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A STUDY CONCERNING THE USE OF MICROCOMPUTERS FOR
WORD PROCESSING IN COLLEGE FRESHMAN COMPOSITION
AT A COMMUNITY COLLEGE

DISSERTATION

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The purpose of this study was to determine the effect of using word processing and proofreading software in freshman composition at a community college. This study used pretest and posttest measures to determine if significant differences in the improvement of composition skills occurred between students in a composition class that did not use microcomputers and students in a composition class that did use microcomputers. Objective tests and writing samples were used as measurements. The population for the study consisted of students enrolled in freshman composition classes at a two year community college. Students self-selected enrollment in each class. Three hundred students who completed the pretest and posttest measures and completed the course were included in the study. There was no significant difference found in the improvement of writing skills between the two groups as measured by the objective test or the writing samples. There was a significant difference found in the withdrawal rate of students from the classes. The computer class had a significantly higher withdrawal rate than the non-computer class.

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CHAPTER I

INTRODUCTION

Freshman composition classes strike terror in the hearts of many college students each semester. College teachers perpetually search for a more effective way to encourage and enable students to improve their writing skills. One of the most recent innovations in the composition classroom is the use of computers, word processing, and proofreading software to aid teachers in their endeavor to improve their students' writing skills. Etchison (2) researched the use of this new innovation in the college freshman writing curriculum in 1985. He found computer usage had a positive impact on improving writing skills. In Etchison's study, students using word processing had a greater gain in mean pretest to posttest scores measuring overall writing quality than students using traditional writing techniques. Etchison's study seems to offer encouraging results to those who support the use of computers to solve the writing problems in schools. Other researchers' findings have been less encouraging. Dean (1) has found conflicting results in repeated studies. Using the Houghton-Mifflin College English Placement exam, Dean (1) found a significant difference in the pre-to-post

assessment for specific writing skills of students in college freshman English. However, during one semester the difference was in favor of the computer using students; the next semester the non-computer users had greater gain.

Although there has been research in the use of computers in writing, Hooper (6) in his critical review of current literature on using computers in writing instruction concludes, "To sound the depths of word processors' influence on student writing will clearly require more research than is available so far." The ever improving state of microcomputers, the software that makes them useful tools for the classroom, and the conflict in findings of previous research calls for continued research into this new and controversial area. A study which would examine the technology at its current level as a tool used in teaching writing skills would be beneficial in assisting educators making decisions when choosing methods and tools for teaching writing to college freshmen.

Statement of the Problem

The problem is the difference in the improvement of writing skills between college freshmen who choose to enroll in and complete freshman composition classes in which computers with word processing and proofreading software are used in the classroom and college freshmen who choose to enroll in and complete classes which do not use computers in the classroom.

Purpose of the Study

The purpose of the study will be to determine improvement in writing skills, as measured by the English College Placement Test, of college students who choose to enroll in and complete freshman composition using word processing and proofreading software in the classroom, to determine improvement in writing skills as measured by the English College Placement Test of college students who choose to enroll in and complete freshman composition who do not use word processing or proofreading software in the classroom, and to determine the significance of differences between the two groups.

Hypothesis

To carry out the purpose of the study, the following hypothesis will be tested:

There will be no significant difference, as measured by the College English Placement Test, in the improvement of writing skills between students who choose to enroll in and complete college freshman composition classes which use computers, word processing and proofreading software in the classroom and students who choose to enroll in and complete traditional freshman composition classes.

Basic Assumptions

It is assumed that the instructors of the sections of Freshmen Composition which are involved in this study have followed the curriculum and syllabus prescribed the English

Department at Tarrant County Junior College. It is also assumed that variations in instructors' teaching styles do not significantly influence the outcome of the study.

Significance of the Study

There is a growing trend toward the belief that computers in the composition classroom would be a positive step in the direction of improving writing skills. The National Council of Teachers of English Committee on Instructional Technology is one of the many groups which has suggested "computers could revolutionize the writing curriculum" (10). The committee suggested in 1985 that more substantial empirical research should be done, but the English teachers should not wait to implement the use of the new technology.

Implementing the use of computers in writing can have a considerable impact in the classroom. Herrmann (5) has described some of the most significant changes in the classroom, which include the transition from a teacher-dominated classroom to an student-centered classroom, the movement from teacher as expert to teacher as learner and the change from writing as a product to writing as a process. Clearly, the use of computers can impact the theories on which writing instruction is based. This study may help schools evaluate the impact of computers in the classroom in terms of benefits, if any, gained and the

significant changes computers bring to the classroom environment and teacher-student relationship.

Increasing numbers of schools are buying microcomputers assuming they will improve the learning environment and combat students' decline in writing skills. Many schools are investing large amounts of money in computer classrooms; yet little research has been done to determine the impact of the computer usage on actual improvement in students' writing skills. Hult (7) contends that "no studies to date have shown an improvement in writing quality by students using computers as compared to those not using computers." This study may be able to aid in the decision making process concerning a school's investment in computer classrooms.

Definition of Terms

For this study the following definitions will be used:

Word processing software - A computer program which allows a writer to create, edit and print text using a computer. The word processing software used for this study was MacWrite.

Traditional method - Composing text with pen and paper and/or a typewriter.

Proofreading software - A computer program which checks text for spelling, usage, style and structure errors. The proof reading software used for this study was MacProof.

Organization of the Study

The remainder of this study is divided into four chapters. Chapter II contains a review of the literature. Chapter III describes the methodology used for data collection and the treatment of the data. Chapter IV contains the analyses of the data and summary of the findings. Chapter V contains summary, discussion of the findings, conclusions, and recommendations for further research and practice.

CHAPTER BIBLIOGRAPHY

1. Dean, R. L. (1986). Cognitive, pedagogic, and financial implications of word processing in a Freshman English Program: A report on two years of longitudinal study. Orlando, FL. (ERIC Document Service No. ED 280 384).
2. Etchison, C. (1985). A comparative study of quality and syntax of composition by first year college students using handwriting and word processing. Glenville, WV. (ERIC Document Service No. ED 282 215).
3. Haugh, O., & Brown, J. (1969). College English Placement Test Manual for Administrators and Examiners. Riverside Publishing, Co., Chicago.
4. Herrmann, A. W. (1985). Teaching strategies for introducing word processing into the writing class. Little Rock, AK. (ERIC Document Service No. ED 276 037).
5. Herrmann, A. W. (1987). Teaching writing with computers: Are we being realistic? Houston, Texas. (ERIC Document Service No. ED 288 199).
6. Hooper, S. C. (1987). Using word processors in high school and college writing instruction: A critical review of current literature. Towson, MD. (ERIC Document Service No. ED 286 202).
7. Hult, C. (1988, April). The computer and the inexperienced writer. Computers and Composition, 19-38.
8. Nash, J., & Schwartz, L. (1987, February). Computers and the writing process. Collegiate Microcomputers, 5, 45-48.
9. Roblyer, M. D. (1988, September). The effectiveness of microcomputers in education: A review of the research from 1980-1987, T.H.E. Journal, 16, 85-9.
10. Teichman, M. & Marilyn P. (1985). Word processing in the classroom: Its effects on freshmen writers. Poughkeepsie, NY. (ERIC Document Service No. ED 276 062).

CHAPTER II

SYNTHESIS OF RELATED LITERATURE

Freedman (8) at the Center for the Study of Writing, University of California, Berkeley, co-authored a paper in 1987 on research in writing which emphasizes the importance of writing instruction. The report states:

Writing has become especially important today, as our society increase in technological complexity and as the demands for a literate citizenry increase. To be literate in today's society, students must learn not only how to manage the basics of writing (and reading) but also how to use what they already know to shape and rethink their ideas, to acquire new knowledge, and to communicate their ideas to others.

