27	3.8	1.2	31-40	20	3.9	1.0	2-5	11	3.6	1.0
42.	51	3.6	1.2	GNN	3	3.0	1.0	41-60	23	3.6	1.2	6-10	11	3.4	1.4
								>60	1	5.0	-	>10	28	3.8	1.1
				M	21	1.8	0.8	22-30	7	1.6	0.5	0-1	1	2.0	-
				F	27	1.9	0.9	31-40	20	2.0	1.1	2-5	11	1.6	0.5
50.	51	1.9	1.0	GNN	3	3.3	2.1	41-60	23	2.0	1.1	6-10	11	2.3	1.3
								>60	1	1.0	-	>10	28	1.9	1.0

Note. "Q" denotes the numbers that correspond to the questions grouped as "Attitude." For a sample of the survey please see Appendix B. The first three columns report the count, mean, and standard deviation of the complete sample; the remaining columns report the counts, means, and standard deviations by gender, by age, and by years of experience (Yrs. Exper.). "GNN" represents the respondents who did not record their gender and dashes (-) an incalculable standard deviation.

On the topic of banking (Q. 16) and making purchases (Q. 17) online, respondents tended to mildly disagree or disagree (M = 2.4 and 2.1), respectively. However, the same respondent over the age of 60 not only banked online (rating = 5.0) but also was comfortable making purchases online (rating = 4.0). An average of the sample's responses also indicated a neutral rating (M = 3.2) for checking E-mail daily (Q. 23) with no notable difference between male and female respondents. Respondents aged 22-30 and the two respondents over 60 agreed with checking

their E-mail daily (M = 4.0), while the rest of the age groups were neutral, and the respondent in the 0-1 year of experience category disagreed with checking E-mail daily (M = 2.0) while the rest of the "years of experience" groups were neutral.

The data in Table 4.9 indicate that respondents' self-perception of having strong mathematical skill is quite low (Q. 40; M = 2.5). In the analysis based on years of experience, the respondent with 0 to 1 year of experience, who also exhibited a low score of "Attitude," strongly disagreed (rating = 1.0) with having strong math skills; respondents with 6-10 or more than 10 years of experience mildly disagreed (M = 2.5 and 2.4, respectively); and respondents with 2-5 years of experience were neutral (M = 3.0). The two respondents over the age of 60 neither agreed nor disagreed (M = 3.0) with having strong math skills. These findings are worth noting since Graham & Russell's (1997) results correlate a high level of math anxiety with a high level of computer anxiety.

Perception

Table 4.10 indicates that the respondents exhibited a neutral level of "Perception" (M = 3.0). GNN respondents scored lower (M = 2.1) than male (M = 3.1) or female (M = 3.1) respondents; negligible differences based on age or years of experience were noted.

Table 4.10

The Means of the Factor Analysis Category: "Perception" For the Complete Sample By Gender, By Age, and By Years of Experience

Demographic Variable		*n*	*M*	*SD*
Complete Sample		52	3.0	0.6
Gender	Males	21	3.1	1.1
	Females	27	3.1	1.2
	Gender Not Noted	4	2.1	0.9
Age	22-30	7	3.1	1.2
	31-40	20	3.2	1.1
	41-60	23	2.9	1.1
	>60	2	2.6	0.7
Years of Experience	0-1	1	2.8	1.3
	2-5	11	3.1	1.1
	6-10	11	3.1	1.1
	>10	29	3.0	1.1

Note. The mean of "Perception" was derived from the means of questions 15, 25, 32, 33, 44, 48, 52, and 56. For a sample of the survey please see Appendix B. "Gender Not Noted" denotes no gender recorded.

The means of the questions clustered under "Perception" (Table 4.11) reveal an overall positive perception of the computer's role in society. Most respondents disagreed that word processors help produce lazy writers (Q. 15; $M = 2.1$). Male respondents ($M = 2.3$), respondents between the ages of 41 and 60 ($M = 2.2$), and the two respondents over the age of 60 ($M = 2.5$) mildly disagreed with this statement while GNN respondents were neutral ($M = 2.8$), and the respondent with 0-1 year of experience strongly disagreed (rating = 1.0).

In general, respondents mildly disagreed that computers dehumanize society (Q. 25; $M = 2.5$). The two respondents over the age of 60 ($M = 3.5$) and GNN respondents mildly agreed ($M = 3.5$). With the exception of GNN respondents ($M = 4.8$), most respondents were neutral in their belief that too much emphasis is placed on the importance of computers in education (Q.32; $M = 3.1$).

Table 4.11

Likert Response Means and Standard Deviations for "Perception" For the Complete Sample, By Gender, By Age, and By Years of Experience

Q	*n*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*n*	*M*	*SD*
15.	51	2.1	1.2	M	20	2.3	1.4	22-30	7	1.9	1.2	0-1	1	1.0	-
				F	27	1.9	1.1	31-40	20	2.0	1.1	2-5	11	2.1	1.1
				GNN	4	2.8	1.0	41-60	22	2.2	1.3	6-10	11	2.0	1.3
								>60	2	2.5	2.1	>10	28	2.1	1.2
25.	52	2.5	1.2	M	21	2.7	1.4	22-30	7	1.9	1.2	0-1	1	2.0	-
				F	27	2.3	1.0	31-40	20	2.6	1.1	2-5	11	2.1	1.2
				GNN	4	3.5	1.0	41-60	23	2.7	1.2	6-10	11	2.6	1.2
								>60	2	3.5	2.1	>10	29	2.7	1.2
32.	51	3.1	1.1	M	20	2.9	1.2	22-30	7	3.0	1.3	0-1	1	3.0	-
				F	27	3.0	1.0	31-40	20	3.1	1.1	2-5	11	3.2	1.3
				GNN	4	4.8	0.5	41-60	22	3.2	1.2	6-10	11	2.9	1.1
								>60	2	3.0	1.4	>10	28	3.2	1.2
33.	39	2.8	1.0	M	16	3.1	1.0	22-30	5	2.6	0.5	0-1	1	2.0	-
				F	21	2.7	0.9	31-40	15	2.9	1.0	2-5	8	2.9	0.4
				GNN	2	1.0	0.0	41-60	17	2.8	1.1	6-10	7	2.7	1.0
								>60	2	2.0	1.4	>10	23	2.8	1.2
44.	50	3.3	1.2	M	20	3.3	1.2	22-30	7	3.0	0.8	0-1	1	2.0	-
				F	27	3.4	1.1	31-40	19	3.3	1.2	2-5	11	3.2	1.0
				GNN	3	2.3	1.2	41-60	23	3.3	1.2	6-10	10	3.1	1.2
								>60	1	4.0	-	>10	28	3.4	1.2
46.	52	2.5	1.2	M	21	2.6	1.1	22-30	7	2.3	1.0	0-1	2.0	1	-
				F	27	2.6	1.3	31-40	20	2.6	1.3	2-5	2.5	11	1.0
				GNN	4	1.8	1.0	41-60	23	2.5	1.2	6-10	2.1	11	1.1
								>60	2	2.0	1.4	>10	2.7	29	1.3
48.	48	2.4	0.8	M	19	2.7	0.8	22-30	6	2.2	0.8	0-1	1	3.0	-
				F	26	2.2	0.8	31-40	20	2.4	0.9	2-5	10	2.4	0.7
				GNN	3	2.3	1.2	41-60	21	2.5	0.9	6-10	11	2.4	1.0
								>60	2	3.0		>10	26	2.4	0.9
52.	47	2.7	1.2	M	20	2.7	1.2	22-30	7	2.7	1.4	0-1	1	1.0	-
				F	24	2.8	1.3	31-40	17	3.1	1.2	2-5	10	2.7	1.2
				GNN	4	2.0	1.0	41-60	22	2.4	1.1	6-10	9	2.9	1.1
								>60	2	4.0	-	>10	27	2.7	1.3
56.	32	2.6	1.1	M	14	2.8	1.1	22-30	5	2.4	0.9	0-1	1	2.0	-
				F	18	2.4	1.0	31-40	11	2.7	1.1	2-5	7	2.9	0.7
				GNN	0	-	-	41-60	15	2.6	1.2	6-10	6	2.3	1.5
								>60	1	2.0	-	>10	18	2.6	1.1

"Q" denotes the numbers that correspond to the questions grouped as "Perception." For a sample of the survey please see Appendix B. The first three columns report the count, mean, and standard deviation of the complete sample; the remaining columns report the counts, means, and standard deviations by gender, by age, and by years of experience (Yrs. Exper.). "GNN" represents the respondents who did not record their gender and dashes (-) an incalculable standard deviation because only one response was recorded.

As in the previous category, marginalia was included to illustrate disagreement. One respondent (aged 41-60) in particular was quite vocal. For instance, in response to "Word processors help

produce lazy writers," this respondent strongly agreed and added, "Unequivocally – yes; some won't even use spell check!" He also rated the statement, "Too much emphasis is placed on the importance of computers in education" as a "–3" and wrote, "... oh ... yes! – Until every desk has one - and video games are locked out." This same individual, in response to the statement, "Computers dehumanize society," wrote: "Forwarding e-mail jokes? Get real," and "Oh come on! Totally."

A trend of neutral to disagree responses can be observed in the remaining questions of the category "Perception" (Table 4.11). For instance, respondents were neutral in their belief that research demonstrates that computers develop better writers (Q. 33; $M = 2.8$). Thirteen out of the 52 respondents (25%) provided no answer for this question and nine of these unanswered questions (17%) were accompanied by either a question mark or a variation of "I don't know." Although one respondent over the age of 60 agreed ($M = 4.0$) and the one respondent with 0 – 1 year of teaching experience disagreed ($M = 2.0$) that their administrators encouraged the implementation of computers in the classroom (Q.44), the means of most groups were neutral ($M = 3.3$). The cluster of marginalia inspired by this question illustrates respondents' uncertainty: "[In] English – no," "Sure,- and zero tolerance for bullying ...," and "Without computer support." Most respondents seemed to neither agree nor disagree that their administrators attended workshops related to the use of computers in the classroom (Q. 56; $M = 2.6$), and they mildly disagreed that they discussed the use of computers with their colleagues (Q.46; $M = 2.5$). The former statement generated 13 uncertain responses (a combination of "?" and "I don't know;" 25%), and seven (13%) respondents did not answer.

Most respondents were neutral in their response that the Ministry advocates strongly for the use of computers in English classes (Q. 52; $M = 2.7$). This question produced four question marks

(8%) and one unanswered question. Noteworthy marginalia accompanying these answers included, "Words contradict actions," "They don't provide funding for computers," and "Advocating is the easy part!" Respondents who did not indicate their gender disagreed with this statement ($M = 2.0$) and the one respondent in the 0-1 year of experience category strongly disagreed (rating = 1.0). Contrastingly, the two respondents over the age of 60 agreed ($M = 4.0$) that the Ministry advocates strongly for the use of computers in English classes.

Professional Development Experiences

In general, respondents recorded less than neutral ($M = 3.4$) experiences with computer-related professional development (Table 4.12). GNN respondents ($M = 2.3$) scored lower than male respondents, who were neutral ($M = 3.4$), and female respondents, who mildly agreed ($M = 3.6$). Additionally, the two respondents over the age of 60 ($M = 3.6$) and respondents with more than 10 years of experience ($M = 3.5$) mildly agreed with the statements in this category while their colleagues remained neutral. The one respondent with 0-1 year of experience did not record any answers for this section of the survey.

Based on their experiences with computer-related professional development (Table 4.13), respondents tended to rate their experiences mildly agree ($M = 3.5 – 3.8$). Thus, in general, respondents mildly agreed that their computer-related professional development sessions encouraged extensive hands-on work (Q. 9a; $M = 3.5$), were self-initiated (Q. 9c; $M = 3.6$), highly relevant (Q. 9d; $M = 3.5$) and were pleasant, overall (Q. 9e; $M = 3.5$), while they neither agreed nor disagreed that their experiences included collaborative learning activities (Q. 9b; $M = 2.8$).

