AN EVALUATION OF THE EFFECTS OF COMPUTER USAGE ON THE ATTITUDES OF SIXTH GRADE STUDENTS TOWARD WRITING

A RESEARCH PROPOSAL

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CHAPTER 1

INTRODUCTION

Many beginning writers are reluctant writers. These students see no challenge or opportunity in writing, and they view composition as a tedious task which must be grudgingly completed. By the time these students reach the sixth grade, they equate writing assignments with drudgery and boredom. Writing is seen as an assignment, a requirement, or a project with a deadline; not an opportunity for expression.

With the growth of computer usage in schools across the country, many writing teachers are presented with a unique opportunity to make writing fun. Word processing software creates a situation where students can "play" with words, inserting phrases, deleting sentences, moving paragraphs, all without recopying papers or throwing anything away. Computers make the writing task easier, by making it seem more like "fun" and less like "work". With computer use, writing is an activity students look forward to, as opposed to traditional pen and paper assignments. Most students see computer assisted writing as a rewarding opportunity. As a result, student attitudes toward writing become more positive.

The widespread use of computers in the writing classroom is yielding many positive results. Student writing is improving, instructional time is more productive, and students actually seem to enjoy writing more (McGarvey, 1986). Student writers who exhibit positive attitudes appear to become better writers. They are less apprehensive toward attempting new tasks, more open to suggestions for improvement, and much more apt to complete their assignments.

Each individual writing teacher must determine his or her most effective approach to teaching composition; however, with the increasing amount of support for the uses of computers in writing, he or she must be willing to consider the possibility of

incorporating the available technology into the classroom. If student writers who use computers appear to enjoy writing more, then a link is apparent between computer usage and student attitudes toward writing.

The researcher believes that the more positive the student attitude toward the writing task, the better the final written work will be. When a student enjoys the task he/she is involved in, more time is often invested. During that time, the student forms a sense of "ownership" for the piece she/he is working on. With that ownership comes pride, as well as a sense of accomplishment when the work is completed. The final published work is the result of personal investment, a process that the student found both enjoyable and rewarding.

Attitude is key in creating a successful student writer. If the writer is reluctant, frustrated, or even defiant, the work produced will reflect that attitude. Additionally, many of the reluctant writers choose not to produce any work at all. The attitude toward writing causes those students to simply shut down. In dealing with these students, teachers search endlessly for motivational factors. As the research indicates, computer assisted writing may be, for many students, the key which will unlock for them the world of writing. The inviting nature of the keyboard and the monitor opens those students up to the possibility that they can write successfully.

As these writers begin to see success, even if it is in the form of their first completed assignment, they will continue to write. In time, the computer may lead a number of students to expressive, creative, dynamic writing. As an education community, we are bound to make every attempt at making the classroom experience a positive one. For many students, it is the presence of the computer that brings excitement to the process of composition.

If the computer is the key to making students excited about writing, then every writer should have access to a keyboard and terminal.

Purpose of the Study

The purpose of this study was to evaluate the effects of computer usage on the attitudes of sixth graders toward writing.

Hypothesis

There will be no significant difference in mean pre test and post test attitude scores of students who have used computers in the writing process.

Assumptions

In order to carry out this study , the semantic differential was used to measure students' attitudes toward writing. The writer assumed that students would honestly answer the semantic differential questionnaire.

Limitations

One of the limitations of this study was the limited access to computers. The computer lab at the site of the study must be shared among six language arts teachers, which limited the amount of time each class may have utilized the lab.

Another limitation of the study was the inability to survey more students. The sample size was approximately 14 students, and a larger pool of student writers could have yielded more accurate results. In addition, these students were identified as Title One readers, reflecting some limitations to their language skills prior to the study.

Yet another limitation may have been the entry status of the sixth graders used in the study. In the school system used in the study, sixth grade was the beginning year for students entering the middle school. Apprehension about a new school and different surroundings could have been reflected in their responses to the questionnaire.

Definition of Terms

Attitude is the student's positive or negative feelings toward a given topic.

Writing is the art or style of literary composition.

Writing process is the standard five step method (pre-writing, drafting, revising, editing, publishing) used in teaching writing.

Word processor is a computer software program which facilitates writing.

Computer assisted composing (CAC) is the act of writing using a word processor.

Language arts is a course for sixth graders in which reading and writing are taught.

Significance of the Study

The researcher has taught in the area of the English language arts for six years, focusing on reading and writing. Most of the students to enter this teacher's classroom have struggled with writing skills. In attempting to find innovative and motivational methods to teach writing, the researcher found that many students were encouraged to write when given the opportunity to compose on computer.

At Esther Dennis Middle School, where the researcher is employed, there are two computer labs present; one Apple IIe lab, and a second lab made up of more modern Macintosh units. These labs are designed for classroom utilization, although access is limited due to scheduling difficulties.