The report discusses how the focus of writing research has changed over the years. Research in writing until the 70's was concerned mostly with the written product. This focus shifted to a new concern for the writing process during the 1970's. Then during the 1980's a third concern was added, the concern of context. Context refers to looking at where people learn to write in interaction with their teachers and

peers. The characteristics of the computer suggest that it has potential in two of the areas of recent concern: the area of writing as process and also the interaction between not only teachers and students, but also students and students.

Although the writing process has not changed since Aristotle wrote about rhetoric in the fourth century B.C., the computer is a new tool available which may offer advantages to the writer. Rice (26) contends that although the computer has not added anything to the writing process, it does provide students with a better tool for writing. He believes the computer can be an effective writing tool for freshman composition classes, but he recognizes the objections which could be raised concerning the use of computers for word processing. Rice addresses three possible objections to using computers in freshman composition in his article, "Computers in Freshman English." He says instructors often complain that there is not enough time in their classes to teach composition, much less time to teach students to use a word processor. Rice's response to this is that a word processor must be chosen which is easy to use. Ease of use not power is the important characteristic of word a processor in freshman composition. Another objection is that word processing creates additional difficulties for the students who are slow or are having difficulties already. Rice contends that computers offer

new opportunities for these students. The computer enables them to approach writing in a new way. The third and most serious problem according to Rice is the problems of student access to computers. There never seem to be enough computers. There is no easy answer to this problem. Increasing the hours in which computer labs are open and limiting the number of students who are given computer assignments are two possible ideas for consideration. Although computers offer no magical solution to the teaching of writing, the computer is a useful tool for taking the student from the beginning to the end of the writing process, according to Rice (26).

Perhaps computers are an appropriate tool for writing students, but how do teachers view using this tool in the classroom. Hannaford (12) surveyed pre-service and in-service teachers at Washington State University concerning their attitude toward using the computer as a tool in the classroom and toward the logistics of classroom use of the computer. Both the pre-service and the in-serve teachers had a positive attitude toward the computer as a classroom tool. Both groups also had a positive attitude toward the logistics of using computers in the classroom. The pre-service teachers did have a more positive attitude toward the use and logistics of computers in the classroom than the in-service teachers. Teachers in the study appear to view

the computers as a simple flexible, and accessible tool (12).

In 1985, Milton Teichman (31) stated, "The study of computers and writing is in its infancy. There is much that remains to be learned." Four years later the remark is still valid. Although there has certainly been much published concerning computers and writing, there are few reports that describe experimental and quasi-experimental research studies; instead most appear to be based on opinion and surveys. The limited research that has been documented seems to produce conflicting results. As Haas (11) reports, "In the literature we see a lot of contradictory claims about the effects of computers on writing, but little conclusive research." Harris (13) also states that there are few studies which provide useful information about how word processing affects student writing.

Researchers are trying to gather data from controlled studies to determine the impact of computers on writing. Storms (29) found no improvement in the essays of student using computers as compared to students not using computers. Like many other researchers (7, 24), he does suggest there are perceived benefits such as favorable student and teacher attitudes toward the use of the computer and more interaction among students. Hawisher (14) also found no difference between essays by students using computers and

those not using computers, even though the non-computer users revised their essays more than the computer users.

One of the characteristics often noted as a positive strength of the computer for writing is the ease of revision. Cornell and Newton (2) investigated the use of the computer as a tool to help teach students the revision process. Using a large screen projector in class they modeled collaborative revision to their students. They hoped this modeling would lead to better student papers, a better understanding of revision, a change in the student's writing process, and a positive attitude toward peer collaboration. They conclude that this method of modeling revisions did result in the students being more aware of the writing process and revision, and in improvement in student writing. They were unable to validate that it resulted in more positive attitudes toward peer collaboration.

A well-known survey taken by Gardner and McGinnis (9) included information from ten universities about the use of computers in composition classes. Of the ten universities included, Colorado State used computers in more courses than any other school in the study. From 4,200 to 5,000 students a year use the writing lab at CSU, making this one of the largest programs in the country using computers for writing. CSU is a particularly interesting case because there has been both a survey opinion study and a quasi-experimental study of this program. CSU is included in the Gardner and

McGinnis study and is the subject of a subsequent quasi-experimental study done by Hert (18). CSU uses Writer's Workbench, a product designed for professional technical writers and adapted and expanded for composition students at CSU. The product is available in a writing lab. Kiefer (9) at CSU feels that the research there shows actual improvement only in editing skills. Kiefer does feel that the habit of spending more time on one aspect usually carries over to other aspects of writing. Charles Smith (9) of CSU says style checkers like Writer's Workbench "not only help students, but also relieve faculty of much mindless labor. No longer are papers I mark riddled with spelling errors; no longer do I find common diction errors; no longer do I write comments about sentence combining and excessive numbers of simple sentences... As a result, I have never returned essays with so few editorial remarks or focused my closing comments more exclusively on those matters that most concern me (and my students)." Based on these remarks it would seem safe to assume students are benefiting from the use of computers in writing at CSU. If the bottom line, however, is improvement in students' writing skills, it is important to look at another study done at CSU. Hert's (18) study measured the comparative gains in writing performance on summary-response essays written prior to and following completion of freshmen composition classes which used the computer for writing and classes which did not use the

computer. Hert found that there was a significant difference in improved writing performance among both groups as a result of completing the course, however, there was no significant difference in writing performance gains between the group using the computer and the group that did not use the computer.

The Gardner and McGinnis study (9) of all ten schools does reflect, for the most part, positive feelings about the use of the computers in writing from students and faculty. Sixty-four percent of the students responding to the survey noticed changes (all but one positive) in their writing processes after using computers. Over seventy percent of the instructors felt that the students think their writing has improved because of using computers. Seventy-five percent of the students agreed. These are only opinions, however, and not based on research which measures actual differences in writing skills. If the findings of the Hert study reflect similar results at the other schools, it would seem that the students using computers think their writing has improved and research at CSU shows that it has, but research also shows, at least in the CSU situation, that it has not improved any more than that of students in classes that do not use computers.

Utah State University also uses Writer's Workbench. At USU two of the five assigned essays in freshman composition must be done on the computer. Instructors believe that the

quality of essays has improved and that revision has increased since computers have been used. Some instructors are troubled about the possibility of students relying too much on the computers and about the increased emphasis on style by Writer's Workbench (9).

Another example of surveys on writing and computers is the Second National Survey of Instructional Uses of School Computers during the Spring of 1985. Although only a small percentage of English teachers reported using word processing, sixty-nine percent of those who did indicated that students had improved their writing, editing or proofreading skills by using the computers. This was a greater consensus than for any other effect for any subject at any grade level (17). Again this is opinion reporting and not based on measurable research studies.

The National Council of Teachers of English Commission on Composition met in November of 1987 to discuss the trends and issues relating to the teaching of composition. The use of computers was one of the issues discussed. The Commission feels computers can be useful in the low-level writing skills, such as spelling and editing. The members feel skeptical that computers can be useful beyond that level, other than the fact that word processing may make writing easier. The Commission on Media also discussed the use of computers. Their concern was that schools are investing heavily in computers, while there is still no

clear consensus on how computers should be used. They also are concerned about the availability of computers to all students. If computers are only available to some, the gap between advantaged and disadvantages student may grow (30).

Educators who are using computers for teaching writing often have strong views on the effects computers have on students. Nash and Schwartz (24) agree with Freedman (8) that an important innovation in the teaching of writing is the movement toward the process approach. Teachers guide students through the development of a piece of writing rather than simply making an assignment and judging the result. Nash and Schwartz suggest that microcomputers have important advantages over the traditional methods when implementing the process approach in writing. Specifically they suggest:

1. Word processors are helpful at the prewriting stage by encouraging students to write down thoughts as quickly as possible without regard to correctness or clarity.