Table 4.12

The Means of the Factor Analysis Category: "Professional Development Experiences" For the Complete Sample, By Gender, By Age, and By Years of Experience

Demographic Variable		*n*	*M*	*SD*
Complete Sample		49	3.4	0.9
Gender	Males	21	3.4	0.8
	Females	24	3.6	0.8
	Gender Not Noted	4	2.3	0.8
Age	22-30	6	3.1	0.9
	31-40	18	3.4	0.8
	41-60	23	3.4	0.7
	>60	2	3.6	0.9
Years of Experience	0-1	0	-	-
	2-5	9	3.4	0.9
	6-10	11	3.0	0.8
	>10	29	3.5	0.7

The mean of "Professional Development Experiences" includes the means of question 9 a – e. For a sample of the survey please see Appendix B. "Gender Not Noted" denotes no gender recorded.

Variation noted in the responses are as follows: the two respondents over the age of 60 ($M = 4.0$) and respondents with 2-5 years of experience ($M = 4.1$) agreed that these workshops encouraged hands-on work, while GNN respondents mildly disagreed ($M = 2.3$). The sample mildly agreed ($M = 3.6$) that it initiated its own professional development, while females had a slightly higher score of agreement ($M = 4.0$) than males ($M= 3.5$). Additionally, while the two respondents over the age of 60 agreed that their experiences were highly relevant ($M = 4.0$) and pleasant overall ($M = 4.0$), GNN respondents were neutral ($M = 2.8$) or mildly disagreed ($M = 2.5$). Respondents between the ages of 22 and 30 were also neutral ($M = 2.7$) in their rating of the latter statement.

Table 4.13

Likert Response Means and Standard Deviations for "Professional Development Experiences" For the Complete Sample, By Gender, By Age, and By Years of Experience

Q	*n*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*n*	*M*	*SD*
9a	49	3.5	1.1	M	20	3.5	1.0	22-30	6	3.5	0.8	0-1	0	-	-
				F	24	3.6	1.0	31-40	18	3.7	1.2	2-5	9	4.1	0.9
				GNN	4	2.3	1.3	41-60	22	3.3	1.1	6-10	11	3.3	1.3
								>60	2	4.0	0.0	>10	26	3.3	1.0
9b	48	2.8	1.2	M	19	2.8	1.2	22-30	6	2.5	1.0	0-1	0	-	-
				F	24	2.9	1.3	31-40	18	2.6	1.2	2-5	9	2.9	0.8
				GNN	4	1.5	0.6	41-60	22	3.0	1.3	6-10	11	2.0	1.3
								>60	2	2.5	0.7	>10	28	3.0	1.3
9c	46	3.6	1.2	M	19	3.5	1.1	22-30	6	3.8	1.2	0-1	0	-	-
				F	22	4.0	1.0	31-40	18	3.6	1.1	2-5	9	3.7	1.2
				GNN	4	2.5	1.7	41-60	22	3.7	1.3	6-10	11	3.3	1.1
								>60	2	3.5	2.1	>10	27	3.8	1.2
9d	48	3.5	1.0	M	19	3.5	1.1	22-30	6	3.0	1.1	0-1	1	-	-
				F	24	3.5	0.9	31-40	17	3.6	1.1	2-5	9	3.2	1.2
				GNN	4	2.8	1.3	41-60	22	3.5	1.0	6-10	11	3.3	1.1
								>60	2	4.0	0.0	>10	27	3.6	1.0
9e	47	3.5	1.1	M	19	3.5	1.1	22-30	7	2.7	0.8	0-1	1	-	-
				F	23	3.7	1.1	31-40	19	3.9	0.9	2-5	10	3.3	1.0
				GNN	4	2.5	1.3	41-60	22	3.5	1.3	6-10	11	3.4	1.0
								>60	2	4.0	0.0	>10	23	3.6	1.2

"Q" denotes the numbers that correspond to the questions grouped as "Professional Development Experience." For a sample of the survey please see Appendix B. The first three columns report the count, mean, and standard deviation of the complete sample; the remaining columns report the counts, means, and standard deviations by gender, by age, and by years of experience (Yrs. Exper.). "GNN" represents the respondents who did not record their gender, and dashes (-) an incalculable standard deviation because only one response was recorded.

Readiness to Implement

The sample was generally neutral ($M = 3.4$) in its responses to the questions categorized as "Readiness to Implement," as were males, 41-60 year olds, the two respondents over the age of 60, and the extremes of the years of experience group (0-1 and >10). All others mildly agreed with the exception of the GNN respondents who scored lower ($M = 2.5$).

Table 4.14

The Means of the Factor Analysis Category: "Readiness to Implement" For the Complete Sample, By Gender, By Age, and By Years of Experience

Demographic Variable		*n*	*M*	*SD*
Complete Sample		52	3.4	0.6
Gender	Males	21	3.4	1.1
	Females	27	3.5	1.2
	Gender Not Noted	4	2.5	1.2
Age	22-30	7	3.5	1.1
	31-40	20	3.6	1.1
	41-60	23	3.3	1.2
	>60	2	2.8	0.8
Years of Experience	0-1	1	3.1	0.8
	2-5	11	3.6	1.1
	6-10	11	3.5	1.1
	>10	29	3.3	1.2

The mean of "Readiness to Implement" includes the means of questions 13, 14, 19, 20-22, 26-29, 39, 46, 49, 51, and 54. For a sample of the survey please see Appendix B. "Gender Not Noted" denotes no gender recorded.

Respondents tended to strongly agree that knowing how to use a word processor is a worthwhile and necessary skill (Q.13; $M = 4.3$), despite one respondents' exclamation, "In our 'world' yes; ideologically, no!" They also tended to mildly agree that they would like to learn more about how to incorporate computers into their English programs (Q. 14; $M = 3.8$). The two respondents over the age of 60 ($M = 3.0$) and the one respondent with 0-1 year of teaching experience ($M = 3.0$) rated this latter statement lower than respondents aged 22-30 ($M = 4.1$), and respondents with 2-5 ($M = 4.2$), 6-10 ($M = 4.0$) or more than 10 ($M = 3.7$) years of teaching experience.

Overall, respondents tended to mildly agree that English teacher training should include instructional applications of computer courses (Q. 21; $M = 3.8$). GNN respondents ($M = 2.8$), the respondent with 0-1 year of experience ($M = 3.0$), and respondents over the age of 60 ($M = 3.5$) reported the lowest means for their respective categories. All of these means are tempered by

low numbers of respondents. Additionally, one of the respondents questioned the need to change current teacher-education practices, "Why? If access is so limited in reality..."

Table 4.15

Likert Response Means and Standard Deviations for "Readiness to Implement" For the Complete Sample, By Gender, By Age, and By Years of Experience

Q	*n*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*N*	*M*	*SD*
								22-30	7	4.4	0.5	0-1	1	4.0	-
				M	21	4.1	0.8	31-40	20	4.5	0.8	2-5	11	4.4	0.5
13.	52	4.3	0.8	F	27	4.4	0.8	41-60	23	4.0	0.9	6-10	11	4.5	0.9
				GNN	4	4.0	0.8	>60	2	4.0	1.4	>10	29	4.2	0.9
								22-30	7	4.1	0.9	0-1	1	3.0	-
				M	21	4.1	0.9	31-40	20	3.9	1.1	2-5	11	4.2	0.9
14.	52	3.8	1.2	F	27	3.8	1.3	41-60	23	3.7	1.4	6-10	11	4.0	0.8
				GNN	4	2.5	1.3	>60	2	3.0	1.4	>10	29	3.7	1.4
								22-30	7	2.4	1.0	0-1	1	3.0	-
				M	21	2.5	1.1	31-40	20	2.4	1.0	2-5	11	2.3	0.9
19.	52	2.6	1.1	F	27	2.5	1.1	41-60	23	2.8	1.2	6-10	11	2.3	1.0
				GNN	4	4.0	1.2	>60	2	3.5	2.1	>10	29	2.8	1.2
								22-30	7	2.4	1.0	0-1	1	3.0	-
				M	21	2.5	1.1	31-40	20	2.4	1.0	2-5	11	2.3	0.9
20.	52	2.6	1.1	F	27	2.5	1.1	41-60	22	2.8	1.2	6-10	11	2.3	1.0
				GNN	3	4.0	1.2	>60	2	3.5	2.1	>10	28	2.8	1.2
								22-30	7	4.0	0.8	0-1	1	3.0	-
				M	20	3.9	0.9	31-40	20	3.8	0.8	2-5	11	3.8	0.9
21.	51	3.8	1.0	F	27	4.0	0.9	41-60	22	3.9	1.1	6-10	11	4.1	0.5
				GNN	4	2.8	1.5	>60	2	3.5	2.1	>10	28	3.8	1.2

(Continued)

Q	*n*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*N*	*M*	*SD*
								22-30	7	3.4	0.5	0-1	1	2.0	-
				M	21	3.6	1.0	31-40	20	3.5	1.1	2-5	11	3.3	0.6
22.	52	3.4	1.2	F	27	3.4	1.1	41-60	23	3.3	1.3	6-10	11	3.7	1.2
				GNN	4	1.8	1.5	>60	2	2.5	2.1	>10	29	3.3	1.3
								22-30	7	2.9	1.2	0-1	1	3.0	-
				M	21	3.6	1.2	31-40	20	3.7	0.9	2-5	11	3.2	0.8
26.	52	3.4	1.2	F	27	3.3	1.1	41-60	23	3.4	1.4	6-10	11	3.7	1.2
				GNN	4	2.8	1.5	>60	2	2.5	0.7	>10	29	3.4	1.3
								22-30	7	2.9	1.1	0-1	1	3.0	-
				M	21	3.2	1.4	31-40	20	3.0	1.4	2-5	11	2.8	1.4
27.	52	3.0	1.4	F	27	2.9	1.4	41-60	23	3.0	1.5	6-10	11	3.0	1.4
				GNN	4	2.3	1.5	>60	2	3.0	2.8	>10	29	3.0	1.5
								22-30	7	4.1	1.5	0-1	1	3.0	-
				M	21	3.9	1.5	31-40	20	4.6	0.8	2-5	11	4.4	1.2
28.	52	4.1	1.3	F	27	4.3	1.1	41-60	23	3.7	1.5	6-10	11	4.5	0.9
				GNN	4	3.5	1.9	>60	2	3.0	2.8	>10	29	3.8	1.5
								22-30	7	4.3	1.1	0-1	1	5.0	-
				M	21	3.5	1.2	31-40	20	4.1	1.0	2-5	11	4.5	0.7
29.	52	3.5	1.3	F	27	3.8	1.3	41-60	23	2.8	1.3	6-10	11	3.8	1.1
				GNN	4	1.5	0.6	>60	2	2.5	2.1	>10	29	3.0	1.4
								22-30	7	3.0	1.2	0-1	1	3.0	-
				M	21	3.0	0.9	31-40	20	3.4	0.8	2-5	11	3.0	1.2
39.	50	3.2	1.0	F	26	3.5	1.0	41-60	23	3.1	1.1	6-10	11	3.4	0.7
				GNN	3	2.0	1.0	>60	2	3.5	2.1	>10	27	3.2	1.1
								22-30	7	2.3	1.0	0-1	1	2.0	-
				M	21	2.6	1.1	31-40	20	2.6	1.3	2-5	11	2.5	1.0
46.	52	2.5	1.2	F	27	2.6	1.3	41-60	23	2.5	1.2	6-10	11	2.1	1.1
				GNN	4	1.8	1.0	>60	2	2.0	1.4	>10	29	2.7	1.3
								22-30	7	4.1	0.7	0-1	1	3.0	-
				M	21	3.8	1.2	31-40	20	3.9	0.8	2-5	11	4.4	0.5
49.	52	3.9	1.1	F	27	4.1	1.0	41-60	23	4.0	1.4	6-10	11	3.8	0.6
				GNN	4	3.0	1.8	>60	2	2.0	0.0	>10	29	3.8	1.4
								22-30	7	2.0	0.6	0-1	0	-	-
				M	21	2.4	1.0	31-40	20	2.5	1.0	2-5	11	2.5	0.7
51.	51	2.3	1.1	F	26	2.3	1.1	41-60	23	2.2	1.2	6-10	11	2.0	1.0
				GNN	4	1.5	1.0	>60	2	2.0	1.4	>10	29	2.3	1.2
								22-30	7	3.9	0.9	0-1	1	4.0	-
				M	21	3.4	1.1	31-40	20	3.6	1.1	2-5	11	3.6	0.9
54.	52	3.6	1.1	F	27	3.8	1.0	41-60	23	3.6	1.1	6-10	11	3.5	1.3
				GNN	4	3.5	1.3	>60	2	3.0	1.4	>10	29	3.6	1.0

"Q" denotes the numbers that correspond to the questions grouped as "Readiness to Implement." For a sample of the survey please see Appendix B. The first three columns report the count, mean, and standard deviation of the complete sample; the remaining columns report the counts, means, and standard deviations by gender, by age, and by years of experience (Yrs. Exper.). "GNN" represents the respondents who did not record their gender, and dashes (-) an incalculable standard deviation because only one response was recorded.