The researcher wished to investigate the connection between student attitude toward writing and the opportunity to use computers. Additionally, the researcher hoped to reveal through review of the available literature that a correlation exists between positive student attitude and actual written performance. Since the focus of schools is often on improving the quality of the work students produce, the researcher believed that establishing this relationship between attitude and performance would be of benefit to those reading the study.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Technology and Changes in the Teaching of Writing

The use of word processors in the classroom has led to many changes in the teaching of writing (Bruce, 1985). Proponents of word processing software for children have long argued that the ease of revision and the ability to read printed output easily aid children in learning to write, and the research has supported such arguments. However, the writing classroom has exhibited changes beyond just the technology of writing.

In a study completed in a sixth grade classroom in the northeastern United States, students were encouraged to write critical reviews of a "Black History Show" they had attended. While student writing was examined for improved quality of work, there were other factors affecting the students which were revealed more clearly. Bruce (1985, p.147)said:

> The most important impact of microcomputers on writing may be the changes in the larger classroom writing "system" rather than the changes in the technology of writing (e.g., speed, printed output, ease of revision). In "milling around" the computer waiting for their turn to get on, students read each other's writing and interacted over it. These interactions affected both the content and the form of student writing.

The study indicates that with the use of computers, student writing becomes influenced by a number of different factors. It becomes public when revealed on the computer's monitor, encouraging student social interaction. By using the information storage capabilities, students can easily access their own (or their peers) writing with relative ease. And in its final form, student writing is like published print, easier to read and more accessible to classmates and other readers. With these factors in play, writing with computers was shown to be quite different than traditional methods.

Due to the dramatic changes in student approach, the use of word processors has caused teachers to make many changes in the teaching of writing (McGarvey, 1986). Through a study at Bedford Middle School in Westport, Connecticut, McGarvey (1988, p. 34) discovers that word processors "make it easier and more effective to teach students how to write." His research indicates that student writing improved, instructional time was more productive, and students seemed to enjoy writing more.

Students who used a word processor at Bedford found the act of writing easier. As a result, McGarvey concludes, these students' attitudes toward writing improved. With the aid of the computer, students were able to write more comfortably and with less inhibitions. The ease of "spell check" and similar tools also assisted the students, and the instructor, by allowing the classroom to be less focused on "correcting" and more on the teaching of writing.

According to McGarvey, one of the greatest benefits of using computers to teach writing is the opportunity to work individually with students (p.34). Writing becomes a "partnership", an action-oriented process, and as a result, classrooms become more active and, seemingly, more effective. McGarvey quotes teacher Carol Bieling: "Children who use word processors become better writers faster. They work harder and longer at revision. They advance far more quickly than children who still plow through pencil and paper drafts."

The impact of computers on the writing process has resulted in many changes in the teaching of writing (MacArthur, 1988). Initially, students are met with the new challenge of learning to use a new writing tool. Once learned, students discover that with a word processor, they have much more flexibility in the editing of text. Their writing is made more public by virtue of the computer's monitor and the use of a keyboard, as well as the neat, printed copy produced by the printer. In addition, computers change the physical process of writing, replacing handwriting with typing.

MacArthur's research (1988, p.537) suggests that the ease of revision on the computer may encourage writers to make more revisions and improve their texts. In addition, the entire composing process may be affected "by encouraging authors to write freely without concern for error and awkward spots because it is so easy to make changes later." That ease of revision, according to MacArthur, may also help those students with learning disabilities learn revising skills.

As corroborated by Bruce in his research, MacArthur acknowledges the social context of using computers in writing. The accessibility of the monitor and the keyboard can facilitate both student collaboration as well as student-teacher interaction. Students are able to share work in progress, while teachers can observe this progress without appearing obtrusive. The instructor can intervene to provide procedural support, leaving students to compose and revise freely on the computer. MacArthur's research also indicates (p. 537) that student motivation and sense of ownership of their writing were enhanced when the teacher limited his/her role to that of technological support.

The neat, printed copy provided by word processors is often a motivator, according to MacArthur, for students who struggle with poor handwriting and/or structural errors in their writing. In addition, that printed output may encourage writers to publish their work for a variety of real audiences which they might not have considered under "regular" pen and paper circumstances.

In addition to improving motivation, MacArthur cites studies which indicate that the use of word processing can result in increases in the quantity and quality of student writing. Although more research is needed to confirm the effect of word processing independent of writing instruction, there are indications that the use of computers can lead to improved student writing. Instructional techniques, as well as the social context of computer usage, are still varying factors which require further

exploration.

MacArthur concludes that computers are dynamic tools for writing which provide a wide range of opportunities for improving writing instruction. They can enhance the interaction between teacher and student and provide an active social context for student collaborative work. With effective instruction, computers can contribute significantly to better student writing (p. 541).