2. Word processors make revision easy at the drafting stage of development.

3. Recopying of work is unnecessary.

4. Proofreading programs can help students to confront their errors in rational ways.

5. Word processors foster a collaborative setting between student and teachers.

In their 1984 pretest and posttest evaluation of 24 students writing in their classes, they found that in the pretest only 17 of the 24 writing samples by students were coherent, while the posttest results showed 14 of 24 writing samples were judged generally coherent. The number of sentences and paragraphs written in a specified period of time doubled. Nash and Schwartz report that, after hundreds of hours teaching and observing, they have seen dramatic increases in the skills of many students during the course of a single semester and are convinced that computers can revolutionize the way writing is taught and learned.

Research regarding the use of word processing in writing has not been confined to college composition classes. Jackson's (21) study in 1984 involved 55 twelfth grade students enrolled in a public school in Mississippi. The students were randomly divided into two groups. Group One used word processing and Group Two used the traditional method. Jackson found that there was no significant difference between the achievement, as measured by students' grade point average, of the word processing group and the traditional group.

Students at Drexel are in the somewhat unique situation where computer integration into most activities in the university seems complete. Beginning in Fall 1984, all students were required to purchase a computer when they entered the university. As a result of this, Valarie Arms,

the Computer Research Project Director, has formed some opinions concerning computers in instruction. She feels faculty training is a necessity, that students must be given access to computers outside of class time, that research is necessary before beginning a program, and that instructors are needed more when computers are used than when they are not. Arms feels her research shows actual improvement in the quality of writing (9). She attributes this to more revising being done by students. Like her colleague, Charles Smith of Colorado State University, Arms feels the use of computers allows teachers to concentrate more on corrections which deal less with the mechanics of writing and more with substantive feedback.

The basic question of whether using computers with word processing has significant impact on the improvement of writing skills of students in freshman composition has been researched by Etchison (5) and by Dean (3). Etchison found that students using word processors did improve their writing skills significantly more than students using the traditional method. Based on pretest to posttest measures, the gain in holistic quality was five times greater for computer users than for the other students. Dean's two-year study resulted in conflicting outcomes. Dean measured both specific and general writing skills. The specific skills were measured by the Houghton Mifflin English College Placement Test (CEPT) and the general skills were measured

by holistically evaluated writing samples. During the first year of the study, the computer users experienced significantly larger gains on specific writing skills. The second year, however, those findings were reversed. The students using traditional methods showed more improvement in specific writing skills. There was not a significant difference between the two groups on the pre-to-post assessment of general writing skills.

Etchison (6) conducted another study at Glenville State College in West Virginia. The study compared two groups of basic writers; one group used word processing and one used traditional handwriting. One of the questions of the study concerned the production of text. The basic writers using word processors produced much more text than the non-computer group. Etchison contends that getting basic writers to produce text is a difficult task and teachers of these writers would want to have their students using word processors. There was no significant difference in growth of writing quality between students in the groups (6).

A program evaluation at Southern Illinois University-Carbondale involved twelve control (traditional) classes and twelve experimental (computer) classes. The experimental classes met in the computer lab for half of the instructional time. After revising, the computer group scored higher on essays than did the non-computer group. Bernhardt (1) suggests that the computer does have a

positive effect on student revising skills. Both the teachers and the students in the computer classes viewed the computer classroom positively. Teachers felt that the computer students seem to have better attitudes toward the class. Students in the lab did not want to be disturbed by other students or teachers. This is different from other studies which have suggested working on computers encourages more peer evaluating and sharing (15). Although the Illinois study suggests that computers do have a positive effect on writing, it points out that the study showed that the most significant factor in the composition class is the teacher, not the computer, and suggests that if the goal is to improve writing, perhaps more training of the teachers would produce the desired results.

Another study involving freshman composition students was conducted at Marist College in Poughkeepsie. A one semester controlled experiment compared the writing skills of computerized writing classes to traditional classes. The computerized classes used terminals tied to an IBM mainframe. Although there was a greater gain from the pretest to posttest scores for the computer group in writing ability, there was no significant difference in writing ability between the two groups (32). Teichman and Poris concluded that it could not be shown from the study that students write better when using a word processor, but that it could be concluded that using the word processor did not

adversely affect the computer group (32). This study also considered the impact of writing anxiety and found no significant difference between the groups. Demographic variables were also considered in the results and were found to have no impact as predictors on the results.

A study by the English Department at Tarrant County Junior College, Northeast Campus was conducted in the Fall of 1987. The study compared the computer and traditional sections of freshman composition classes taught during that semester. This study showed no significant difference in the improvement of writing skill between the two types of instruction. There was no significant difference in the successful completion rate, the withdrawal rate, or the failure rate between the two groups in this study. Approximately sixty-six percent of the students from both groups successfully completed (received a passing grade) the classes. Approximately fifteen percent of the students withdrew from both the computer and the traditional classes and approximately nineteen percent failed. The instructors of the computer classes, however, were very excited about using the computers for composition instruction and based on comments from the students concerning their evaluation of the computer classes, felt the use of computers had a very definite positive effect on the majority of students in their classes.

Computers and writing can be considered a new topic when compared to the history of writing in general. There is research being done, and it needs to be examined and considered carefully. Hawisher's (15) paper on research in computers and writing examines thirty-three of the studies in this area which have been completed since 1981. Eighteen of these studies dealt with quantitative measures. Hawisher reports some common findings from this work. Students using computers seem to have positive attitudes toward writing and word processing. They have fewer mechanical errors, and they write longer papers. Findings concerning quality and revisions were mixed. Predisposition toward revising seems to be a more important factor than the use of computers in getting writers to revise. Neither does the quality of writing seem to be clearly influenced by the use of computers. Eight of the sixteen studies which considered quality found improvement. Hawisher (15) does note that it is interesting that all of the studies dealing with basic writers (from elementary to college) reported improved writing with word processing. She suggests that word processing acts as a motivator for this group of writers.

Another aspect of Hawisher's research considered ethnographic studies, or the examination of the culture in which writing takes place. The studies in this group all dealt with elementary or high school students. Using computers for writing in these groups seemed to turn writing

into a public rather than a private activity. Also the collaborative efforts seemed to focus on content and style among computer users, where the focus with the traditional students often focused on handwriting (15).

Hawisher (15) concludes that while the research in the area is growing, there needs to be a continued effort to consider computers and writing. Many of the studies currently published were begun three or more years ago and anyone involved with computers knows there has been significant changes in word processing hardware and software in the last three years. For example, Hawisher mentions that none of the studies in her research used the Macintosh (the computer used in this study) with its icon system and graphic interface.

Tone and Winchester (32) looked at the ERIC database to find the reports dealing with computers and writing. The heading of their report shows their conclusions: Too Early to Judge the Impact: Computer-Assisted Writing Instruction (33). Many of the reports in the database found that computer-assisted writing has had some effect on quality and quantity of writing. Most of these reports, however, are based on informal observation. A primary concern expressed in the report was the limited access many students had to computers.

It is clear that the research projects involving teaching writing using computers have produced mixed

results. There are those however who believe that the research to date does not truly reflect the impact computers has on instruction of writing. Cynthia Selfe, at Michigan Technological University, places little faith in the research (4). She says, "Writing is not amenable to statistics". Bruce Appleby, at Southern Illinois University-Carbondale also has reservation concerning research in this area (4). Most of the research now addresses the question: Does using a computer help a student improve writing skills? If Fuller is correct, perhaps the direction of future research should be: What is the best way to teach the writing process using computers?