Respondents were neutral in their belief that integrating computers into the teaching of written composition has more disadvantages than advantages (Q. 19; $M = 2.6$). Though GNN respondents agreed with this statement ($M = 4.0$), respondents between the ages of 22 and 30 ($M = 2.4$) and respondents between the ages of 31 and 40 ($M = 2.4$) mildly disagreed, while

respondents over the age of 60 mildly agreed (M = 3.5). Most respondents also neither agreed nor disagreed that knowledge of word processors will improve students' writing (Q. 26; M = 3.4). However, male respondents (M = 3.6), respondents between the ages of 31 and 40 (M = 3.7) and respondents with 6-10 years of experience (M = 3.7) all mildly agreed.

On average, respondents were uncertain that word processors help to reduce writing apprehension (Q. 39; M = 3.2); exceptions include female respondents (M = 3.5) and the two respondents over the age of 60 (M = 3.5) who mildly agreed with this statement. Respondents were slightly more in agreement that without word processing skills, all students will have limited job opportunities (Q. 54; M = 3.6). While the majority of respondents neither agreed nor disagreed with this statement, female respondents (M = 3.8) mildly agreed while respondents between the ages of 22 and 30 (M = 3.9); and the respondent with 0-1 year of experience (M = 4.0) agreed.

On a personal level, these respondents were neutral about using the word processor to write creatively (Q. 27; M = 3.0); the only notable difference in this response was that the respondents who did not note their gender (M = 2.3) mildly disagreed with using the word processor to write creatively while the remaining respondents were neutral. In general, respondents had more favourable feelings about using the Internet to search for new teaching ideas (Q. 29; M = 3.5). The two respondents over the age of 60 mildly disagreed (M = 2.5) with this practice, while respondents between the ages of 31 and 40 (M = 4.1) agreed; respondents between the ages of 22 and 30 (M = 4.3), respondents with 2-5 years of experience (M = 4.5), and the one respondent with 0-1 year of experience (M = 5.0) all strongly agreed. This trend suggests that younger and less experienced respondents used the Internet to search for new teaching ideas more than their senior or more experienced colleagues.

In the "Readiness to Implement" category, respondents showed the highest level of agreement ($M = 4.1$) when it came to using the computer to keep student records (Q. 28). Respondents between the ages of 31 and 40 ($M = 4.6$), female respondents ($M = 4.3$), and respondents with 6 to 10 years of experience ($M = 4.5$) rated this statement the highest in their respective gender, age, and years of experience groups. GNN respondents ($M = 3.5$), the two respondents over the age of 60 ($M = 3.0$), and the one respondent with 0-1 year of experience ($M = 3.0$) scored this statement the lowest in their respective groups. At least one respondent admitted to being "forced" to use the computer to keep student records.

When asked to look ahead, respondents neither agreed nor disagreed that they felt confident in their ability to integrate computers into their present writing program (Q. 20; $M = 2.6$), and they reported a slightly more favourable attitude about looking forward to a time when more English teachers are using word processors to teach written composition (Q. 22; $M = 3.4$). The two respondents over the age of 60 and the one respondent with 0-1 year of experience recorded the highest rating for self-reported confidence ($M = 3.5$, and 3.0, respectively); they, in addition to the GNN respondents, were also the only groups to mildly disagree or to disagree with the latter statement ($M = 2.5$, 2.0, and 1.8).

Respondents tended to mildly disagree with "discussing the use of computers with [their] colleagues" (Q. 46; $M = 2.5$). However, GNN respondents ($M = 1.8$), the two respondents over the age of 60 ($M = 2.0$), the one respondent with 0-1 year of experience (rating = 2.0), and the respondents in the 6-10 years of experience ($M = 2.1$) all disagreed with this statement. Respondents also tended to agree that greater release time was needed to learn about computer integration (Q. 49; $M = 3.9$). In this instance, the two respondents over the age of 60 ($M = 2.0$)

disagreed, while the GNN respondents (M = 3.0) and the respondent with 0-1 year of experience (rating = 3.0) were neutral. Those with 2-5 years of teaching experience strongly agreed (M = 4.4).

Despite this desire for greater release time, respondents tended to mildly disagree that English teachers are obligated to incorporate computers into their writing programs (Q.51; M = 2.3). The only exceptions were respondents who were between the ages of 22 and 30 (M = 2.0) and the respondents over the age of 60 (M = 2.0) who disagreed with this statement, and the GNN respondents (M = 1.5) who strongly disagreed with this statement. In total, 29% of the sample responded "Strongly Disagree" to this question.

Current Practice

In general, the mean scores for "Current Practice" (Table 4.16) are less than neutral (M = 2.6). However, respondents aged 22-30 (M = 3.0), and the respondent with 0-1 year of experience (M = 3.3), reported slightly higher scores than the remaining groups.

Most respondents strongly agreed that they taught their students techniques for the various stages of the writing process (Q.12; M = 4.6); this statement generated the highest Likert-scale rating by the complete sample. Respondents strongly disagreed that they used the word processor to aid their teaching of the pre-writing stage (Q. 34; M = 1.6), disagreed that they used the word processor to teach drafting (Q. 35; M = 2.0) and mildly disagreed that they used the word processor to teach revising and editing (Q. 37; M = 2.2). In contrast to the mild agreement shown by the general sample, the respondent with 0-1 year of experience agreed (M = 4.0) with using the word processor to teach revising and editing.

Table 4.16

The Means of the Factor Analysis Category: "Current Practice" For the Complete Sample, By Gender, By Age, and By Years of Experience

Demographic Variable		*N*	*M*	*SD*
Complete Sample		52	2.6	0.8
Gender	Males	21	2.5	1.6
	Females	27	2.8	1.4
	Gender Not Noted	4	1.9	1.8
Age	22-30	7	3.0	1.5
	31-40	20	2.8	1.5
	41-60	23	2.3	1.5
	>60	2	2.4	1.8
Years of Experience	0-1	1	3.3	1.0
	2-5	11	2.8	1.5
	6-10	11	2.8	1.5
	>10	29	2.5	1.5

The mean of "Current Practice" is derived by the means of questions 12, 34, 35, and 37. For a sample of the survey please see Appendix B. "Gender Not Noted" denotes no gender recorded.

Table 4.17

Likert Response Means and Standard Deviations for "Current Practice" For the Complete Sample, By Gender, By Age, and By Years of Experience

Q	*n*	*M*	*SD*	Gender	*n*	*M*	*SD*	Age	*n*	*M*	*SD*	Yrs. Exper.	*n*	*M*	*SD*
12.	52	4.6	0.5	M	21	4.6	0.6	22-30	7	4.6	0.5	0-1	1	4.0	-
				F	27	4.7	0.5	31-40	20	4.7	0.5	2-5	11	4.6	0.5
				GNN	4	4.5	0.6	41-60	23	4.6	0.6	6-10	11	4.6	0.5
								>60	2	5.0	0.0	>10	29	4.6	0.6
34.	52	1.6	0.9	M	21	1.5	0.8	22-30	7	1.7	0.8	0-1	1	2.0	-
				F	27	1.7	0.9	31-40	20	1.7	0.9	2-5	11	1.7	0.8
				GNN	4	1.0	0.0	41-60	23	1.4	0.9	6-10	11	1.6	1.0
								>60	2	1.5	0.7	>10	29	1.5	0.9
35.	52	2.0	1.3	M	21	1.9	1.3	22-30	7	2.9	1.3	0-1	1	3.0	-
				F	27	2.3	1.2	31-40	20	2.3	1.3	2-5	11	2.5	1.2
				GNN	4	1.0	0.0	41-60	23	1.7	1.1	6-10	11	2.1	1.4
								>60	2	1.5	0.7	>10	29	1.8	1.2
37.	52	2.2	1.3	M	21	2.0	1.2	22-30	7	2.7	1.1	0-1	1	4.0	-
				F	27	2.4	1.3	31-40	20	2.7	1.4	2-5	11	2.3	1.1
				GNN	4	1.0	0.0	41-60	23	1.6	1.0	6-10	11	2.9	1.4
								>60	2	1.5	0.7	>10	29	1.8	1.1

"Q" denotes the numbers that correspond to the questions grouped as "Current Practice." For a sample of the survey please see Appendix B. The first three columns report the count, mean, and standard deviation of the complete sample; the remaining columns report the counts, means, and standard deviations by gender, by age, and by years of experience (Yrs. Exper.). "GNN" represents the respondents who did not record their gender, and dashes (-) an incalculable standard deviation.

GNN respondents very strongly disagreed with using the word processor to teach pre-writing, drafting, and revising and editing (for all questions $M = 1.0$). Respondents with more than 10 years teaching experience rated these three practices lower than the remaining "years of experience" groups did ($M = 1.5$, 1.8, and 1.8), and there was little difference between the responses given by the two respondents over the age of 60 and the respondents in the "41-60" age group.

Open-Ended Responses

This section of the chapter will be divided into three sections: "Access and Needs," "Attitude," and "Instances of Implementation." It will discuss the open-ended responses found in questions 58 through 60 of the survey. In these questions, respondents were asked to describe, if applicable, ways in which they used the word processor to teach written composition (Q. 58); the kinds of assistance they required to use computers to teach written composition (Q. 59); and any comments that would help the researcher to understand the respondents' attitudes towards and experiences with word processors (Q.60).

Access and Needs.

It is difficult to ignore that the access to, and reliability of, computers in schools is a major deterrent to implementation of word processors in the secondary English classroom. When asked to describe the kinds of assistance teachers required to use computers to teach written composition, 57% of the written responses mentioned the need for greater access and/or more reliable resources in the school. Responses ranged from teachers' wanting more access to the computer labs, "The two computer labs are used each period by the business and keyboarding classes," to teachers' wanting enough computers in the classroom for each student: "I need the hardware!!! I would like a pod of computers in my classroom with c/d and internet access. We

no longer even have a computer classroom – as ineffective as that can be." Four respondents expressed their need for access to reliable hardware in answer to question 58 which asked: If you use the word processor to teach written composition, please describe ways that you use it. In general, teachers expressed the need for computers that work, computers in the classroom; access to computer labs, printers, software programs that are compatible with the students' computers at home, and technical support.