By providing a more interactive model of instruction, computers lead to a variety of changes in the teaching of writing (Bernhardt, 1994). The underlying premise of Bill Bernhardt's research (1994) is that the fluidity of text on a computer screen allows writers new opportunities. His notion of "reading and writing between the lines" gives writers a sense of engagement with the work they are composing. Students need not be computer masters to begin to manipulate text, adding comments between lines and modifying the text on the screen.

Bernhardt takes his students through a number of exercises designed to make them comfortable with the technology before them. As they insert spaces, parentheses, and capital letters, they are becoming involved in the test. Bernhardt (1994, p. 462) states that "the purpose here is to use the technology to make the student more active in opening up the text, not to master the bells and whistles of a particular word processing program."

With reading and writing between the lines, writers can utilize the fluidity of the written text. This method supports an interactive model of composition instruction in which people learn primarily be doing and inventing, rather than through listening and copying (Bernhardt, p. 463).

Writing with word processors changes the classroom context and results in changes in the teaching of writing (Snyder, 1994). Snyder examines the many differences between a "computer classroom" and a "pen classroom".

In the pen classroom, most of the eighth graders appear frustrated and bored, finding it difficult to stay on task. The instructor must reprimand the class continuously, announcing that time is passing and most students are not on task. By contrast, the computer classroom is active and involved. Students are writing, discussing and conferring without benefit of "teacher control." According to Snyder, all of the students in the classroom are engaged in writing, some independently, some collaboratively.

The two scenarios differed greatly, and Snyder (1994, p. 144) was led to a number of conclusions:

> First, the ways in which the students interacted with each other and with the teacher varied in the two classes. The students in the computer group were more work-focused and task-oriented. They were also more interactive, co-operative and collaborative than the students in the pen classroom. Second, the teacher's role was different in the two classes. In the computer class, the teacher was more peripheral; the students were more independent; the class was less teacher-centered and more student-focused.

Snyder went on to research additional classrooms and their strategies using computers. The writer focused on three principal aims in her study: the influence of the computer on the written texts; the effects on students' composing processes; and the impact on the teaching/learning context.

Composing processes and resulting quality of texts were the first of Snyder's areas of research to reveal interesting results. Snyder found that the computer students, when compared to pen-and-paper composers, were awarded consistently higher marks. The computer texts offered strong evidence of the effectiveness of word processing in the promotion of quality. Students composing processes, however, tended to remain the same.

When examining the importance of the teaching/learning context, Snyder based her argument on a socio-cognitive view of writing development. In this view, learning is seen as socially based, and the experience of learning to write is seen as an

interactive process. In addition, writing behaviors are believed to be influenced by context and affect the meanings that the learners produce. By examining process, product and context, Snyder attempted to reach a more comprehensive understanding of the impact of computers (p.147).

After reflecting on the structural differences between the two classrooms (arrangement of furniture, aesthetic details, positioning of students and computers), Snyder noted the discrepancies in behaviors. The writer observed that the computer students were more purposeful in their behavior, as well as more intently focused on the task of writing than the pen students. The computer students overall appeared more task oriented, and instruction did not not require as much time in the computer classroom (p. 154).

The computer room also presented itself as a busier place, according to Snyder's study. There was more movement, more talk and more laughter. As submission time approached for assignments, students exhibited intense concentration. A sense of achievement was displayed when assignments were handed in. In the pen classroom, submissions were seen as merely routine occurrences.

Snyder's study reinforced a number of sound principles for effective learning: when the learner is independent, when risk taking is nurtured, and when the environment is supportive and encouraging, the learner thrives (p. 157). These positive qualities, however, were more apparent in the computer classroom. The end result revealed the computer classroom as the more effective learning environment. The students participating agreed with this assessment. In conclusion, Snyder (p. 159) states, "For teachers concerned with students writing development, the use of word processors presents a unique opportunity to instigate powerful change in their classrooms."

Improvement in Writing Skills by Using Computers

Using computers with students with special needs can produce improvement in writing skills (Storeygard, 1993). "Computers and Writing" was a middle school language arts course developed at Wayland Middle School to meet the needs of reluctant writers. According to Judy Storeygard (p. 22), the idea for the course came from observing the positive attitudes of students using word processors in other courses. It was conceived as a separate, remedial course, beginning with skill acquisition on the keyboard. It developed into a great assistance for writing across the curriculum.

As students worked with the computers, they discovered the usefulness of the technology as a writing tool. Revision was simplified for the students, as summarized by one student in the study (Storeygard, p. 23) : "I just like typing on the computer, because if I make a mistake I just go back a press the Delete button. But if you're writing the rough draft (using pencil and paper), you have to erase it and get shavings all over everywhere; it drives me nuts."