CHAPTER BIBLIOGRAPHY

1. Bernhardt, S., Edwards, P., & Wojahn, P., (1988). Teaching college composition with computers: A program evaluation. St. Louis, MO. (ERIC Document Service No. ED 295 191).
2. Cornell, C., & Newton, R. (1988). Collaborative revision on a computer. St. Louis, MO. (ERIC Document Service No. ED 295 155).
3. Dean, R. L., (1986). Cognitive, pedagogic, and financial implications of word processing in a Freshmen English Program: A report on two years of longitudinal study. Orlando, FL. (ERIC Document Service No. ED 280 384).
4. Deloughry, T. J. (1988, May). For many writing instructors, computers have become a key tool. The Chronical of Higher Education, A9-A16.
5. Etchison, C. (1985). A comparative study of quality and syntax of composition by first year college students using handwriting and word processing. Glenville, WV. (ERIC Document Service No. ED 282 215).
6. Etchison, C. (1988). Word processing: A helpful tool for basic writers. St. Louis, MO. (ERIC Document Service No. ED 294 243).
7. Feldman, P. (1984). Using microcomputers for college writing - what students say. (ERIC Document Service No. ED 244 298).
8. Freedman, S. (1987). Research in writing: Past, present and future. Berkeley, CA. (ERIC Document Service No. ED 285 205).
9. Gardner, R., & McGinnis, J. Computers in college composition: A comparative study of ten schools. A research report. (ERIC Document Service No. ED 284 241).
10. Godshalk, F., Swineford, F., & Coffman, W. (1966). The measurement of writing ability. College Entrance Examination Board, New York, NY.

11. Hass, C. (1987). What research with computers can tell us about the uses of reading in writing. (ERIC Document Service No. ED 284 252).
12. Hannaford, M. (1988). Teacher attitudes toward computer use in the classroom. Seattle, WA. (ERIC Document Service No. ED 296 721).
13. Harris, J. (1985). Student writers and word processing: A preliminary evaluation. College Composition and Communication, 36, 322.
14. Hawisher, G. (1987). The effects of word processing on the revision strategies of college students. Research in the Teaching of English, 21, 145-159.
15. Hawisher, G. (1988). Research in computers and writing: Findings and implications. New Orleans, LA. (ERIC Document Service No. ED 293 140).
16. Herrmann, A. W. (1985). Teaching strategies for introducing word processing into the writing class. Little Rock, AK. (ERIC Document Service No. ED 276 037).
17. Herrmann, A. W. (1987). Teaching writing with computers: Are we being realistic? Houston, TX. (ERIC Document Service No. ED 288 199).
18. Hert, R. (1989). A study of one computer-driven text analysis package for collegiate student writers. Unpublished doctoral dissertation, Department of Higher and Adult Education, University of North Texas, Denton, TX.
19. Hooper, S. C. (1987). Using word processors in high school and college writing instruction: A critical review of current literature. Towson, MD. (ERIC Document Service No. ED 286 202).
20. Hult, C. (1986, April). The Computer and the inexperienced writer. Computers and Composition, 5, 19-38.
21. Jackson, L. W. (1984). Relating learning styles to performance on written compositions using microcomputer word processing and the traditional handwriting method. DeKalb, MS. (ERIC Document Service No. ED 276 014).

22. Matthews, M. (1988). A study of computer vs. traditional instruction in college freshman composition. Unpublished study, Tarrant County Junior College, Hurst, TX.
23. McAllister, C., & Louth, R. (1987). The effect of word processing on the revision of basic writers. Hammond, LA. (ERIC Document Service No. ED 281 232).
24. Nash, J., & Schwartz, L. (1985). Making computers work in the writing class. Educational Technology, 25, 19-21.
25. Nash, J., & Schwartz, L. (1987, February). Computers and the writing process. Collegiate Microcomputers, 5, 45-8.
26. Rice, H. W. (1989, February). Computers in Freshman English. Teaching English in the Two Year College, 16, 29-34.
27. Roblyer, M. D. (1988, September). The effectiveness of microcomputers in education: A review of the research from 1980-1987. 16, 85-9.
28. Schwartz, H. J. (1986). The student as producer and consumer of text: Computer uses in English studies. Rochester, MI. (ERIC Document Service No. ED 283 211).
29. Storms, E., & Collins, J. (1984). What research tells us about composing on computers. (ERIC Document Service No. ED 249 479).
30. Suhor, C. (1988). Trends and issues in English instruction, 1988--six summaries. Urbana, IL. (ERIC Document Service No. ED 295 167).
31. Teichman, M., & Marilyn, P. (1985). Word processing in the classroom: ; Its effects on freshmen writers. Poughkeepsie, NY. (ERIC Document Service No. ED 276 062).
32. Teichman, M., & Marilyn, P. (1988). Initial effects of word processing on writing quality and writing anxiety of freshman writers. St. Louis, MO. (ERIC Document Service No. ED 294 217).
33. Thomas, I. (1985). Uses of the computer in teaching the composing process. Philadelphia, PA. (ERIC Document Service No. ED 265 571).

34. Tone, B., & Winchester, D. (1988). Computer-assisted writing instruction. Bloomington, IN. (ERIC Document Service No. ED 293 130).

CHAPTER III

PROCEDURES FOR THE COLLECTION AND TREATMENT OF DATA

Introduction

Tarrant County Junior College - Northeast Campus of the Tarrant County Junior College District is a large community college located in Hurst, Texas, with an enrollment of approximately 11,000 students. The Northeast Campus curriculum includes a full range of transfer, developmental, occupational and adult continuing education courses. Permission has been obtained from the Tarrant County Junior College District to select students enrolled in Freshman College Composition on the Northeast Campus for this study. All students enrolled in the sections of freshman composition selected for study were administered the College English Placement Test (CEPT) during the second week of classes of the Spring semester in January, 1989. The test was administered again the last week of the semester in May, 1989.

Research Design

This study is designed to compare the change in writing skills of students who choose to enroll in and complete freshman composition classes which use computers in the classroom and those who choose to enroll in and complete

classes which do not use computers in the classroom. The CEPT was given as a pretest and posttest.

The research design is a quasi-experimental nonequivalent control group design as defined by Huck (6). The subjects in each group were not randomly assigned to groups, but self-selected their group membership. Each group was measured (pretest) at the same time before the treatment (computerized classes) was applied. After the treatment had been applied to the experimental group, each group was measured (posttest) again. After the posttest, all subjects completing the course and taking both the pretest and posttests were included in the study.

Experimental Variable

The independent variable for this study was the use of the computer in the computerized composition classes. The dependent variables were the scores on the objective section of the CEPT and the scores on the writing samples from the CEPT.

Population

Tarrant County Junior College, Northeast Campus, is located in a suburban area in North Central Texas. The population of students in freshman composition is approximately 1,764. During the Spring semester of 1989 approximately 400 students chose to enroll in computerized freshman composition. In that same semester, 240 students chose traditional classes. The remaining students enrolled

in other specialized composition classes. The syllabi, course content and course objectives were the same for computerized and traditional classes.

Selection of the Sample

All 11 sections of computerized freshman composition classes were part of the study. All of the students who completed the computerized composition classes and took the pretest and posttest were included in the study. Ten sections of freshman composition which were taught by the traditional method were a part of the study. This included all of the sections taught during the semester which were considered to be traditional classes. All of the students from those sections who completed the course and took the pretest and posttest were included in the study.

Instrument

The instrument used in measuring the writing skills of the students was the College English Placement Test (CEPT). This instrument was designed to be used to determine the writing skills of students enrolling in college freshman composition. The test is divided into two parts. The objective section and the writing sample. Researchers have suggested this combination of objective items and writing sample proves to be more valid than either type of item alone in measuring writing skills (3).

The CEPT is made up of questions chosen from 465 items used on three forms of the test administered to 2,598

freshmen in nine colleges and universities in the United States. Each of the 465 items was subjected to a test of difficulty by obtaining the percentage of students answering each item correctly. Items chosen for the final version of the test have an average difficulty of .589 which is slightly higher than the optimum level (5). The discriminating power of each question was obtained by comparing the number of students answering the item correctly who were in the highest scoring twenty-seven percent of the group with the number scoring the lowest twenty-seven percent. The average discrimination index is +.428. Ebel (2) has stated that a discrimination index of +.40 is very good.