These teachers were not only concerned with a lack of access to hard and software, but also with the unpredictability and unreliability of technology. One teacher wrote, "I would be more interested in this – but the technology would have to function," while two other teachers expressed pressing and personal concerns, "This is the first year I have a computer in my class – it has yet to be hooked up!" and "I don't have access in the classroom because my computer breaks down 90% of the time." Still others described failed attempts to run a writing program based on computers: "I have developed programs and units but would lose access over and over again" or " I have traditionally used word processing to teach students composition but we lost access to a computer lab, and so it is now no longer an option." Generally speaking, teachers mentioned constant problems with the server and scarce access to technical support:

> I need technical support. At the moment our large school (2 500 students 90 staff) shares one resource person with two other schools/ sometimes it takes 2 weeks before help arrives!

When asked to rate the statement "Insufficient access to word processors is impeding the implementation of word processors into my English program," (Q. 43) 19 of the 43 respondents to this question (44%) strongly agreed with this statement, resulting in a sample mean of 3.5. Female respondents agreed (M = 4.0) with this statement while male respondents were neutral (M = 3.1), and no differences were noted based on age or years of experience. In response to this

statement regarding insufficient access, one respondent added, "We still call that 'understatement'."

In addition to the need for reliable and adequate hardware and software, teachers also communicated a need for workshops on how to integrate computers into the English curricula and a couple of teachers requested more information regarding the proven benefits of the use of computers to teach written composition. However, when respondents were asked to rate the statement, "There are plenty of opportunities for computer-related professional development offered in our district," the average response was neutral (Q. 45; M= 2.9), while the two respondents over the age of 60 agreed (M = 4.0). No differences were noted based on gender.

Attitude.

It is apparent that teachers' experiences with unpredictable and insufficient resources have impacted their attitude towards the use of word processors in the secondary English classroom. Responses to question 60, "Please add any comments that would help me to understand your attitudes toward and experiences with word processors," furthers the understanding of these experiences. As expected, teachers' attitudes were wide-ranging.

Several teachers described computers as alienating, frustrating, and dehumanizing:

> I think its important that students learn to write without a computer as well as with a computer. There is a sense of dehumanization, but computers are here, so we must learn to adapt.

The Likert-scale responses indicate that when respondents encounter a problem, they are more likely to ask someone for help (Q. 30; M = 4.0) than try to figure it out on their own (Q. 31; M = 3.1). The only discrepancy noted in these findings is that the two respondents over the age of 60

strongly disagreed with trying to figure out their computer-related problems on their own (M = 1.5) while the rest of the sample's responses ranged from mildly disagree to neutral (M = 2.5 – 3.6) with no notable differences based on gender or years of experience.

Respondents indicated their preference for writing by hand as opposed to using a word processor:

> For me, there is something inherently creative and satisfying in putting pen to paper as opposed to tapping away at some keyboard and straining my eyes onto a fuzzy screen. I like the concreteness of writing on paper as opposed to the computer!

> I think writing is a personal experience. I think typing is an impersonal way of communicating (i.e. the typed Christmas letter). I think the writing process is meaningful when one pens his/her thoughts physically w/a pen. The writer is an active participant. Writing is like cooking ... using a breadbaking machine is not baking bread! There is no physical experience and there "kneads" to be!

The above descriptions support the sample's agreement (Q. 24; M = 4.1) with the statement, "I will do as little work with computers as possible." An analysis of the data based on gender, age, and experience, indicates that respondents between the ages of 41-60, the two respondents over the age of 60, and respondents with more than 10 years of experience rate this statement neutral or mildly agree (M = 3.7, 3.0, 3.8, respectively) and that the respondents who did not note their gender disagreed (M = 2.0). All other groups exhibited varying degrees of agreement (M = 4.0 – 4.7).

Some teachers expressed reservation regarding students' increasing access to computers and the Internet: "I find many students are more concerned with fonts, colors, icons; I see little improvement in sentences, in clarity, or grace, as a result of computers." Additionally, teachers commented that students' access to the Internet has forced them to change their practices and

have more in-class compositions: "I like word-processed final drafts; I do not like students access to internet and 'cut and paste' writing from other sources – easy to plagiarize- forces me to have more in-class compositions." Another teacher expressed a more general concern:

> I book students in to labs and encourage use of the computer for writing and research, but not to the exclusion of other methods. I feel that we are choosing the impossible dream with computers. They are expensive and soon become obsolete. Just like the TV there is a mixture – both good and bad. I feel, that as an objective tool the computer can be great. The computer can also lead to subjectivity and blanket acceptance of information and values in a non critical way. This often under the guise of being objective! So, in a word – I am ambivalent about the role of computers...

These reservations should be viewed in light of the sample's general tendency to disagree (Q. 36; $M = 2.0$) that students should use word processors only to publish their work; the anomalous case in this instance is the one respondent with 0-1 year of experience who agreed (rating = 4.0) with this statement. These reservations should also be viewed in light of the sample's general agreement ($M = 4.1$) that students should only compose writing by hand, with a pen or a pencil (Q. 55); this statement reported no differences based on gender, age, or years of experience.

Twenty-three percent of the responses to a request for comments that would help the researcher understand participants' attitudes towards and experiences with computers exhibited a lack of confidence in respondents' ability to teach written composition using a word processor. This finding supports the neutral mean (3.0) of the Likert-scale question addressing this same concern:

> As a "senior" teacher who began my career in '72, computers were really non-existent in my personal high school and university experience. This has resulted in an apprehension on my part, to widely use a computer!!
>
> It is hard in my "declining years" to learn what my students were practically born with.

> Fortunately or unfortunately, I teach to my strengths and training. I write and edit by hand so that's how I teach it. This does a disservice to the student who thinks and writes best with a computer but it also builds skills during class time where there are no computers.
>
> Most of my students have computers at home; I really don't feel I can teach them anything they don't already know since most of them are using more sophisticated word processing programs than I am.

Still other teachers expressed the desire to implement computers into their present practices:

> I would love to use computers on a frequent and regular basis, but that is impossible in my school. Everyone pays lip service to the idea, but the technical support, training, collaboration with colleagues, hardware and software are all non-existent or grossly inadequate
>
> Time is a huge factor – I do other subject specific workshops and I am taking courses at UBC if I could learn about computers and get credit for it I definately would consider it.

One teacher succinctly explained: " ... I see too many minor difficulties to make use of the lab worthwhile since kids are word processing anyway."

In general, these secondary English teachers disagreed that teaching word processing skills is the responsibility of the English teacher ($M = 2.0$). Female respondents and respondents with 6 to 10 years of experience strongly disagreed ($M = 1.7$ and 1.6) with this statement; male respondents disagreed ($M = 2.0$); and GNN respondents and the respondent with 0-1 year of experience were neutral ($M = 3.0$). There were no differences among the different age groups.

Instances of Implementation.

Despite all these apparent deterrents, 31% of these teachers reported ways in which they have used word processors to teach written composition. In response to question 58, which asked respondents to describe ways they used the word processor to teach written composition, the most common answers were for revising ($n = 4$), and final drafting ($n = 4$) and the second most

common uses were spell check (n = 3) and using the word processor for drafting (n = 3) and editing (n = 3) purposes. Also mentioned among these answers were grammar check (n = 2), word processing (n = 2), research (n = 2), with special education students (n = 2), group write (n = 1), creative writing (n = 1), presentations (n = 1), word mining (n = 1), and poetic techniques (n = 1). One teacher shared an observation of how students will opt for processing using the computer vs. pen to paper when the computers are available

Bi-Variate Correlations

As a final step in data analysis, bi-variate correlations were calculated, using SPSS 10.0, on all five of the defined categories: "Attitude," "Perception," "Professional Development Experiences," "Readiness to Implement," and "Current Practice." After the correlations were calculated on the sample as a whole (Table 4.18), they were also calculated on a sample divided by gender (Table 4.19), by age (Table 4.20), and by years of experience (Table 4.21).

Table 4.18

Correlations of Categories Based on the Complete Sample

		P.D. Experience	Perception	Readiness to Implement	Attitude
P.D. Experience	Pearson Sig. (2) N				
Perception	Pearson Sig. (2) N	-.00 .98 52			
Readiness to Implement	Pearson Sig. (2) N	.20 .18 52	.12 .39 52		
Attitude	Pearson Sig. (2) N	.32* .02 52	.19 .17 52	.14 .33 52	
Current Practice	Pearson Sig. (2) N	.18 .19 52	.07 .62 52	.58** .01 52	.10 .15 52

Note. The categories are based on the results of a factor analysis; "P.D." refers to Professional Development; "Pearson" refers to the Pearson Correlation; and "(2)" refers to the 2-tailed scale. "*" Correlation is significant at the 0.05 level (2-tailed) and "**" Correlation is significant at the 0.01 level (2-tailed).

The data in Table 4.18 indicate that "Readiness to Implement" is the only factor that correlates significantly with "Current Practice" ($r = .58^{*}$). Thus, teachers who agreed on the Likert scale that they were "Ready to Implement" also reported that they used computers in their "Current Practice." Additionally, "Attitude" was found to correlate significantly with "P.D. Experience" ($r = .32^{*}$). Based on the complete sample, none of the other factors indicated significant correlations.

When the sample was divided by gender (Table 4.19), some significant correlations appeared to have localized effects. For instance, "P.D. Experience" and "Attitude"($r = .55^{*}$); "Perception and "Readiness to Implement" ($r = .49^{*}$); "Perception" and "Current Practice" ($r = .44^{*}$); "Attitude" and "Readiness to Implement" ($r = .66^{**}$); and "Current Practice" and "Readiness to Implement" ($r = .61^{**}$) all showed strong correlations in male respondents. However, the only relationship that was repeated in female respondents was the relationship of "Readiness to Implement" and "Current Practice"($r = .56^{**}$), the same relationship that was found in the analysis of the complete sample. A significant correlation of "Readiness to Implement" and "Attitude" ($r = -.96^{*}$) was also noted in GNN respondents.

These data shed a different light upon the relationship of the male and female respondents in this study. Although male and female respondents had very similar scores on the "Attitude," "Perception," "Professional Development Experiences," "Readiness to Implement," and "Current Practice" scales, their scores appear to have been influenced by different factors. Thus, male respondents' "Attitude" would seem to be related to their "Professional Development Experiences" and their "Readiness to Implement," in addition their "Perception" would seem to be related to their "Readiness to Implement" and "Current Practice." On the other hand, with the

exception of "Readiness to Implement" and "Current Practice," female respondents' responses appear to be independent of one another.

Table 4.19

Correlations of Categories Based on Gender

		P.D. Experience			Perception			Readiness to Implement			Attitude		
Category		M	F	GNN	M	F	GNN	M	F	GNN	M	F	GNN
P.D. Experience	Pearson Sig. (2) N												
Perception	Pearson Sig. (2) N	-.02 .94 21	.04 .89 27	-.12 .88 4									
Readiness to Implement	Pearson Sig. (2) N	-.02 .94 21	.15 .46 27	-.23 .77 4	.49* .03 21	.06 .75 27	-.62 .39 4						
Attitude	Pearson Sig. (2) N	.55* .01 21	.31 .11 27	.44 .56 4	.25 .27 21	-.01 .97 27	.66 .34 4	.63** .00 21	.32 .11 27	-.96* .04 4			
Current Practice	Pearson Sig. (2) N	.03 .88 21	.10 .65 27	-.23 .78 4	.44* .05 21	-.20 .32 27	.54 .46 4	.61** .00 21	.56** .00 27	-.88 .12 4	.37 .09 21	-.02 .93 27	.72 .29 4

Note. The categories are based on the results of a factor analysis; "P.D." refers to Professional Development; "Pearson" refers to the Pearson Correlation; and "(2)" refers to the 2-tailed scale. "*"Correlation is significant at the 0.05 level (2-tailed) and "**" Correlation is significant at the 0.01 level (2-tailed). "GNN" represents respondents who did not indicate their gender.

Table 4.20 indicates that the significant correlation of "Readiness to Implement" and "Current Practice" continues to hold true for respondents in the "31-40" ($r = .58^{*}$) and the "41-60" ($r = .66^{**}$) age groups. While the significant correlation of "Readiness to Implement" and "Attitude" was also found in the "31-40" age group ($r = .58^{*}$), no other strong relationships were found among the responses of the other age groups.