Word processing also assisted these students in expressing their thoughts. The ease of composing on the computer facilitated writing for both mainstream assignments and personal journaling. In addition, the legibility of the final product made computers a useful tool for those who struggled with handwriting difficulties.

Students in the study found that the social context of computers aided in peer conferencing, which was a part of the writing process at Wayland Middle School. The ease and visibility of keyboards and monitors made collaboration simpler and facilitated the revision process. In addition, features like spellchecker allowed students to work independently through the editing process.

Through effective planning, monitoring and evaluation by staff and administration, the Computers and Writing course became successful at Wayland.

The school was committed to student writing, and communication between the mainstream English teacher and the special education teacher made the course successful in fulfilling that commitment. The novel approach of the Computers and Writing course not only enabled reluctant writers to improve their writing skills significantly, but also facilitated their participation in mainstream learning (Storeygard 1993, p. 24).

When the writing process is taught with computer instruction, students show improvement in their writing skills (Montague, 1991). Marjorie Montague, in her book *Computers, Cognition and Writing Instruction*, attempts to persuade writing instructors to reform instruction including computer assisted composition in the classroom. The author argues that a computer writing environment effectively complements instruction, particularly when the writing process is implemented.

With effective use of software, a variety of writing problems can be addressed on computer. Student difficulties with structure, spelling, style and grammar can be addressed with grammar and spell checkers. Prewriting, revision and editing may be simplified using simple steps in computers programs, or through the relative ease of on-screen changes. Montague advises that schools examine and evaluate software which will best help students achieve the goals of their writing program.

Through extensive research of available software and classroom computer usage, Montague has concluded that the computer is a valuable tool which effectively supplements a writing process mode of instruction. She states (p.150): "Computer based education has the potential to expand the learning experiences of children by providing alternatives and choices that will enable them to be literate, informed, and successful in their own right."

The ease of computer usage in writing leads to improvement in writing skills (Vacc, 1986). Studies have revealed that students, particularly those at the middle

school level, perceive their writing to be easier, better and more enjoyable when using a computer. Nancy Vacc's research, using middle schoolers and a letter writing assignment, attempted to reinforce those findings by comparing word processing results to those which were hand written.

Student reaction to computer usage was enthusiastic. One student stated (Vacc 1994, p. 26): "I'd rather work on computers than typewriters or by hand," while many others supported this statement. In actual usage, students made many more revisions in their work, primarily deletions and replacements of words. Students appeared more actively engaged in their writing experiences, and found the ease of computers facilitated their composition.

Vacc's results supported the use of computers as effective tools in the middle school writing curriculum (p. 27). With appropriate teacher training and adequate financial means, classrooms with computer assisted instruction can develop effective writing programs for students.

Incentives provided to students by computer usage promote improvement in writing skills (Hague, 1986). Sally Hague and George Mason studied the correlation between student desire to use computers and the increase in readability of their writing. A group of tenth graders participated in the project, who were asked to bring a writing sample to the first session. The samples were evaluated for readability, and found to be considerably below grade level. When introduced to the word processor, students were instructed in editing and revision techniques designed to increase the readability level of their writing.

Students began to gain enthusiasm for using the computers. They were encouraged by the ease of revision, although the student aim was simply to increase grade level (Hague 1986, p. 17). Competition actually began among the students to see who could increase the most grade levels in readability. As a result, students

were subtly led to effective revision. The end result was an increase in grade level from original draft to the computer revised copy for all participants; one student raised his readability by eight grade levels.

In this study, students were motivated to examine and revise their writing, and this resulted in improved final products. The revision strategies used, through word processing, improved both the quality of the writing and the attitudes of the student writers (p. 17).

Research indicates that using computers in writing results in improvement in writing skills (Hawisher, 1989). Studies examining the writing processes of junior high students indicate that students seem to revise papers with word processing so that final drafts exhibit fewer numbers of mechanical errors. Final drafts of student compositions done on computer were judged to be more technically proficient than first drafts. Hawisher concludes that, when working with word processors, students can be expected to submit papers that have been more carefully and effectively edited (p. 90).

In studies examined by Hawisher, the most common finding was that students enjoy writing with computers and often display significantly more positive attitudes toward the activity of writing than classmates working with conventional tools. Word processing tends to motivate students and, in so doing, helps create an ecology in which students and instructors seem to share information and learning (p.90). Schools need to capitalize on computers and on the social interactions within the computer assisted classrooms.

According to Hawisher (p.91), "Research in computers and writing...can, with careful study, provide a framework for us to reflect on how the special properties of computers lend themselves to the promising capabilities of our students and the writing class."