The reliability of the instrument was tested using a total of 4,127 students in seventy-four colleges and universities. Of these, 1,172 students were community college students. A coefficient of correlation was computed by using the split-half procedure. The scores made by a student on all odd-numbered items were correlated with those made on all of the even-numbered items and then corrected by the Spearman-Brown formula since the test had been shortened to half its length. The coefficient of correlation was +.936. This is the level (.94) Guilford (4) recommends, but he admits many have accepted .90 as a minimum. The reliability of the CEPT is above acceptable minimums.

Questionnaires were sent to more than 160 universities, four-year colleges and two-year colleges to elicit information concerning what elements of writing should be included in the CEPT. The results were used by authors to determine relative emphasis to give each area, a structure for the test and the kinds of items to be developed. In addition to the questionnaires, College Freshman English textbooks and syllabi were used to compile specifications for the test. Using the information gathered from these sources, the CEPT was organized, test questions were developed and the validity of content was established (5).

Treatment

Both the computerized classes and the non-computerized classes were one standard semester of English Composition 1613. All the instructors were selected and supervised by the English Department chairman. All the instructors who taught computerized sections volunteered for the computer classroom. All the instructors used the same syllabus and had common goals for their students. Each instructor taught only computerized or traditional classes included in the study. Each instructor taught two sections included in the study, except for one instructor, who taught three computerized classes. The instructors spent a portion of the class time lecturing and using instructional techniques such as peer evaluation, conferencing, and discussion. The major emphasis in the classrooms was the writing process.

As in the Bernhardt (1) study, the teachers were not expected to teach the two courses in parallel. Different instructional methods influence strategies, timing of assignments, frequency of in-class writing, and other class situations. All of the teachers kept office hours. Part of the office hours of the computer classes teachers were kept in the computer classroom.

The computer classes met in the computer classroom for all of the classes. The students had access to the computers when a class was not meeting in the room and they also had access to the same type of computers and software in the Computer Learning Center in the library which was open until 10 p.m. Monday through Friday and in the afternoon on Sunday. There was always someone in each of the areas to assist a student who might be having problems with the computer or the software. Help for the actual writing process was available only in the computer classroom. The non-computer classes met in traditional classrooms. There were typewriters available in the library for their use and computers like the ones in the computer classroom, as well as other types of computers were available in the Computer Learning Center for their use. There were no requirements for students to have prior typing or computer experience.

The writing samples were evaluated using a common check sheet (See Appendix) based on the criteria identified by

the Texas Assessment Skills Program as essential elements on writing (8). The instructors discussed and agreed upon the method and criteria for evaluating the writing samples. This scoring method was constructed based on the analytic scale developed by Paul B. Diederick (7). The instructors scored their own students' essays using the check sheet.

The computer used in the study was the Apple Macintosh SE. The Macintosh is operated using an icon based system which enables the user to use a mouse to point and click the icon which represents the activity or data he wishes to use. There were thirty-two Macintoshes in the computer classroom. Apple Imagewriter II printers were connected to the computers. Each printer was shared by four computers using the Appletalk network system. The word processing and proofreading software were stored on a twenty megabyte hard disk. Students used their own floppy disk to save their writing assignments so they could be taken home or to the Computer Learning Center in the library for additional work. Students were given a handout prepared by the English Department explaining the use of the Mac at the beginning of the course. A training program which comes with the Mac (Your Guided Tour of the Macintosh SE) was used by the instructors to introduce the students to the computer. The students spent about twenty minutes the first class meeting using the training program.

The word processing software used in the study was MacWrite. MacWrite is an icon based program which allows the students to create and edit text quickly and easily. The students were introduced to MacWrite with a handout created by the English Department which explains step by step the processes necessary for the student to complete their writing assignments. The second class period was dedicated to learning MacWrite, using this handout.

The proofreading software used in the study was MacProof II. MacProof checks MacWrite documents for errors in mechanics, usage, style, and structure. When a possible problem is identified, a correction can be made immediately, or at a later date, or the text can be left unchanged. MacProof simply identifies possible problems; it is up to the student to decide whether the text in a particular document should be changed. The students were introduced to MacProof using a handout created by the English department. The fifth class period was spent learning MacProof.

MacProof is not intended to be the only or final judge of a document. It is intended to identify possible problems which the student may want to consider further. The specific items it checks concerning mechanics are spelling, punctuation, capitalization, and double words. Under usage, it checks sexist terms, racist terms, confused terms (e.g., their and there), vague terms, overworked terms, and discouraged terms (slang and jargon). Style considerations

are "be" verbs and nominalizations. Structure includes abridgment (paragraph structure review) and expansion (sentence structure review). The instructors emphasize to the students that MacProof was not intended to solve writing problems or to make decisions for them. It only points out areas which the students may want to check. Students were not required to use MacProof to check their documents.

Procedures for Analysis of the Data

The pretest and posttest scores of the objective and writing samples from each of the sections were collected and entered into the computer for analysis. An analysis of covariance was used to compare group means. This treatment compared the posttest means after they had been adjusted for any difference between the groups with respect to the pretest means.

CHAPTER BIBLIOGRAPHY

1. Bernhardt, S. (1988). Teaching college composition with computers: A program evaluation study. St. Louis, MO. (ERIC Document Service ED 295 191).
2. Ebel, R. L. (1965). Measuring educational achievement, Prentice-Hall, Inc., Englewood Cliff.
3. Godshalk, F., Swineford, F., & Coffman, W. (1966). The measurement of writing ability, College Entrance Examination Board, New York.
4. Guilford, J. P. (1965). Fundamental statistics in psychology and education, 4th ed., McGraw-Hill, New York.
5. Haugh, O., & Brown, J. (1969). College English Placement Test Manual for administrators and examiners. Riverside Publishing, Co. Chicago.
6. Huck, S., Cormier, W., & Bounds, W. (1974). Reading statics and research. Harper and Row, New York.
7. Mann, R. (1988). Measuring writing competency. Louisville, KY., (ERIC Document Service ED 295 695).
8. _____ (1989). The Official TASP Test Study Guide. National Evaluation Systems. Amherst, MA.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

The purpose of this chapter is to present the results of the statistical analysis of the data. The data includes analyses of the pretest and posttest CEPT objective test and the pretest and posttest scores of the writing samples. It also includes the analysis of the difference, if any, in the improvement of writing skills of students enrolled in the computer and traditional classes. The withdrawal rates of the students in the two groups are analyzed to determine if there is a significant difference in the number of students who withdrew from the computer classes and the number who withdrew from the traditional classes. Also included is information concerning the number of students who successfully completed the classes in the study and how that compared to the number of students who successfully completed any freshman composition class during the same semester at the same institution. There is also information on the percentage of students in the study who successfully completed the classes as reported by instructors.

Procedure for Analysis of Data

Three hundred students in the study completed both the pretest and the posttest and also completed the course (did

not withdraw). After students' tests were scored, they were then entered into the computer for analysis using the SPSS software package.

An analysis of covariance was used to compare the group means on the CEPT objective test and the group means on the writing sample. This treatment compared the posttest means after they had been adjusted for any difference between the groups with respect to the pretest means. This design is used to control statistically any initial differences in the students which may be present and may confound differences between the two groups. The CEPT and the writing samples are the dependent variables and the use of computers in the classroom is the independent variable. The analysis of covariance adjusted the posttest means on the basis of the covariate (pretest) and then compared these adjusted posttest means to see if they were significantly different from one another.

The Z test was used to determine if there was any significant difference between the withdrawal rate of students in the computer classes and those enrolled in the traditional classes. This design is used to test the significance of the difference between two independent proportions.