The only "years of experience" group (Table 4.21) in which significant correlations were found was the group of respondents with more than 10 years of experience. "Professional Development Experience" and "Attitude" ($r = .39^{*}$) and "Readiness to Implement" and "Current Practice" ($r = .67^{**}$) were correlations found based on the responses of these respondents.

Table 4.20

Correlations of Categories Based on Age

		P.D. Experience			Perception			Readiness to Implement			Attitude		
Category		22-30	31-40	41-60	22-30	31-40	41-60	22-30	31-40	41-60	22-30	31-40	41-60
P.D. Experience	Pearson Sig. (2) N												
Perception	Pearson Sig. (2) N	.35 .44 7	.02 .94 20	-.22 .32 23									
Readiness to Implement	Pearson Sig. (2) N	.33 .47 7	-.01 .97 20	.30 .17 23	.60 .16 7	.28 .23 20	.04 .84 23						
Attitude	Pearson Sig. (2) N	.57 .18 7	.30 .20 20	.50 .02 23	.45 .31 7	.23 .33 20	-.10 .65 23	.14 .76 7	.65* .00 20	.29 .18 23			
Current Practice	Pearson Sig. (2) N	-.17 .72 7	.21 .38 20	.17 .43 23	.05 .92 7	.12 .62 20	-.06 .78 23	-.01 .98 7	.58* .01 20	.66** .00 23	.16 .74 7	.33 .16 20	-.08 .74 23

Note. The categories are based on the results of a factor analysis; "P.D." refers to Professional Development; "Pearson" refers to the Pearson Correlation; and "(2)" refers to the 2-tailed scale. "*" Correlation is significant at the 0.05 level (2-tailed) and "**" Correlation is significant at the 0.01 level (2-tailed). Due to a low number of respondents (n = 2) the ">60" group was not included in the table.

Table 4.21

Correlations of Categories Based on Years of Experience

		P.D. Experience			Perception			Readiness to Implement			Attitude		
Category		2-5	6-10	> 10	2-5	6-10	> 10	2-5	6-10	> 10	2-5	6-10	> 10
P.D. Experience	Pearson Sig. (2) N												
Perception	Pearson Sig. (2) N	.18 .59 11	.33 .33 11	.15 .45 29									
Readiness to Implement	Pearson Sig. (2) N	.02 .95 11	.26 .45 11	.29 .13 29	.72 .01 11	.03 .93 11	.02 .02 29						
Attitude	Pearson Sig. (2) N	.57 .07 11	.38 .25 11	.39* .04 29	.36 .28 11	-.22 .51 11	.31 .11 29	.37 .27 11	.54 .08 11	.06 .77 29			
Current Practice	Pearson Sig. (2) N	-.17 .62 11	.52 .10 11	.21 .29 29	.04 .91 11	.10 .77 11	.06 .76 29	.06 .87 11	.47 .15 11	.67** .00 29	.58 .06 11	.36 .28 11	.04 .83 29

Note. The categories are based on the results of a factor analysis; "P.D." refers to Professional Development; "Pearson" refers to the Pearson Correlation; and" (2)" refers to the 2-tailed scale. "*" Correlation is significant at the 0.05 level (2-tailed) and "**" Correlation is significant at the 0.01 level (2-tailed). Due to a low number of respondents (n = 1) the " 0-1" group was not included in the table.

Conclusion

This chapter reported the data recorded in the 52 surveys of this sample. Results were based on Likert-scale questions that were categorized using a factor analysis ("Attitude," "Perception," "Professional Development Experiences," "Readiness to Implement," and "Current Practice"), open-ended responses, and a correlative analysis of the data. These data show respondents reported varying and conflicting "Attitudes," "Perceptions," and "Experiences." Respondents scored neutral on the "Attitude," "Perception," "Professional Development Experiences," and "Readiness to Implement" scales, but low on the "Current Practice" scale. No noteworthy differences (one point on the Likert-scale) were recorded between male and female respondents, and only the two respondents over the age of 60 and the one respondent in the 0-1 year of experience category differed from their respective groups based on "Attitude." Chapter V will draw conclusions to this study based on these data and others and it will make suggestions for future research and for pedagogical practice.

V: Conclusions and Implications

The findings of this study demonstrated that this large urban centre's secondary school English teachers' self-reported attitudes towards, perceptions of, and experiences with computers exhibited a great deal of within-group variation which is consistent with the review of the literature described in Chapter II. Also consistent with the literature, considerable differences between male and female respondents were not evident. While some teachers were ready to welcome the word processor into their teaching of written composition, others met this technology with utter resistance. Additionally, a correlational analysis of the data revealed that teachers' "Readiness to Implement" is the factor that produces the strongest correlation with current practice and that "Attitude," "Perception," and "Professional Development Experiences" have limited and localized effects on implementation. This chapter will discuss this study's findings, draw conclusions based on these findings, and address implications for practice and further research.

Readiness to Implement and Current Practice

The findings of this study suggest that these secondary English teachers were not extensive users of the computer. Although many of these teachers reported that they agreed with using the computer to keep student records (Likert-scale $M = 4.1$), they neither agreed nor disagreed that they used the computer to write creatively ($M = 3.2$) or to check E-mail ($M = 3.0$). They also mildly disagreed with making purchases online ($M = 2.4$) and disagreed with banking online ($M = 2.1$).

However, when it comes to pedagogical practices, the findings of this study are consistent with Dupagne and Krendl's review of the literature (1992) which concludes that, overall, teachers

express positive attitudes regarding the implementation of computers in the curriculum. Respondents strongly agreed that knowledge of word processing skills is worthwhile and necessary ($M = 4.3$). Even though they were uncertain of the word processor's ability to reduce writing apprehension ($M = 3.4$) and to improve students' writing ($M = 3.4$), and neither agreed nor disagreed that integrating computers into the teaching of written composition has more disadvantages than advantages ($M = 3.4$), they tended to agree that greater release time is required to learn about computer implementation ($M = 3.9$). A comparative analysis of the above findings suggests that the two teachers over the age of 60 (Q. 22; $M = 2.5$) and the one teacher with 0–1 year of teaching experience ($M = 2.0$) were the least enthusiastic, in their respective groups, about expanding computer implementation. As previously mentioned, both these findings are tempered by low frequencies: there were only two respondents in the >60 age group, and one respondent in the 0-1 year of experience group.

Though most respondents did not resist the idea of implementation and had positive perceptions of the computers' potential, 69% of the teachers in this study disagreed that they were obligated, as English teachers, to incorporate the word processor in to their teaching of written composition, and only 35% of the respondents in this sample felt confident in their ability to integrate computers into their present writing program. Ninety percent of the sample reported never using a word processor to teach written composition, and only 6% were aware of their colleagues' use of this teaching aid.

Most respondents strongly disagreed that they used the word processor to teach pre-writing ($M = 1.6$), disagreed that they used the word processor to teach drafting ($M = 2.0$), and mildly disagreed that they used the word processor to teach revising or editing ($M = 2.2$). These findings lend support to Smith's (1989) finding that "Teachers generally make positive statements

regarding computers, but tend to be far less positive regarding their own participation in computer projects" (p. 199) and Griswold's (1985) report that education majors generally believe computers to be useful but will not necessarily consider using them in their own classrooms. Respondents' reports of increasing the use of word processors as they move from the drafting stages to the revising stages of the writing process could suggest that teachers are teaching the writing process in a linear manner and believe the word processor to be of greater use as their students arrive closer to completion. It could also mean that teachers have a better handle on using the word processor to teach revising and editing than they do to teach pre-writing. In either case, further research is required.

Attitude

Since a factor analysis of the respondents' answers determined that the cluster of questions originally designed to assess the attitude of teachers towards computers contained too many inconsistencies to be reliable, conclusions will be based on teachers' general attitudes. It is worth noting that banking online, making purchases online, and checking E-mail daily are included within the "Attitude" category designated by the factor analysis. Thus, one can assert that the respondents' "Attitude" is at least correlated with these three computer-based activities.

Consistent with the review of the literature, the findings of this study suggest that secondary English teachers' attitudes are wide-ranging. These teachers generally mildly disagreed that they were uncomfortable with change ($M = 2.2$); however, the respondent with 0-1 year of experience recorded the opposite to be true ($M = 4.0$). In general, respondents also reported that they were not afraid of appearing ignorant in front of their students ($M = 1.9$), but neither agreed nor disagreed that they were comfortable with not being the "expert" in the classroom ($M = 3.6$). In

contrast to this latter mildly agreed rating, the respondent over the age of 60 who answered this question strongly agreed ($M = 5.0$).

Arguably, one of the most surprising findings of this study is that the two respondents over the age of 60 exhibited a more favourable "Attitude" than their junior colleagues and that one of these two respondents was also more likely to bank and make purchases online. Equally surprising is that the one respondent with the least amount of teaching experience, in the 31-40 age group, exhibited a lower "Attitude" score than several of her colleagues with more English-Language Arts teaching experience. Although hypotheses can be made for both cases based on social, economical, or philosophical differences, further research is needed to determine the accuracy of these findings since findings are based on low numbers of respondents.

Perception

The results of this study found teachers' "Perception" of computers to be unpredictable. Respondents generally disagreed that word processors produce lazy writers ($M = 2.1$) and neither agreed nor disagreed ($M = 3.1$) that too much emphasis is placed on computers in education. Like Dupagne and Krendl's (1992) review of the literature that found 55% of teachers believe computers to be a dehumanizing tool, 48 % of this study's teachers believed (agreed or strongly agreed) this to be true.

In general, these teachers are unacquainted with the research in the field of word processing and written composition. Information regarding recent studies conducted in a controlled and precise manner could prove to be critical in expanding the implementation of computers since Fullan (2001) believes that it is essential to provide teachers with knowledge to make informed decisions in order to expand implementation. It is my assumption that educating teachers about

the word processors' potential and pedagogical limitations can increase teachers' comfort level and allow them to make informed decisions. With the increasing demands placed on teachers, it is not unreasonable for teachers to be apprehensive about exchanging a practice they are familiar with for a practice which brings them uncertainty and unfamiliarity. Thus, despite respondents' positive perceptions about the word processors' potential (i.e., knowledge of word processing skills is worthwhile and necessary), few teachers are implementing word processors in the classroom or participating in computer-related professional development workshops to learn more about implementation.

The findings of this study conclude that these teachers neither agreed nor disagreed that the Ministry advocates strongly for the implementation of computers in to their writing programs ($M = 2.7$) and they did not see that their administrators attend workshops on the implementation of computers ($M = 2.6$). Fullan (2001) also advises that this latter instance is especially important if implementation is anticipated.

According to the written responses of the survey, several teachers also believed that they had nothing to teach their students since students' comfort with the computer exceeded their own. Knowledge of the research in this field could help to eliminate this misconception. Arguably the most important piece of information that teachers can learn about the use of word processors to teach written composition is that teachers still need to teach composition. As previously explained in Chapter II, if we expect students to benefit from the automatic features of the word processor, we have to continue to help students learn what good writing is and how to improve their drafts (Daiute, 1986). Students may know more about a word processor's capabilities than some teachers, but all secondary English teachers should know more about teaching written

composition than their students. Thus, the word processor provides students and teachers with the prime generator of collaboration since both parties have skills and techniques to contribute.

Experience

This study found respondents to be open to professional development with several respondents spending their own time and money on such experiences. However, respondents neither agreed nor disagreed that their experiences contained the experiences selected by Graham and Russell (1997) and by Dupagne and Krendl (1992) as requirements for successful computer-related professional development. These requirements include extensive hands-on work, relevancy, and pleasure. Correspondingly, respondents gave mildly agree ratings to extensive hands-on work (M = 3.5), highly relevant workshops (M = 3.5), and overall pleasure (M = 3.5). Thus, an evaluation of current professional development is advisable. This evaluation is especially pertinent since several teachers describe their experiences with computers as "alienating" and "frustrating," and since Rosen and Maguire (1990) report that ignoring the need for positive computer experiences may simply lead to further computer avoidance.