In comparing conventional writing with word processing, word processed stories show improvement in writing skills (Owston, 1991). A group of eighth graders, when given two similar writing tasks--one on the computer, the other off the computer--were shown to produce better quality work on the computer as judged by trained raters (p. 81). Students produced significantly longer papers, and revision and editing was superior in the computer generated compositions. Owston's research further supported the evidence already presented that students have more positive attitudes toward writing when working on computer.

Owston cautions, as many other researchers have done, that further research need to be completed regarding the connections between improved writing quality and the use of word processors in the classroom. Although Owston's study revealed a positive correlation between the two, a number of extraneous factors need to be considered. Student experience and familiarity with computers, or the lack thereof, may influence the quality of the writing product. The positive attitudes that students bring to writing with computers may be the influencing factor for increased attention to composition, revision and editing--not the computer itself. According to Owston (p. 85), "Wide ranges of speculation highlights the need for research focusing upon the processes of writing as well as the products if we are to truly gain insight into the benefits of writing on computers."

Motivation in Students by Using Computers In Writing

Using computers as partners in writing leads to greater motivation in students (Le, 1989). Word processors play an important role in making the process of writing less arduous for students and more enjoyable for reluctant writers. A number of "fill-in" or cloze procedure programs, as described by Thao Le, encourage reluctant or weak writers to have a go with writing and, by doing so, make students feel proud in thinking that they are the authors of a written product (p.608).

A number of programs have been designed to incorporate features which will motivate writing in the computer-assisted classroom. Students are allowed flexibility and creativity, and many allow for interaction for students to write and share. In addition, programs allow for teachers to adapt or modify to cater to the individual needs of students. As a result, these programs are providing motivation toward writing activities, for both students and instructors.

Thao indicates that computers can be useful partners in the writing process. In converting reluctant writers into active writers, computers can be very effective tools. Thao states (1989, p. 610): "If student, particularly those with negative attitudes toward writing, are motivated to write initially,...it is the first but most crucial step in their literacy development."

Word processing makes writing more exciting and increases motivation in students (Klenow, 1992). According to numerous research reports, computers can be powerful allies in teaching reading and writing skills. Students enjoy composing on the computer, revise their work more frequently, and see editing as an exciting part of the writing process. Incorporating technology into the classroom is key to improving writing skills and boosting enthusiasm for composition (p. 70).

Teachers at Westside Elementary in Daytona Beach, Florida, revealed that their classroom is evidence that word processing makes writing more exciting for students. According to teacher Kathy Morelli (Klenow 1992, p. 70), "For many students, the computer can be a powerful motivator that stimulates improved writing performance." Students see computers as helpful, creative tools for writing.

This increased motivation should be utilized through classroom writing activities. Klenow suggests having students design their own books, write reviews of the books they have read, publish classroom newsletters, and develop projects around their favorite books. In addition, computers with modem access provide

excellent opportunities for students to expand the audiences for their writing. Through such activities and projects, the computer becomes an active part of the classroom writing process.

In addition to improving writing, using computers encourages interaction and increases motivation in students (Montague, 1993). In what Montague refers to as "computer assisted composing," or CAC, students see computers as highly motivating learning tools which engage them in the writing process.

In allowing for the individual needs of student writers, CAC provides several advantages. Computer writing is an alternative for students who have handwriting difficulties. It facilitates the revision process and aids poor readers in their writing and editing. The process promotes discussion about writing through its visible, social context. Computers serve as naturally reinforcing learning tools, because they provide ongoing corrective and positive feedback. And finally, CAC helps students become independent writers. Prompting programs and integrative software help students with self-monitoring at any grade level.

When writing process instruction is paired with CAC, Montague reports a number of positive results. Students spend more time in the drafting process, resulting in more on task, focused time. Interaction between students and their teachers is encouraged, because conferencing can occur spontaneously as the instructor circulates the room, viewing each monitor. Peer interaction is also more productive when CAC is active.

Montague concludes that computer assisted composing can make the writing experience pleasurable for students who otherwise would be reluctant to write. Quantity and quality of writing will improve with CAC. Students are provided with a number of opportunities which make it possible for them to be productive and successful writers (p. 49).

By increasing enjoyment of writing assignments, computer-based writing classrooms show increased motivation in students (Baer, 1988). Vicki Baer conducted a study into student attitudes toward writing when using computers. The author examined both verbal responses and student behaviors in comparing computer writing activities to pen and paper assignments.

A majority of students enjoyed writing more when they used the word processor. Students revealed that mistakes were easier to see and correct, and they found the final product neater. Students also felt they could concentrate better while using the computer and produce better work as a result (Baer 1988, p. 148).

According to Baer, using word processing can encourage students to view writing as a dynamic activity. With improved attitudes toward writing, students may be more likely to produce quality compositions.