Testing the Hypothesis

In order to compare the effects of using the computer in the freshman composition classroom on the gains in

writing skills of the students, two methods were used to gather information about the students' writing abilities at the beginning of the semester. One was the objective section of the CEPT and the other was a writing sample. These same methods were used at the end of the semester to gather information about students' skills after completing the composition class.

Reporting of Data

The number of students enrolled in the traditional classes who completed the course and who completed both the pretest and posttest CEPT objective test and the writing sample was 167. The number of students enrolled in the computerized classes who completed the course and who completed both the pretest and posttest CEPT objective test and writing sample was 133. The mean scores for the two groups on the objective test are reported in Table 1.

Table 1

Mean Scores on CEPT Objective Test

	<u>Pretest Mean Score</u>	<u>Posttest Mean Score</u>
Computer Class	53.7	57.1
Traditional Class	64.3	67.3

The difference in the pretest scores of the computer class and the traditional class seems to indicate that the two classes were starting the semester with very different levels of knowledge of the mechanics of grammar as measured

by the CEPT. It is difficult to speculate on the reasons behind this difference. Although there is diagnostic testing of all students before they are placed in composition classes, the tests are used simply to determine if a student is ready for composition at the freshman college level. Any student who achieves a predetermined score may be admitted to any composition class. Students are not grouped according to their scores on the test. Students make their own choices concerning the sections in which they enroll. In talking with students it became clear that their decisions are based on many varied factors, including: computer vs. traditional, instructor, class day, class time, friends enrolling together, etc.

In attempting to determine a possible cause for the difference of the means of the pretest scores of the students included in the study, the pretest scores of all of the students who originally enrolled in the classes were examined. These pretest mean scores are reported in Table 2.

Table 2

Mean Scores on CEPT Object Test-All Students

	<u>Pretest</u>
	<u>Mean Score</u>
Computer Class	55.2
Traditional Class	54.6

The mean score of the students in the traditional classes who completed the study is much higher than the mean score of all the students who began the traditional class. This indicates that the students who completed the study scored higher on the pretest than those who failed to complete. The mean score of the computer class changed very little from the mean score of all the students who enrolled in the computer class. This may indicate that the students who failed to complete the traditional class were students who scored poorly on the objective pretest. Perhaps poor students are less likely to complete the traditional class because of difficulty with the work required. Students in the computer class may fail to complete because of difficulty with the work required, however other reasons may play a more important role with these students than with the traditional class students, such as lack of access to computers at home.

This study has been designed to accommodate any difference in the beginning score of the students by the use of the analysis of covariance as the statistical method for treating the data. It is the gain that the students achieve that is important in the study, not where they started or where they ended, but how much they improved. The real question is whether the improvement can be credited to the difference in the instructional method, computer or traditional.

The mean scores for the two groups on the writing sample portion of the test are reported in Table 3.

Table 3

Mean Scores on CEPT Writing Sample

	<u>Pretest</u> <u>Mean Score</u>	<u>Posttest</u> <u>Mean Score</u>
Computer Class	67.3	81.7
Traditional Class	64.3	80.8

The difference between the pretest and posttest mean scores of the writing samples did not differ as much as the scores on the objective test. Again, it is difficult to determine why this is true. There was no control of student placement in sections, other than the fact that diagnostic tests indicated they were ready for college level freshman composition.

The analysis of covariance using the pretest scores as the covariance as a test of statistical significance was used to determine the difference between the two groups' scores on the objective and writing sample. The level of significance was 0.05, or five percent. Table 4 contains the results of the pretest related to the posttest on the CEPT objective test. Three hundred cases were processed.

Table 4

Analysis of Covariance of Pretest and Posttest Scores on the CEPT Objective Test

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Type	59.317	1	49.317	0.491	0.484*
Residual	35895.738	297	120.861		
Total	62285.086	299	208.311		

*p > 0.05

The adjusted means on the CEPT objective test do not differ significantly. This indicates that there was no significant difference in the gains made on the skills tested by the CEPT objective test of the two groups.

Table 5 contains the results of the pretest related to the posttest on the writing sample. Three hundred cases were processed.

Table 5

Analysis of Covariance of Pretest and Posttest Scores on the Writing Sample

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Group	48.543	1	48.543	0.630	0.428*
Residual	22893.098	297	777.081		
Total	30382.637	299	101.614		

*p > 0.05

As with the objective test, there was no significant difference in the gains in writing skills made by the two groups as measured by the writing samples.

Based on the result of these statistical test, it can be said that neither the computer class or the traditional class treatment produced significantly greater gains in the students' writing skills as measured by the CEPT objective test or the writing sample.

A student is considered to have completed the course successfully if he or she receives a passing grade at the end of the semester. The successful completion rates of students in the classes included in the study are reported in Table 6.

Table 6

Student Overall Successful Completion Rates

	Percentage of Students Completing	Percentage of Students Not Completing
Computer Class	52%	48%
Traditional Class	72%	28%

The successful completion rates percentages for computer and traditional classes in the study differ by 20 percentage points. The successful completion rate of the computer classes seems to be very low compared to the traditional classes. It is important to look at the successful completion rates of students in all freshman composition classes at the same institution the same semester in order to evaluate this data. At the beginning of the semester there were 645 students enrolled in the classes in this study. During the same semester there were

1,155 students enrolled in all freshman composition at the campus where the study took place. Approximately thirty-four percent of the 1,155 were in the computer classes studied, twenty-one percent were in the traditional classes studied and the remaining forty-five percent were enrolled in other sections of freshman composition. Overall, fifty-four percent of the students enrolled in freshman composition received a passing grade in the course. Forty-six percent of the students withdrew or failed the course. These successful completion and failure percentages are very close to the percentages found in the computer classes in the study. Although there was a difference in the successful completions of the two groups studied, it is important to recognize that the completion rate of the computer classes was more in line with the general successful completion rates of all of the classes in freshman composition the same semester.

The difference in the completion rate of students enrolled in the classes in the study suggested that an additional research question be explored. Students may fail to complete a course successfully because they withdraw from the class or because they make a failing grade. Further study of the data concerning students who did not successfully complete the course revealed that more students withdrew than failed the classes. The question to ask, then, is whether there is a significant difference between

the withdrawal rates of the computer and the traditional classes.

Table 7 includes the data concerning the withdrawal and failure rates of the students in the study.

Table 7

Student Withdrawal and Failure Percentages

	Percentage of Students Withdrawing	Percentage of Students Failing
Computer Class	25	23
Traditional Class	10	19

The percentage of students withdrawing from the computer classes is very much higher than that of students in the traditional classes. Withdrawal rates are typically high at two year institutions. It would be, perhaps, more difficult to explain the low withdrawal rate of ten percent from the traditional classes than it is to explain the twenty-five percent withdrawal from the computer classes. There was no information gathered concerning the reasons for withdrawal in either group, so suggestions of cause can only be considered speculation.

The "Z" test was used to test significance of the difference in the withdrawal rates between the computer and traditional classes. Table 8 includes the results of the test.

Table 8

Withdrawal Rates of Students Enrolled in Computer and Traditional Classes

	Percentage Withdrawing	Z	Z(0.05)
Computer Class	24	4.73	1.96
Traditional Class	10		

The calculated "Z" value for the withdrawal rates, reported in Table 8, was 4.73. There is a significant difference at the 0.05 level in the withdrawal rates of the computer and traditional classes. Without further research, the reasons for the difference between the withdrawal rates of the two groups can only be speculated upon.

Sixteen instructors taught freshman composition during the spring semester of 1989. Six instructors taught the computer classes studied. Four instructors taught the traditional classes studied. Six instructors taught other sections of the class. The percentages of students who completed the course with a passing grade is presented by instructor in Table 9.