Equally important to assessing the current professional development syllabus is assessing what teachers are doing once they depart their professional development sessions. In general, the teachers in this study mildly disagreed (M = 2.5) that they discussed the use of computers with their colleagues. These findings are noteworthy since Kozalka (2001) and Fullan (2001) advocate for the need to converse about change and about computers in order for implementation to be successful. Kozalka's study that engaged teachers in list server discussions found that social interactions among teachers enhance motivation, attitude, and comfort level regarding the acquisition of technological expertise and can serve as a model for administrators.

Implications for Practice

Although this study did not set out to address the available technology in schools, the subject proved unavoidable. Even if all the teachers in this sample had reported having positive attitudes towards, perceptions of, and experiences with computers, it is my belief that the present status of word processors in secondary English classrooms would go unaltered without addressing English teachers' access to computers. Ignoring this prevalent matter would do the respondents of this study a disservice since their most vocal complaint was the lack of access to computer hardware and software in schools. Teachers reported having access to computer labs only two to three times a year while the computer and business departments dominated over them, and that their negligible access was of no value to them or to their students. Teachers also reported several difficulties with the technology they did have which rendered the act of implementing computers into their writing programs impractical. However, these findings are not without conditions.

Since this study was based solely on teachers' self-reported attitudes, perceptions, and experiences, it lacks information regarding the equipment available to secondary English teachers in this large urban centre. Such an extension will either confirm or call into question Herrmann's (1989) conclusion that the lack of computer use in schools is not because the schools are not purchasing computers, but because computers "...in classes, such as English, ... are not being used as effectively as they might be" (p. 112). If Herrmann's results are called into question, administrators' first step may be to re-evaluate the allocation of their resources. Since word processing programs do not require access to the Internet or to advanced editions of the program to capitalize on the software's ability to make writing a recursive and fluid activity, administrators may find such equipment more attainable. Additionally, if teachers implement collaborative writing activities into their present writing programs, each student does not necessarily need a computer to him or herself.

However, if greater access to computers is not a possibility, administrators and the Ministry of Education may have to reassess the need for computer implementation in secondary English classrooms. Since a review of the literature on computers and writing (Thiesmeyer, 1989; Conway, 1995; Herrmann, 1991, and Cross, 1990) indicates that students transfer present writing and editing skills to the computer, then limiting students' access to computers may be a better option. This statement does not suggest that students be prohibited access to computers or that teachers should ignore the existence of computers. However, it does suggest that teachers should continue focusing on strengthening students' writing skills, so that they may transfer strong skills to the computer and that this may be the only solution to dealing with the present shortage of computers in the schools sampled. Teachers should still be educated on the potential and the effects of the computer so that they may introduce the computer into their teaching of written composition, and make their students critical consumers of this tool.

This study suggests that if educators do not wish to be perceived as anachronistic, and if the expansion of computer implementation is expected, all parties (researchers, Ministry of Education, administrators, and teachers) need to be involved. The Ministry of Education needs to ensure that teachers are provided with quality professional development and with release time to participate in such experiences. Administrators need to assess the allocation of their computer resources and to ensure that all teachers are provided with the proper infrastructure to support implementation within the school. They also need to be active participants in expanding implementation and to involve teachers in the process. Since the teachers in this study reported a "readiness to implement" and a desire to learn, providing them with time, resources, and support could help to nourish and expand implementation.

Secondary English teachers in this large urban centre need the opportunity to discuss their achievements and their difficulties, as well as adequate access to hardware and software to make implementation possible. However, teachers must also follow through on their willingness to participate in professional development workshops and to have confidence in the computers' power as a tool for writing instruction. They need to believe that with their help, word processors can help to reduce writing apprehension and improve students' writing. Zehr (1998) asserts that teachers have to believe what they are doing is legitimate and they have to want to teach that way in order for implementation to occur. Without such amendments, the increase use of word processors in the secondary English classroom could remain a pipe dream and students could be deprived of different opportunities to write and revise more, to see their text as recursive, to collaborate, and to improve their attitude and confidence towards writing.

Implications for Research

This study suggests that researchers need to provide proof of the benefits of word processors on student writing and effective ways to implement word processors in their teaching of written composition. Since respondents strongly agreed (M = 4.6) that they taught their students techniques for the various stages of the writing process, efforts should be made to judge the effectiveness of incorporating the word processor into present practices. Efforts also need to be made to report concrete and tangible evidence that using word processors to teach written composition provides benefits worthy of altering current pedagogical practices. Since 90% of this sample's high school English teachers reported never using the word processor to teach written composition, efforts need to be made to determine if this negligible use of word processors expands beyond this school district. Moreover, research is needed to understand what is impeding the implementation of word processors in the secondary English classroom.

Since this study's findings that the two teachers over the age of 60 scored higher in "Attitude" than their junior colleagues and that the teacher with 0-1 year of experience scored lower than her more experienced colleagues must both be tempered by a low number of respondents, further research should be conducted in an attempt to validate these findings. Further research should also be conducted to understand why the respondent with 0-1 year of experience, who exhibited a lower "Attitude" score and a greater discomfort with change than her more experienced colleagues, also exhibited a higher level of confidence in her ability to implement word processors into her present writing program. A validation of these findings could lead to further understanding of teachers' motivation behind implementation, thereby improving the expansion rate of word processors in the secondary English classroom.

Additionally, since the teacher with 0-1 year of experience exhibited a lower "Attitude" score than teachers with more experience, research should also be conducted to determine the effects of teacher education on practice. According to Dorman's (2001) study, "...integration of technology applications within existing teacher preparation courses ... has a greater effect on the use of technology in practice" (p. 83); however, this study's respondents were not entirely convinced that English teacher training should include instructional applications of computer courses ($M = 3.8$). Further research may clarify this contrast. Further research may also explain why administrators and colleagues run the most attended computer-related professional development workshops and why female respondents exhibited a higher score of self-initiated attendance ($M = 5.0$) than male respondents. Such research could provide important information with respect to making computer-related Faculty of Education courses more appealing (83% of the sample reported never earning such credits) and how to make computer-related professional development more widely attended.

The data of this research indicate that, in general, these high school English teachers' scores on the "Attitude," "Perception," and "Professional Development Experiences" scales were not strongly related to their scores on the "Readiness to Implement" or "Current Practice" scales. However, the data also indicate that "Readiness to Implement" strongly correlated with "Current Practice," and "Attitude" strongly correlated with "Professional Development Experiences." It must be noted that the two respondents over the age of 60 and the respondent with 0-1 year of experience were not included in this analysis. Thus, further research is necessary to determine the effects of these exclusions. Since "Attitude" only showed a strong correlated with "Professional Development" in the answers given by respondents with more than ten years of experience and in male respondents, further research should be conducted to understand why these factors share a relationship in some groups but not in others.

It is my belief that this study could produce different results if replicated at a later date. For the reasons addressed in this chapter, a token number of teachers is implementing the word processors in their teaching of written composition and this may hinder an accurate assessment of how their attitudes, perceptions, and experiences affect varying degrees of implementation. A future replication of this study could yield additional insight.

EPILOGUE

My thesis grew out of my experiences as both a graduate student and a teacher. In both these environments, I heard English teachers express opinions akin to Cathy's mother's rant found in the cartoon on the first page of this thesis. These comments and observations, coupled with researchers' reports of a lack of computer implementation by English departments, led me to my research question. I was curious about how English teachers' nostalgic images of labour-intensive writing affected what they taught their students and how they felt about computers.

As my own use of the word processor increased, I realized how the word processor had changed my writing process and that I wanted my students to benefit from these changes. The detailed outlines I once depended upon and insisted my students write prior to drafting, no longer existed in my own writing process; I wondered why my colleagues and I continued to use these methods when they were no longer pertinent to our own experiences.

Before I began my literature review, I was almost certain that the word processor had a positive affect on writing; after all, I could see how much my own writing had improved. Once I became familiar with the research, I realized that the word processor was a far cry from being a panacea. In fact, with regards to improving written composition, the research suggests that without an effective writing teacher, there is little proof that the word processor has any positive effects at all.

Although I collected a great deal of interesting data via the Likert-scale questions in my survey, the marginalia and open-ended responses the respondents added illuminated my findings. The teachers of my study wanted to share their thoughts about using the word processor to teach written composition and did so with great passion. Their responses reflected what I had been

hearing in the classroom, some of which was also supported by previous research: that computers were alienating, that they were afraid their students knew more than they did, that writing with a word processor robbed students of the critical commitment and connection to their writing. I was keen to find out if their passionate feelings were keeping them from providing their students with the opportunity to explore the possibilities of this tool.

Much to my surprise, when I analysed my data, I found that teachers' attitudes towards, perceptions of, and experiences with computers had very little relationship with their implementation of word processors in their teaching of written composition. When I discussed my research with colleagues in university classes or at conferences, I found the issue of computer-access for students and teachers was always paramount. My automatic reply to the access question was, "Research says that the ratio of computers to students has decreased and English teachers are still not using them in their classrooms." With my myopic vision, I did not realise that the increased supply of computers in schools did not necessarily mean that the English teachers received any more access than they had previously received. In fact, teachers in this study reported negligible access to computer labs and made mention of how computer and business departments dominated these classrooms.

As I read the open-ended questions and the teachers' marginalia, it became clear to me that the teachers had more to tell me than the questionnaire could elicit. Therefore, if I were to extend this study, I would include interviews with teachers, administrators, and students, and an examination of the access teachers have to computers and how they are exploiting that access. This study did not examine or question whether teachers had attempted to use the resources available to them or whether they had approached the task through less traditional means (e.g., cooperative learning activities or collaborative writing). Only 10% of my sample reported using

the word processor to teach written composition; it is difficult to predict whether future conditions (such as access and more training) would change these findings. Therefore, if I were to extend this study, I would also have to include a close look at how the available computer resources are being distributed and whether or not English teachers are receiving ample opportunity to learn, to discuss, and to experiment with implementation.

When I return to my classroom in September, I see a lack of access to computers impeding my own implementation of word processors. However, this study has helped me to understand that with or without the hardware, students need my guidance as a writing instructor. They need me to help them understand how the writing process is affected by the word processor and how they can improve their composition skills on or off the computer. Thus, I will aim to provide my students with the opportunities to write collaboratively and independently, on and off the computer, and I will continue to help my students reflect upon their writing processes.

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Appendix B

In the following section, please circle the answers that apply to you.

1. Gender: Male Female

2. Age: 22-30 31-40 41-60 >60

3. How many years of experience do you have teaching English/Language Arts?
   0-1 2-5 6-10 more than 10

4. How many sections of English/Language Arts are you presently teaching?
   0 1-2 3-6 more than 6

5. Which of the following grade levels do you most prefer to teach?
   K-7 8-10 11-12

6. Approximately which percentage of your English students, use the word processor without being required to?
   0 – 30 % 30 – 60% 60 – 100 %

7. In the blank space provided, please print the approximate number of hours, per day, you use a computer for the following reasons (Note: Please use "0" where applicable):
   a. Personal (including E-mail) _____
   b. Teaching-related (including E-mail) _____

8. In the blank space provided, please print an approximate, total number of hours you have spent in the following computer-related professional development workshops. (Note: Please use "0" where applicable).
   a. Workshops offered by your administrators or colleagues _____
   b. Workshops run by your Board or Ministry _____
   c. In the blank space provided, please print the total number of credits you have earned in computer-related Faculty of Education courses or workshops.
   _____

9. Please rate the following statements based on your experiences with computer-related professional development on a scale of 1 to 5, where ***1 is Strongly Disagree*** and ***5 is Strongly Agree***.

a.	My experiences encouraged extensive hands-on work.	1 2 3 4 5
b.	My experiences were based on collaborative learning activities.	1 2 3 4 5
c.	My experiences were self-initiated.	1 2 3 4 5
d.	My experiences were highly relevant.	1 2 3 4 5
e.	My experiences were pleasant, overall.	1 2 3 4 5

10. How many hours of class time do you spend, per week, on average, in each of your English classes,
    a. teaching writing composition? _____
    b. using computers to teach written composition? _____

11. Please rank the top three techniques you use most frequently to teach written composition:

_____ Writing Workshop
_____ Student-Teacher Conference
_____ Lecture
_____ Other

Please rate the following statements on a scale of 1 to 5, where 1 represents a statement with which you ***Strongly Disagree*** and 5 represents a statement with which you ***Strongly Agree***.