CHAPTER III

PROCEDURE

Subjects

The subjects of this study were fourteen sixth grade students with a wide range of perceived writing abilities. The students were identified as "at risk" in reading ability; however, any similar connections to writing ability were not established. The group was randomized; however, it was believed that both learning disabled and gifted students were included as subjects.

Setting

School. The school in which this study took place was a sixth, seventh and eighth grade middle school of approximately 500 students. Students participated in a seven period class day, with the English language arts course representing one period of that day. Class size was approximately 20 to 25 students per class.

Community. An industrialized urban community in the Midwest served as the setting for this study. Members of this community reflected a middle to low income socio-economic level, with nearly 50 percent of the students registered to the school district qualifying for federal assistance through the free and reduced lunch program. Much of the community represented an Appalachian or African American heritage.

Data Collection

Construction of Instrument. After a review of the related literature, a semantic differential, using twelve bipolar adjectives, was developed by the researcher. The instrument afforded students the opportunity to choose between adjectives which represented positive and negative thoughts or feelings toward the act of writing. In

addition, students were given three open ended questions regarding the writing process, through which they may have expressed additional ideas or comments about writing.

A sample of the instrument utilized was included in the appendix to this study.

Administration of Instrument. The semantic differential was administered during the first week of instruction in the language arts class. A mean score was computed for the sample group. After a six-week period of writing instruction using computers, the semantic differential was administered a second time and a mean score once again calculated. The researcher evaluated the results to determine if a significant difference in mean score resulted from the second questionnaire.

Design

This study was conducted using the one group pre test-post test design, which is represented by $T_1 X T_2$. The pre test and post test reflected the semantic differential type of questionnaire.

Treatment

The independent variable in this study was be the use of computers and word processing software to provide instruction in writing. Students were given the opportunity, during a six week period, to utilize a Macintosh computer lab for composition at least two days per week during the language arts class. Students were trained in the use of Microsoft Word, a word processing software program, and assigned a personal disk on which to save any work completed. When available, students may have used the computer lab for additional writing time in other classes, or before or after school hours.

CHAPTER IV

RESULTS

Presentation and Discussion of the Results

As previously stated, the semantic differential (see appendix) was the instrument used in this study to determine the effects of computer usage on the attitudes of sixth grade students toward writing. After the raw scores in both the pre test and post test were determined, the gain (or loss) for each participating student was calculated by the researcher. The mean ($\bar{X}$) gain regarding attitude was then computed. In order to determine if the difference was significant, the figures were subjected to the t test.

The findings are revealed through the tables and discussions included in this chapter.

The data from the pre test (see Table I) represents that, with the fourteen students who participated in the semantic differential pre test, the mean score total for the pre test was 44.5. The standard deviation from the mean was calculated as 12.727. A range of 41 points was demonstrated from the high score to the low score on the semantic differential.

The data from the post test (see Table II) represents that, with the fourteen students who participated in the semantic differential post test, the mean score total for the post test was 58.79. The standard deviation from the mean score was calculated as 7.18. A range of 24 points was demonstrated from the high score to the low score on the semantic differential. This range was noticably smaller than the pre test range.

Within Table I and Table II, the scores were arranged in ascending order to illustrate the dispersement of the results. The semantic differential was used as the measure of dispersion.

TABLE I

RESULTS OF THE PRE TEST SEMANTIC DIFFERENTIAL

AND

CALCULATION OF THE STANDARD DEVIATION

T_1	d	d^2
61	16.5	272.25
59	14.5	210.25
58	13.5	182.25
55	10.5	110.25
54	9.5	90.25
47	2.5	6.25
47	2.5	6.25
45	.5	.25
45	.5	.25
44	- .5	.25
36	- 8.5	72.25
30	-14.5	210.25
22	-22.5	506.25
20	-24.5	600.25
$\Sigma X = 623$	$\Sigma d = 0$	$\Sigma d^2 = 2267.5$

$N = 14$ $\bar{X} = 44.5$ Standard Deviation = 12.727

TABLE II

RESULTS OF THE POST TEST SEMANTIC DIFFERENTIAL

AND

CALCULATION OF THE STANDARD DEVIATION

T_2	d	d^2
68	9.21	84.824
68	9.21	84.824
66	7.21	51.984
62	3.21	10.304
62	3.21	10.304
62	3.21	10.304
62	3.21	10.304
61	2.21	4.884
60	1.21	1.464
55	- 3.79	14.364
54	- 4.79	22.944
53	- 5.79	33.524
46	-12.79	163.584
44	-14.79	218.744
$\Sigma X = 823$	$\Sigma d = - .06$	$\Sigma d^2 = 722.356$
$N = 14$	$\bar{X} = 58.79$	Standard Deviation = 7.18