Table 9

Percentage of Students Passing
Freshman Composition by Instructor

Instructor	Type Class	Percentage Receiving Passing Grade
Instructor 1	Computer	60
Instructor 2	Computer	50
Instructor 3	Computer	55
Instructor 4	Computer	34

Instructor 5	Computer	52
Instructor 6	Computer	59
Instructor 7	Traditional	73
Instructor 8	Traditional	73
Instructor 9	Traditional	76
Instructor 10	Traditional	62
Instructor 11	Other	41
Instructor 12	Other	37
Instructor 13	Other	61
Instructor 14	Other	48
Instructor 15	Other	78
Instructor 16	Other	31

It is noteworthy, that with only one exception, (an instructor not included in the study who had a completion rate of seventy-eight percent), the instructors in the study who taught the traditional classes had the highest percentage rates of passing grades of all instructors teaching freshman composition the semester the study took place. It is impossible to explain this finding without further research.

Summary of the Data Findings

The statistical findings comparing the pretest and posttest writing skills as measured by the CEPT objective test show no significant difference in the gains in writing skills between the students in the computer class and the students in the traditional classes. The findings also show no significant difference in the gains in writing skills of the students in the two groups as measured by the writing sample.

The successful completion rates of the students in the two groups differed by 20 percentage points. This difference can be accounted for largely because of the greater number of students who withdrew from the computer classes as opposed to the traditional classes. There was a significant difference between the withdrawal rates of the two groups. The successful completion rates of the computer classes, however, were only two percentage points different from the successful completion rates of all student enrolled in freshman composition the same semester at the same school. The successful completion percentage rates of the traditional classes were eighteen percentage points higher than the completion rates of all students enrolled in freshman composition the same semester at the same school. The students of the instructors in the traditional classes in the study tended not only to have a higher successful completion rate than the other instructors in the study, but also had a higher successful completion rate than all but one of the other instructors at the institution who taught freshman composition during the same semester.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study is to determine improvement of writing skills, as measured by the English College Placement Test, of college students who choose to enroll in and complete freshman composition classes which use word processing and proofreading software in the classroom, to determine the improvement in writing skills as measured by the English College Placement Test of college students who choose to enroll in and complete freshman composition classes which did not use word processing or proofreading software in the classroom, and to report the level of difference between the two groups.

Summary of the Data Findings

Following is the summary of the data finding of the study.

1. While there was improvement in the writing skills of both groups as measured by the College English Placement Test objective test, there was no significant difference in the improvement of writing skills between the group in the computer classes and the group in traditional classes ($p = 0.484$).

2. There was also improvement in the writing skills of both groups as measured by the writing sample, however, again, there was no significant difference in improvement of writing skills between the two groups ($p = 0.428$).

3. The withdrawal rate of students from the computer classes was significantly higher than the withdrawal rate from the traditional classes.

Discussion

The findings that the use of word processing and proofreading software in the classroom did not result in a significantly greater improvement in writing skills than the traditional classroom methods can be supported by much of the previous research conducted concerning this topic. Hawisher's (3) paper on research concerning computers and writing, reported that only half of the studies dealing with quality of writing found improvement in writing skills. The majority of those showing improvement were conducted with students who began with very low level writing skills. A previous study in the fall of 1987 (5) on the same topic at the same location as this study, using different measurement tools, had similar results concerning the improvement in writing skills. There was no significant improvement in writing skills. These examples mirror the body of research currently existing on this topic. There are still conflicting results being reported on research on computers and writing. There is no clear answer to the question:

Should computers be used to teach writing?

It is difficult to explain the very positive attitudes many of the educators feel about using computers for composition. Nash and Schwartz (6) feel computers can make a dramatic difference in the writing ability of their students. Arms (2) of Drexel feels using computers improves the quality of writing done by students. Etchison (1) found improvement in writing in his study. These are people who are very involved on a daily basis with the use of computers for writing. Their enthusiasm for the use of computers for writing is high. Yet there is the conflicting evidence of studies such as the Hert (4) Colorado State University versus the positive attitudes of the faculty and students involved in the actual computer classes there. Hert found there was no significant difference in the improvement of writing by students in computer classes. Teachers, such as Smith (2), who are actually involved in the CSU program are very positive about the use of computers and their impact on students and teachers alike.

It may seem simple to conclude that the teachers and project coordinators actually involved in the situations where computers are being used to teach writing may be too close to the situation to judge it properly. Many of the studies which have been done on this topic were conducted by the educators involved in the first experiences of an institution using computers for composition. Many of them

actually teaching the classes themselves. It may seem that more objective research is needed to obtain a true picture of outcomes from the use of computers to teach writing. However, it may also be true that there is no better evaluator of learning in the classroom than the teacher who is in that classroom every teaching day. It may be easy to objectively check a writing sample for grammatical and spelling errors, complete sentences and well-formed paragraphs, but it may not be as easy to find truly reliable objective means for judging good writing.

Conclusions

Based on the findings of this study, the following conclusions have been made.

1. The introduction of computers into the freshman composition curriculum does not necessarily result in greater improvement in the writing skills of the students in classes with the computers than of students in traditional classes.

2. Students in freshman composition improved their writing skills in classes using the computer method and in classes using the traditional method of teaching.

3. The withdrawal rate in the computer classes was higher than that of the traditional classes, but the reason for this cannot be identified in the scope of the study.

4. Based on the review of the literature and this study, methodological studies addressing only one facet of a

teaching, learning environment are not likely to explain all factors involved in such complex acts as teaching and learning.

Implications

Computers in the educational arena are a new tool for many educators. The research in computers and writing is very recent and quite small compared to many other educational research topics. The computer experience of the teachers involved in much of the research is very limited and their experience using computers as a teaching tool is even more limited. The majority of the studies have been done over short periods of time; often not even a complete semester. These many factors impact the results of the studies in ways unknown to the researcher. As with any teaching method, teachers refine it as they use it in the classroom. They become better at it and more confident in the ways they are able to apply it to their students' learning styles and needs. Better and more effective ways to use computers in the writing process are being discovered by teachers every day. Long term research projects may be able to reflect more clearly the impact computers are having on the instruction of writing.

It is important to remember that although much of the current research does not show that computers improve writing skills more than the traditional methods used, neither does the research show that the traditional methods

result in more improvement in writing than the computer method. If it is true that the difference in the improvement in writing skills is not significant for either method, other questions may need to be considered. Each year more and more of the writing tasks in the world are done on computers. Is it important to be teaching students writing using the tools they will most likely be using for their writing tasks in their future? Is the cost of computers required to support the teaching of writing justified considering the conflicting research on the topic currently available? If all students enrolled in writing classes cannot have access to computers, is it fair to make them available only at schools that can afford them?

Often discussion concerning the use of computers and writing is strictly that: computers and writing. Computers are tools that are of absolutely no use without the necessary software to enable them to accomplish the task at hand. It is useless to talk about computers and writing without specifically talking about the software being used. Very few of the studies available now were conducted using the same type of computer, much less the same software. It would not be reasonable to suggest that if there were no positive results in a classroom where Writer's Workbench was used on an IBM mainframe computer, that the same results could be expected in a classroom using Macintosh computers with FullWrite Professional software. It would not even be

reasonable to assume the same results would be attained in a classroom with Macintosh computers using FullWrite Professional as a Macintosh classroom using MacWrite software. The results might not be the same, but this cannot be assumed. Software is the essential ingredient whose unique impact has been over looked in most of the past research where the questions tend to be whether computers cause a difference and not whether the use of the specific software causes a difference. Perhaps it is time to consider the use of a specific software package an essential part of the method.