		SD				SA
12.	I teach my students techniques for the various stages of the writing process.	1	2	3	4	5
13.	Knowing how to use a word processor is a worthwhile and necessary skill.	1	2	3	4	5
14.	I would like to learn more about how to incorporate computers into my English program.	1	2	3	4	5
15.	Word processors help produce lazy writers.	1	2	3	4	5
16.	I do my banking on-line.	1	2	3	4	5
17.	I am comfortable making purchases on-line.	1	2	3	4	5
18.	Teaching word processing skills is the responsibility of the English teacher.	1	2	3	4	5
19.	Integrating computers into the teaching of written composition has more disadvantages than advantages.	1	2	3	4	5
20.	I feel confident about my ability to integrate computers into my present writing program.	1	2	3	4	5
21.	English teacher training should include instructional applications of computer courses.	1	2	3	4	5
22.	I look forward to a time when more English teachers are using word processors to teach written composition	1	2	3	4	5
23.	I check my e-mail daily.	1	2	3	4	5
24.	I will do as little work with computers as possible.	1	2	3	4	5
25.	Computers dehumanize society.	1	2	3	4	5
26.	Knowledge of word processors will improve students' writing.	1	2	3	4	5
27.	I use a word processor when I want to write creatively.	1	2	3	4	5
28.	I use a computer to keep student records.	1	2	3	4	5
29.	I use the Internet to search for new teaching ideas.	1	2	3	4	5
30.	When I encounter a problem with a computer, I ask someone for help.	1	2	3	4	5
31.	When I encounter a problem with a computer, I try to figure it out on my own.	1	2	3	4	5
32.	Too much emphasis is placed on the importance of computers in education.	1	2	3	4	5
33.	Research demonstrates that computers develop better writers.	1	2	3	4	5
34.	I teach students how to use the word processor for their pre-writing stage.	1	2	3	4	5
35.	I teach students how to use the word processor to draft their writing.	1	2	3	4	5
36.	Students should use word processors only to publish their work.	1	2	3	4	5
37.	I teach students how to revise and edit using a word processor.	1	2	3	4	5
38.	I expect all final products to be completed on a word processor.	1	2	3	4	5
39.	Word processors help to reduce writing apprehension.	1	2	3	4	5
40.	I have strong mathematical skills.	1	2	3	4	5
41.	I am not comfortable with change.	1	2	3	4	5
42.	I am comfortable not being the "expert" in the class.	1	2	3	4	5

43.	Insufficient access to word processors is impeding the implementation of word processors in to my English program.	1	2	3	4	5
44.	My administrators encourage the implementation of computers in the classroom.	1	2	3	4	5
45.	There are plenty of opportunities for computer-related professional development offered in our district.	1	2	3	4	5
46.	I often discuss the use of computers with my colleagues.	1	2	3	4	5
47.	The computer contact in my school is approachable.	1	2	3	4	5
48.	Many of my colleagues integrate computers in their writing programs.	1	2	3	4	5
49.	Greater release time is needed to learn more about computer integration.	1	2	3	4	5
50.	I am afraid of appearing ignorant in front of my students.	1	2	3	4	5
51.	As an English teacher, I am obligated to incorporate computers into my writing program.	1	2	3	4	5
52.	The ministry advocates strongly for the use of computers in English classes.	1	2	3	4	5
53.	There are plenty of resources available to help me integrate computers into my present writing program.	1	2	3	4	5
54.	Without word processing skills, all students will have limited job opportunities.	1	2	3	4	5
55.	Students should only compose writing by hand, with a pen or a pencil.	1	2	3	4	5
56.	My administrator attends workshops related to the use of computers in classrooms.	1	2	3	4	5
57.	I have experienced positive results when implementing word processors in my writing program	1	2	3	4	5

If additional space is required to answer questions 58 – 60, please feel free to use the reverse side of this sheet and labelling your answer with the appropriate number.

58. If you use the word processor to teach written composition, please describe ways that you use it.

59. Please describe the kinds of assistance you require to use computers to teach written composition.

60. Please add any comments that would help me to understand your attitudes toward and experiences with word processors.

Appendix C

The University of British Columbia
Office of Research Services and Administration
Behavioural Research Ethics Board

Certificate of Approval

PRINCIPAL INVESTIGATOR	DEPARTMENT	NUMBER
Belanger, J.F.	Language and Literacy Educ	**B01-0638**

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT

CO-INVESTIGATORS:

Crescenzi, Patrizia, Language and Literacy Educ

SPONSORING AGENCIES

TITLE:

Ways attitudes, perceptions, and experiences of secondary English teachers affect their implementation of word processors in the teaching of written composition

APPROVAL DATE	TERM (YEARS)	DOCUMENTS INCLUDED IN THIS APPROVAL:
MAY 23 2002	1	10 May 2002, consent form, questionnaire

CERTIFICATION:

The protocol describing the above-named project has been reviewed by the Committee and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval of the Behavioural Research Ethics Board by:
Dr. James Frankish, Chair

This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures

Appendix E

Pilot Study Questionnaire

In the following section, please circle the answers that apply to you.

61. Gender: Male Female

62. Age: 22-30 31-40 41-60 >60

63. How many years of experience do you have teaching English/Language Arts?
    0-1 2-5 8-10 more than 10

64. How many sections of English/Language Arts are you presently teaching?
    0 1-2 3-6 more than 6

65. Which of the following grade levels do you most prefer to teach?
    K-7 8-10 11-12

66. In the blank space provided, please print the approximate number of hours, per day, you use a computer for the following reasons:
    a. Personal _____
    b. E-mail _____
    c. School-Related _____

67. In the blank space provided, please print the number of hours you have spent in the following computer-related professional development courses or workshops.
    a. Workshops offered by your administrators and/or colleagues _____
    b. Workshops run by your Board or Ministry _____
    c. Courses or Workshops offered by a Faculty of Education _____

68. Please rate the following statements based on your experiences with computer-related professional development on a scale of 1 to 5, where ***1 is Strongly Disagree*** and ***5 is Strongly Agree***.

f. My experiences encouraged extensive hands-on work. 1 2 3 4 5
g. My experiences were based on collaborative learning activities. 1 2 3 4 5
h. My experiences were self-initiated. 1 2 3 4 5
i. My experiences were highly relevant. 1 2 3 4 5
j. My experiences were pleasant, overall. 1 2 3 4 5

69. On average, how many hours per month, of class time, do you use computers when teaching written composition?
    Never 1-2 hours 3-5 hours more than 5 hours

Please rate the following statements on a scale of 1 to 5, where 1 represents a statement with which you ***Strongly Disagree*** and 5 represents a statement with which you ***Strongly Agree***.

	SD				SA
70. Knowing how to use a word processor is a worthwhile and necessary skill.	1	2	3	4	5
71. I would like to learn more about how to incorporate computers into my English program.	1	2	3	4	5
72. Word processors help produce lazy writers.	1	2	3	4	5
73. Word processors help students write more creatively.	1	2	3	4	5
74. I feel confident in my ability to learn about computers.	1	2	3	4	5
75. I do not feel threatened when others talk about computers.	1	2	3	4	5
76. I get a sinking feeling when I think of trying to use a computer.	1	2	3	4	5
77. I do my banking on-line.	1	2	3	4	5
78. I am comfortable making purchases on-line.	1	2	3	4	5
79. Teaching word processing skills is the responsibility of the English teacher.	1	2	3	4	5
80. Integrating computers into the teaching of written composition has more disadvantages than advantages.	1	2	3	4	5
81. I feel confident about my ability to integrate computers into my present writing program.	1	2	3	4	5
82. English teacher training should include instructional applications of computer courses.	1	2	3	4	5
83. **(Please rate this question only if you do not presently integrate computers in to your English program)** I think integrating computers in to my English program would be an enjoyable and stimulating experience.	1	2	3	4	5
84. I check my e-mail regularly.	1	2	3	4	5
85. I will do as little work with computers as possible.	1	2	3	4	5
86. Computers dehumanize society.	1	2	3	4	5
87. Knowledge of word processors will improve students' writing.	1	2	3	4	5
88. I use a word processor when I want to write creatively.	1	2	3	4	5
89. I use a computer to keep student records.	1	2	3	4	5
90. I use the Internet to search for new teaching ideas.	1	2	3	4	5
91. When I encounter a problem with a computer, I ask someone for help.	1	2	3	4	5
92. When I encounter a problem with a computer, I try to figure it out on my own.	1	2	3	4	5
93. When I encounter a problem with a computer, I ask someone for help.	1	2	3	4	5
94. Too much emphasis is placed on the importance of computers in education.	1	2	3	4	5
95. Research demonstrates that computers develop better writers.	1	2	3	4	5
96. Students should use word processors in their pre-writing stages.	1	2	3	4	5

97. Students should use word processors in their drafting stages.	1	2	3	4	5
98. Students should use word processors only to publish their work.	1	2	3	4	5
99. Students should use word processors to revise and edit their work.	1	2	3	4	5
100. Word processors help to reduce writing apprehension.	1	2	3	4	5
101. I have strong mathematical skills.	1	2	3	4	5
102. I am not comfortable with change.	1	2	3	4	5
103. I am comfortable not being the "expert" in the class.	1	2	3	4	5
104. Insufficient access to computers is impeding my implementation of computers in my English program.	1	2	3	4	5
105. My administrators encourage the implementation of computers in the classroom.	1	2	3	4	5
106. There are plenty of opportunities for computer-related professional development offered in our district.	1	2	3	4	5
107. I often discuss the use of computers with my colleagues.	1	2	3	4	5
108. The computer contact in my school is approachable.	1	2	3	4	5
109. Many of my colleagues integrate computers in their writing programs.	1	2	3	4	5
110. Greater release time is needed to learn more about computer integration.	1	2	3	4	5
111. I am afraid of appearing ignorant in front of my students.	1	2	3	4	5
112. As an English teacher, I am obligated to incorporate computers into my writing program.	1	2	3	4	5
113. The ministry advocates strongly for the use of computers in English classes.	1	2	3	4	5
114. There are plenty of resources available to help me integrate computers into my present writing program.	1	2	3	4	5
115. Using a computer increases productivity.	1	2	3	4	5
116. Without knowledge about word processing, all students will have limited job opportunities.	1	2	3	4	5
117. Students should be encouraged to compose writing on paper.	1	2	3	4	5