TABLE III

SEMANTIC DIFFERENTIAL RESULTS

GAIN/LOSS FROM T_1 to T_2

	T_1	T_2	d	d^2
Student 1	55	54	-1	1
Student 2	30	62	32	1024
Student 3	22	66	44	1936
Student 4	47	62	15	225
Student 5	61	55	-6	36
Student 6	36	68	32	1024
Student 7	20	46	26	676
Student 8	47	44	-3	9
Student 9	59	60	1	1
Student 10	45	61	16	256
Student 11	58	68	10	100
Student 12	54	62	8	64
Student 13	45	53	8	64
Student 14	44	62	18	324
	$\Sigma T_1 = 623$	$\Sigma T_2 = 823$	$\Sigma d = 200$	$\Sigma d^2 = 5740$
	$\bar{X}_1 = 44.5$	$\bar{X}_2 = 58.79$	$\bar{X}d = 14.29$	Stan. Dev. = 20.2

$t = 3.59^*$

*p = .01

The above table (Table III) represents the actual gain or loss for each student participant in the semantic differential. The deviation from the mean for each subject was calculated, as well as the pretest mean, the post test mean, the mean gain, the standard deviation, and the t value for attitude change.

As can be observed, the mean gain in student attitude toward writing was 14.29. This figure was obtained by calculating the mean of the gain scores in the fourth

column of Table III. Using this figure, the researcher was able to compute the standard deviation for the gains as 20.2 and apply the t test. The t test for dependent samples indicated that there was a significant difference in pre test and post test gain scores in student attitude at the .01 level.

After carefully examining the foregoing tables and information included, the researcher rejects the null hypothesis. The data reveals that students who have used computers in the writing process have a significant difference in mean pre test and post test attitude scores.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

With the growth of computer usage in the schools, many writing teachers are presented with a unique opportunity to make writing fun. Word processing software creates a situation where students can "play" with words, inserting phrases, deleting sentences, moving paragraphs, all without recopying papers or throwing anything away. Computers make the writing task easier, by making it seem more like "fun" and less like "work".

The widespread use of computers in the writing classroom is yielding many positive results. Student writing is improving, instructional time is more productive, and students actually seem to enjoy writing more (McGarvey, 1986). Student writers who exhibit positive attitudes appear to become better writers. They are less apprehensive toward attempting new tasks, more open to suggestions for improvement, and much more apt to complete their assignments.

The purpose of this study was to evaluate the effects of computer usage on the attitudes of sixth graders toward writing.

For this study, the researcher hypothesized that there would be no significant difference in the mean pre test and post test attitude scores of students who have use used computers in the writing process.

The subjects for this study were fourteen sixth grade students with a wide range of perceived writing abilities. The group was randomized; however, it was believed that both learning disabled and gifted students were included as subjects.

The school in which this study took place was a sixth, seventh and eighth grade middle school of approximately 500 students. The school was situated in an

industrialized urban community in the Midwest.

After a review of the related literature, a semantic differential, using twelve bipolar adjective, was developed and administered by the researcher. The instrument was administered as a pre test before computer instruction began, and administered again six weeks later as a post test. A mean score was computed for the sample group for both test administrations. The results were evaluated by the researcher to determine if a significant difference in mean score resulted from the second questionnaire.

The independent variable in this study was the use of computers and word processing software to provide instruction in writing.

The data resulting from the pre test and post test administrations was assembled into tables and calculated. The information revealed that a mean gain of 14.29 resulted from the pre test to the post test. When calculated and applied to a t test, the data yielded that there was a significant difference in pre test and post test gain scores in student attitude at the .01 level.

The null hypothesis was rejected, and the researcher believed the accuracy of the data to reveal that a significance in the mean gain scores revealed a correlation between computer usage and student attitude toward writing.

Conclusions

The attitudes of sixth grade students toward writing improves when the students are given the opportunity to work on computers. The researcher could have reached this conclusion through regular observation of student behaviors during the writing instruction time. When students are using computers, they appear to be more focused on the activity at hand, they exhibit more on-task time, and they are more likely to produce written results.

In addition to the statistical evidence, students revealed their attitudes toward writing through three open-ended questions on the reverse side of the semantic differential. Students were asked to name one thing they liked about the writing process, one thing they would change, and the easiest part of the process. Student answers on this section also revealed a change in attitude once introduced to computers.

A sampling of answers to "Name one thing you like about the writing process" on the pre test revealed that students do enjoy some aspects of traditional writing. The students indicated that they liked "learning new things" and "finding stuff," most likely alluding to the research aspect of writing. Other students said writing was "easy," and that they liked "being creative." A number of students, however, stated that they liked "nothing" about writing.

When given the post test, students showed more enthusiasm toward writing in their answers. Several students simply said that writing was "fun," and others stated that they liked "everything" about the writing process. Favorite aspects of the process were often identified as "the typing," "using the computer keyboard," and "having spell checker." Other answers revealed that students don't become bored with writing when using computer, and that the neatness of the final copy is an appealing factor. On the post test, not one student gave the answer of "nothing" when asked what was liked about the writing process.