If the evaluation of a method is concerned with only the improvement of writing skills, the results of this study alone do not support the use of computers for teaching writing. In fact, considering the higher withdrawal rate of students in the computer classes, it makes a better case for using traditional methods. However, any single study is not enough on which to base decisions that effect the students of the future. One study only adds to the body of research which must exist in order to accomplish the goal of improving students' writing abilities. Much more research must be conducted, however, before the results of using computers to teach writing can truly be evaluated. The research questions asked must be refined, the methods used must be improved, and the results must be studied carefully

before decisions are made concerning the choice of methods for teaching writing.

Recommendations for Future Research

Based on the findings of this study, the following recommendations for future research are suggested.

1. Further research should be conducted which examines the effect of other factors in combination with teaching methods on the improvement of writing skills. For example, studies which combine teaching styles and learning styles with the use of computers in the classroom should be considered. Other possible factors might include prior computer knowledge, teacher expectations, and student and teacher attitudes toward computers.

2. Studies which compare different software packages, not just computer and non-computer classes should be undertaken. Because of the difference in the sophistication and ease of use of different software and computers, the studies should use the same type of computer and the subjects should be grouped by grade level.

3. Longitudinal studies should be undertaken to determine if continued use of the same equipment and software impacts the results of a study. In the past, students usually have come to a computer class with little or no knowledge of the computer, therefore, a certain amount of learning must take place in order for the student simply to operate the computer effectively. Also, some students

experience anxiety about using computers at the beginning of a course. A longitudinal study might lessen the impact of these factors.

4. Research should be conducted concerning whether the use of computers in a class impacts the number students who fail to complete a course. This research should include not only classes where students first encounter computers, but also classes later on in a program to help determine if there is a difference in first time users and experienced users in the students' failure to complete a course.

5. Studies should be conducted concerning the best way to teach writing using computers. There is some suggestion that peer evaluation is an outgrowth of using computers in writing. Would it be valuable to deliberately incorporate this into the teaching environment? Should computers be used to teach grammar and spelling skills? Is it valuable to use proofreading software which finds spelling errors, grammar errors, etc., or does this encourage the student to rely too much on the computer?

APPENDIX
ESSAY SCORE SHEET

Essay Score Sheet

Name _____ Social Security #: _____

APPROPRIATENESS--the extent to which the student address the topic and uses language and style appropriate to the given audience, purpose, and occasion.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

UNITY AND FOCUS--the clarity with which the student states and maintains a main idea or point of view.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

DEVELOPMENT--the amount, depth, and specificity of supporting detail the student provides.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

ORGANIZATION--the clarity of the student's writing and the logical sequence of the student's ideas.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

SENTENCE STRUCTURE--the effectiveness of the student's sentence structure and the extent to which the student's writing is free of error in sentence structure.

1 2 3 4 5 6 7 8 9 10

USAGE--the extent to which the student's writing is free of errors in usage and shows care and precision in word choice.

1 2 3 4 5 6 7 8 9 10

MECHANICAL CONVENTIONS--the student's ability to spell common words and to use the conventions of capitalization and punctuation.

1 2 3 4 5 6 7 8 9 10

Total number of points: _____

BIBLIOGRAPHY

- Bernhardt, S., Edwards, P., & Wojahn, P., (1988). Teaching college composition with computers: A program evaluation. St. Louis, MO. (ERIC Document Service No. ED 295 191).
- Cornell, C., & Newton, R. (1988). Collaborative revision on a computer. St. Louis, MO. (ERIC Document Service No. ED 295 155).
- Dean, R. L., (1986). Cognitive, pedagogic, and financial implications of word processing in a Freshmen English Program: A report on two years of longitudinal study. Orlando, FL. (ERIC Document Service No. ED 280 384).
- Deloughry, T. J. (1988, May). For many writing instructors, computers have become a key tool. The Chronical of Higher Education, A9-A16.
- Ebel, R. L. (1965). Measuring educational achievement, Prentice-Hall, Inc., Englewood Cliff.
- Etchison, C. (1985). A comparative study of quality and syntax of composition by first year college students using handwriting and word processing. Glenville, WV. (ERIC Document Service No. ED 282 215).
- Etchison, C. (1988). Word processing: A helpful tool for basic writers. St. Louis, MO. (ERIC Document Service No. ED 294 243).
- Feldman, P. (1984). Using microcomputers for college writing - what students say. (ERIC Document Service No. ED 244 298).
- Freedman, S. (1987). Research in writing: Past, present and future. Berkeley, CA. (ERIC Document Service No. ED 285 205).
- Gardner, R., & McGinnis, J. (1986). Computers in college composition: A comparative study of ten schools. (ERIC Document Service No. ED 284 241).
- Godshalk, F., Swineford, F., & Coffman, W. (1966). The measurement of writing ability. College Entrance Examination Board, New York, NY.

- Guilford, J. P. (1965). Fundamental statistics in psychology and education, 4th ed., McGraw-Hill, New York.
- Hass, C. (1987). What research with computers can tell us about the uses of reading in writing. (ERIC Document Service No. ED 284 252).
- Hannaford, M. (1988). Teacher attitudes toward computer use in the classroom. Seattle, WA. (ERIC Document Service No. ED 296 721).
- Harris, J. (1985). Student writers and word processing: A preliminary evaluation. College Composition and Communication, 36, 322.
- Haugh, O., & Brown, J. (1969). College English Placement Test Manual for Administrators and Examiners. Riverside Publishing, Co., Chicago.
- Hawisher, G. (1987). The effects of word processing on the revision strategies of college students. Research in the Teaching of English, 21, 145-159.
- Hawisher, G. (1988). Research in computers and writing: Findings and implications. New Orleans, LA. (ERIC Document Service No. ED 293 140).
- Herrmann, A. W. (1987). Teaching writing with computers: Are we being realistic? Houston, Texas. (ERIC Document Service No. ED 288 199).
- Hert, R. (1989). A study of one computer-driven text analysis package for collegiate student writers. Unpublished doctoral dissertation, Department of Higher and Adult Education, University of North Texas, Denton, TX.
- Hooper, S. C. (1987). Using word processors in high school and college writing instruction: A critical review of current literature. Towson, MD. (ERIC Document Service No. ED 286 202).
- Hult, C. (1988, April). The computer and the inexperienced writer. Computers and Composition, 19-38.
- Huck, S., Cormier, W., & Bounds, W. (1974). Reading statics and research. Harper and Row, New York.

- Jackson, L. W. (1984). Relating learning styles to performance on written compositions using microcomputer word processing and the traditional handwriting method. DeKalb, MS. (ERIC Document Service No. ED 276 014).
- Mann, R. (1988). Measuring writing competency. Louisville, KY., (ERIC Document Service ED 295 695).
- _____ (1989). The Official TASP Test Study Guide. National Evaluation Systems. Amherst, MA.
- Nash, J., & Schwartz, L. (1985). Making computers work in the writing class. Educational Technology, 25, 19-21.
- Rice, H. W. (1989, February). Computers in Freshman English. Teaching English in the Two Year College, 16, 29-34.
- Storms, E., & Collins, J. (1984). What research tells us about composing on computers. (ERIC Document Service No. ED 249 479).
- Suhor, C. (1988). Trends and issues in English instruction, 1988--six summaries. Urbana, IL. (ERIC Document Service No. ED 295 167).
- Teichman, M., & Marilyn, P. (1985). Word processing in the classroom: Its effects on freshmen writers. Poughkeepsie, NY. (ERIC Document Service No. ED 276 062).
- Teichman, M., & Marilyn, P. (1988). Initial effects of word processing on writing quality and writing anxiety of freshman writers. St. Louis, MO. (ERIC Document Service No. ED 294 217).
- Thomas, I. (1985). Uses of the computer in teaching the composing process. Philadelphia, PA. (ERIC Document Service No. ED 265 571).
- Tone, B., & Winchester, D. (1988). Computer-assisted writing instruction. Bloomington, IN. (ERIC Document Service No. ED 293 130).