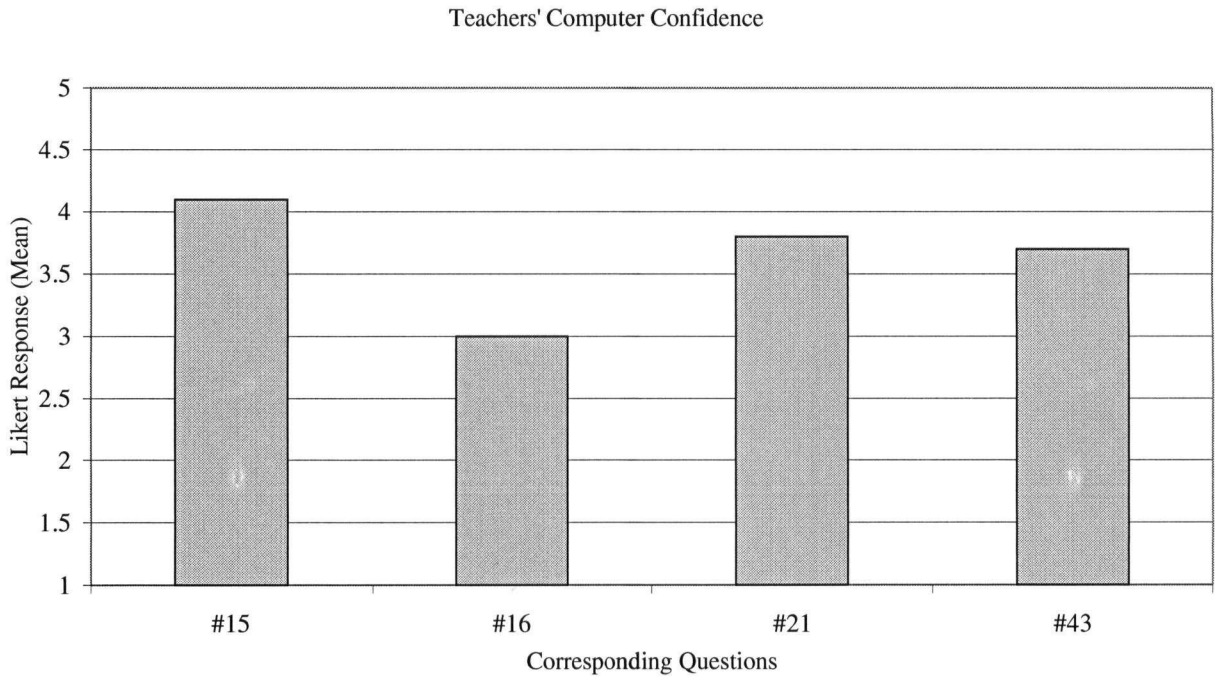
Appendix F

Figure A.1

Teachers' Computer-Related Confidence

This figure displays the average responses to the following statements regarding computer-related anxieties:

15. I do not feel threatened when others talk about computers
16. I get a sinking feeling when I think of trying to use a computer. *
21. I feel confident about my ability to integrate computers into my present writing program.
43. I am comfortable not being the "expert" in the class.



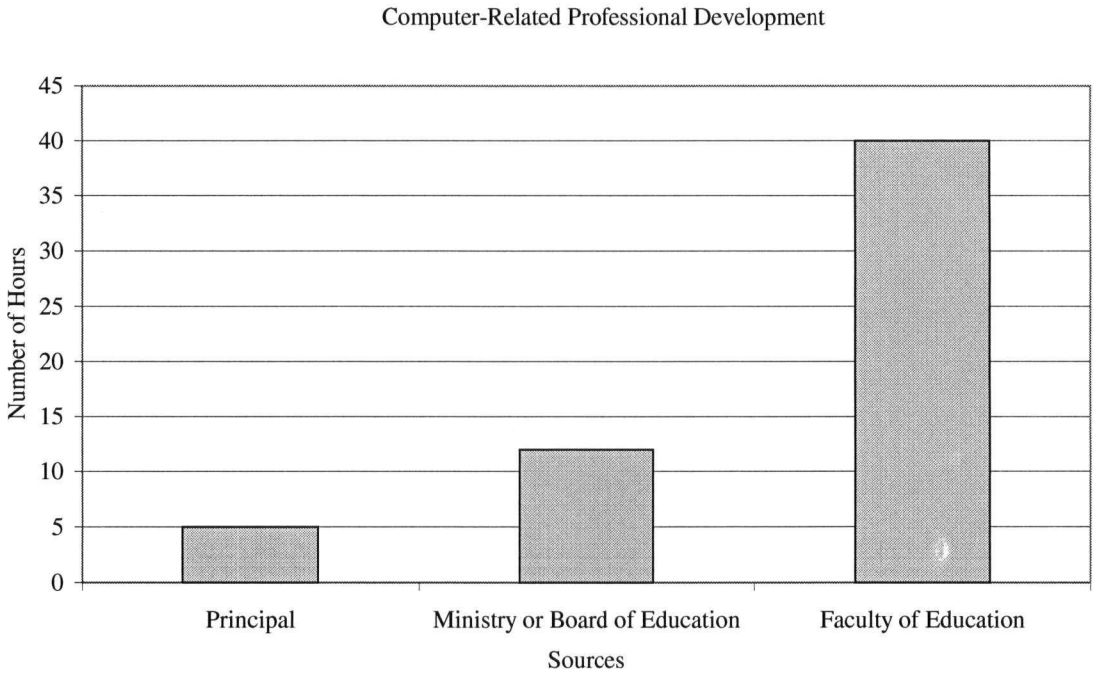
In general, the participants were not threatened when others talked about computers, and were confident in their ability to learn about computers.

Appendix G

Figure A.2

Computer-Related Professional Development

The following figure displays the average number of hours the participants spent in computer-related professional development implemented by their principal, the ministry or board of education, or a faculty of education. The data show that these participants have spent a considerable amount of time in computer-related professional development courses and/or workshops, and that the most common locale for this development was a faculty of education.



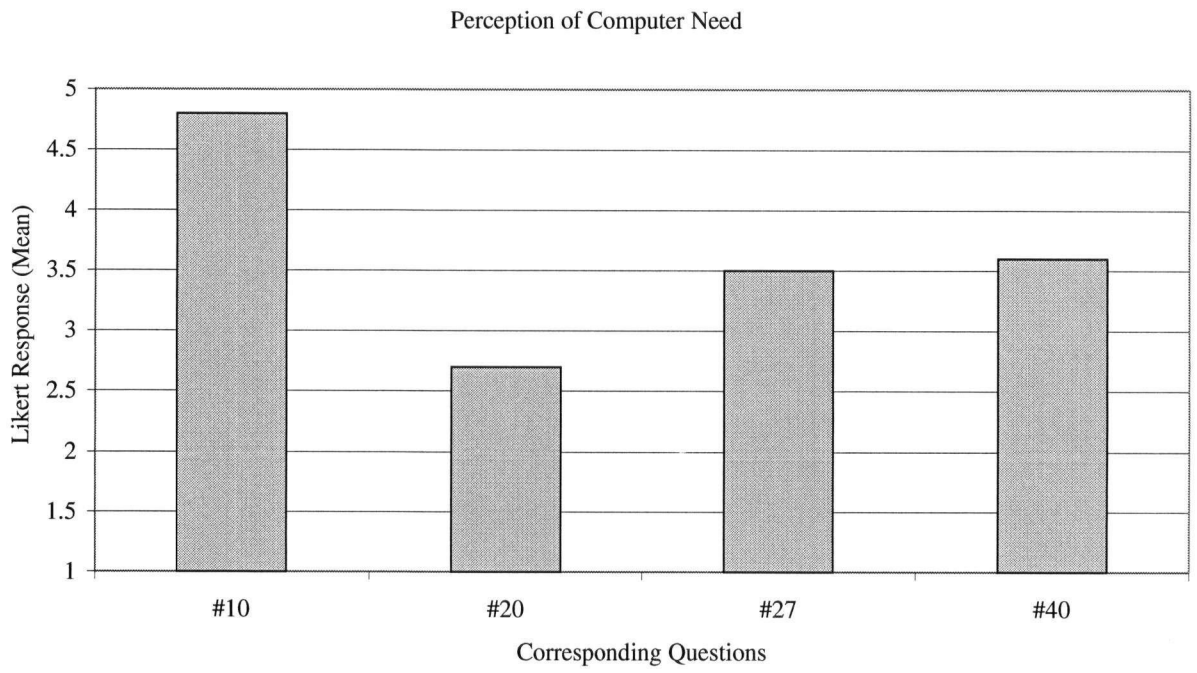
Appendix H

Figure A.3

Perception of Computer Need

Given the participants' experiences with computers, and their open-mindedness, it is not surprising to find that their perceptions of computers are also positive. The following figure displays the average Likert-scale responses to these questions:

10. Knowing how to use a word processor is a worthwhile and necessary skill.
20. Integrating computers into the teaching of written composition has more disadvantages than advantages. *
27. Knowledge of word processing will improve students' writing.
40. Word processors help to reduce writing apprehension.

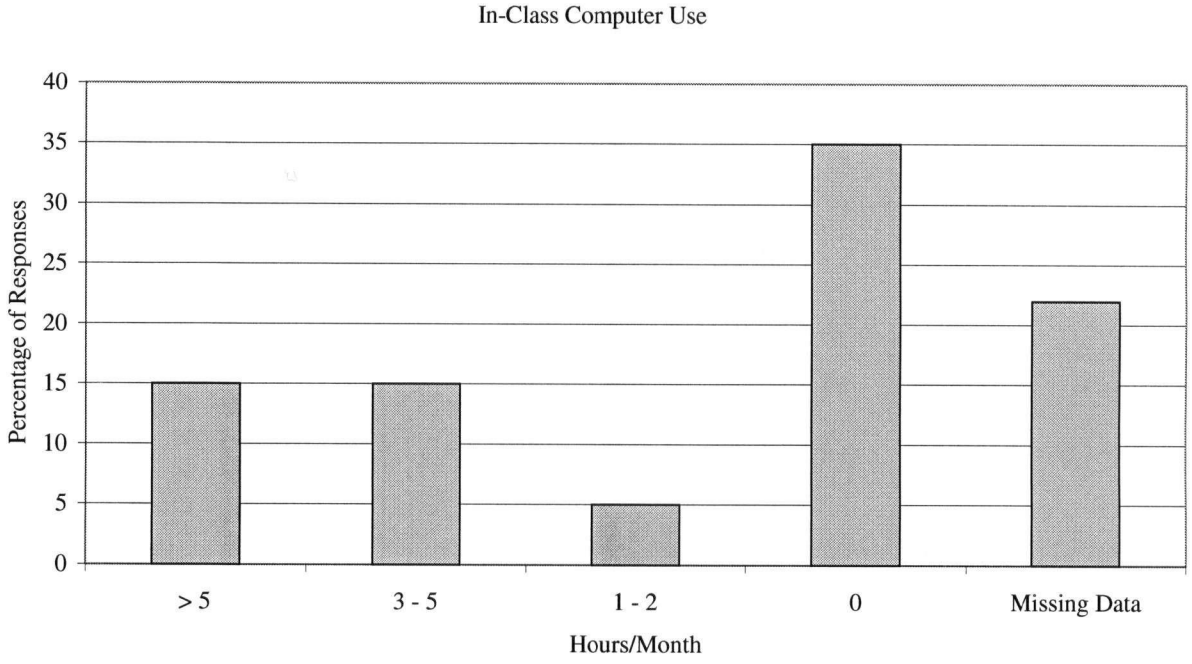


Appendix I

Figure A.4

In-Class Computer Use

Despite this group's positive experiences with computers, and despite its positive attitudes and perceptions of the usefulness of computers, 35 percent of these subjects reported never using computers in their teaching of written composition, and only 18 percent reported using the computer in their classrooms 3 or more hours per month. As a limitation of this finding, only 2 of my 17 subjects were presently teaching at least one section of English/Language Arts and 22 percent of the data for this question were missing.



Appendix J

Table A.1

Un/Reliability Ratings of Original Categories

Category	Sub-Category [a]	Reliability Rating
Attitude	Comfort	.40
	Anxiety	.37
Perception	Reservation	.53
	Gameness	.52
Experiences	Professional Support	.44
Implementation	Responsibility	.17
	Teaching Practices	.18

Note. "Reliability Ratings" were rounded to the nearest hundredth.

[a] "For Professional and Personal Purposes" was not included because it was not comprised of Likert-scale questions and "Professional Development Experiences" was not included because it was deemed a reliable scale and was not eliminated from the study.