When asked what they would change about the writing process on the pre test, students had a number of suggestions. "Don't make us write so much" was a common answer, and complaints were registered about using too much paper and getting bored in class. A prevalent attitude that writing was difficult was revealed on the pre test.

The post test indicated some change in those attitudes. Most students offered

that no changes were needed in the writing process. Still others only requested that they be allowed more computer time. No student indicated that writing was "hard" or "boring" when answering the post test questions.

The researcher believes in the validity and value of the answers students offered on the pre test and post test. Not all students dislike writing; however, when given the opportunity to use computers, very few have any complaints. The appeal of computers makes writing, at least, a tolerable activity. At best, students find it exciting, enjoyable, and fun.

Recommendations

For many students, school is a boring requirement of life; an interruption in their social and recreational time. These students would much rather discover and explore outside the classroom, away from the teacher. This reality forces teachers to "make learning fun," to seek new ideas and opportunities to transform the classroom into an exciting and inviting place to be.

When presented with the results of this study, educators must examine the possibility that computers could be the motivating factor in getting students to write. When faced with pressure to increase student writing ability for competency and proficiency test results, teachers must seriously consider how to motivate students to write, and to write well. Teachers are held accountable for the writing their students produce, through test results, the media, and the scrutiny of parents and administration. They must constantly seek out the most effective way to teach and produce results.

Computer assisted composition is, as indicated by the review of literature and the results of this study, an effective method for teaching writing. Students are more likely to possess positive attitudes toward writing, and consequently more likely to invest time and effort into their work. Through this time and effort, the final written

product will often be of a higher quality, as judged by both the student writer and the instructor. This higher quality writing is the objective of the writing instructor, and the computer may be the ultimate facilitator in achieving this objective.

For the researcher, these conclusions indicate a need for students to have more frequent opportunities to write using computers. Computer labs, such as the one constructed at the researcher's school, should be available and easily accessible to all students. Teachers should be afforded the necessary training to teach students how to use the computers, as well as the available software for word processing and composition.

If student attitude toward writing improves when students use computers, then students should be writing on computers as much as possible. Ideally, this would mean providing a computer in the classroom for each student. However, since this scenario is not financially feasible for most school districts, the maximum access to computers for each classroom should be explored. Computer labs, constructed for classroom instruction and use, should be utilized to their highest potential. In class computers, particularly in the language arts classroom, should be accessible to all students during writing time. And opportunities for parents to purchase home computers, particularly at reduced cost or through simplified purchasing plans, should be publicized and encouraged.

This study indicates that students may write more effectively if given the opportunity to use computers. Since the ultimate goal of the writing teacher is to produce more effective writers, the conclusion is clear. Maximize access to computers for all students, encourage student writing on computers, and continually monitor the progress of those students and their writing.

With monitoring and documentation of the improvement of student writing, a domino effect may be initiated. When student writing consistently improves, schools

will be forced to examine the reason why. If that reason is revealed to be computer assisted composition, then perhaps more computers will be requested to be made available to students. School districts and state departments of education may see the need for increased technology, and increased funding for computers may result.

This "chain reaction" can only be initiated by documenting the progress of students and the correlation between student writing and computer usage. Researchers, like this one, must be willing to invest the time and energy to validate the need for computers in the classroom. When this validation is evident, the growth in classroom technology may continue.

APPENDIX

Consider your feelings toward the writing process. Look at the adjectives used to describe possible feelings , and circle the number on the scale which best represents your opinion.

GOOD	7 : 6 : 5 : 4 : 3 : 2 : 1	BAD
IMPORTANT	7 : 6 : 5 : 4 : 3 : 2 : 1	UNIMPORTANT
POSITIVE	7 : 6 : 5 : 4 : 3 : 2 : 1	NEGATIVE
INTERESTING	7 : 6 : 5 : 4 : 3 : 2 : 1	BORING
EASY	7 : 6 : 5 : 4 : 3 : 2 : 1	DIFFICULT
FUN	7 : 6 : 5 : 4 : 3 : 2 : 1	WORK
SUCCESSFUL	7 : 6 : 5 : 4 : 3 : 2 : 1	UNSUCCESSFUL
PLEASURABLE	7 : 6 : 5 : 4 : 3 : 2 : 1	PAINFUL
SIMPLE	7 : 6 : 5 : 4 : 3 : 2 : 1	COMPLICATED
CLEAR	7 : 6 : 5 : 4 : 3 : 2 : 1	CONFUSING

Name one thing you like about the writing process.

Name one thing you would like to change about the writing process.

What is the easiest part of the writing process?

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