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A (STUDY OF THE EFFECT OF DESKTOP PUBLISHING IN
WRITING INSTRUCTION VERSUS TRADITIONAL
PENCIL AND PAPER ON THE LENGTH AND
DETAIL OF STUDENTS' COMPOSITIONS)

by
Christine Sonsini

A THESIS

Submitted in partial fulfillment of the Master of Arts Degree in
Elementary School Teaching in the Graduate Division of
Rowan College, Glassboro, New Jersey
1995

Approved by _____
Professor

Date Approved May 1995

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ABSTRACT

CHRISTINE SONSINI

A STUDY OF THE EFFECT OF DESKTOP PUBLISHING IN
WRITING INSTRUCTION VERSUS TRADITIONAL
PENCIL AND PAPER ON THE LENGTH AND
DETAIL OF THE STUDENTS' COMPOSITIONS

1995

Dr. Louis Molinari, Advisor

Elementary Education

This study was based on the following question: Could it be that first grade students who receive primary writing instruction using The Children's Writing and Publishing Center computer software program, compose longer, and more detailed texts than those first grade students who receive traditional primary writing instruction using pencil and paper?

One group of students received primary writing instruction using a desktop publishing software program, while the other group received primary writing instruction using pencil and paper. After receiving an equal amount of instructional and individual writing time, both groups were given the same writing assignment. The students' compositions were evaluated and compared. Based on the evaluation of the students' compositions, the hypothesis of the study which stated that there would be no significant difference in the length and detail of compositions between the two groups was accepted.

Conclusions were drawn for the use and distribution of computers in the first grade classroom. Recommendations were given for further studies.

MINI-ABSTRACT

CHRISTINE SONSINI

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WRITING INSTRUCTION VERSUS TRADITIONAL
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DETAIL OF STUDENTS' COMPOSITIONS

1995

Dr. Louis Molinari, Advisor

Elementary Education

This study will aide in the future development, revision, and planning of a comprehensive computer curriculum for grade one at James W. Lilley, Jr. Elementary School, and possibly other elementary schools in the Gloucester Township School District in New Jersey. It will also guide in the distribution of available computers among grade levels. The conclusions are based on the results of this study and reflect the current research in the field.

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Chapter One

The Problem

Significance of the Study

"Word processing and desktop publishing have been widely endorsed as some of the most promising uses of microcomputers in the elementary school curriculum." (Cochran-Smith, 1991) Computers are becoming a common element in the elementary classroom. (Jackson, 1986) The computer is moving from a source of drill and practice to a classroom writing instrument, through the use of word processing programs. A major goal of teaching word processing to students is to improve the children's writing skills (Computer Directions for Schools, 1983), which is the focus of this paper.

Since 1982, investigators from a number of disciplines have explored the advantages of word processing and desktop publishing as a tool for student writers. Although students of all ages have been studied, most of the empirical studies and the greater part of the literature focuses on the ways the tool affects the writing of the learning disabled, middle school, high school, and college level students. Given the relatively small body of literature that concentrates on elementary school writers (Cochran-Smith, 1991), this paper has examined both this literature and the related literature on word processing, desktop publishing and student writing. The purpose is to identify the significant conceptual and paradigmatic issues involved in conducting classroom research on word processing and writing at the lower elementary school level. (Cochran-Smith, 1991)

In the school district for which this study has been developed, the Gloucester Township School District, it is admirable that grades two through eight are currently exposed to word processing or desktop publishing at some point during the school year. Most of the first grades classes, however, are not equipped with computers, thus the students are not exposed to word processing or desktop publishing at any point during the school year. The priorities of the first grade curriculum are to teach the children how to read, write,

and conceptualize basic aspects of a math curriculum. It is in first grade that the students learn to write comprehensive sentences and short stories for the first time. It is during this initial learning period, when the students should be exposed to the writing equipment that may simplify and/or enhance the learning process. It is also important for the students to become familiar with current word processing software that they will be expected to use in their upcoming school years, and probably in their chosen career. The students will probably first use word processing for composition or report writing, and then later for research projects or general communication.

As young children learn to write (especially for the first time), the tools they use, the tasks they are assigned to complete, and the ways they interact with adults shape their theories and practices of writing and the ways they understand the nature and functions of writing in the world. (Cochran-Smith, Paris, & Kahn, 1991; Kahn, 1988) As teachers plan for writing instruction, the tools they offer, the tasks they design, and the learning contexts they construct with children, interact with the cultures of their classrooms and shape their understandings of teaching writing. (Mehan, 1989; Paris, 1990)

Utilizing a word processing or desktop publishing software program will take over much of the mechanical operation involved in

the writing process by hand, such as rewriting and recopying; tasks which are often laborious and sometimes even counter-productive for elementary school age children. The student is released from the mechanical aspects to concentrate on the logic, organization, and clarity of the piece. (Snyder, 1993) The child who is "free to let his thoughts flow without worry of having to rewrite and correct his drafts... will undoubtedly create a quality product." (Computer Directions for Schools, 1983) Snyder (1993), also mentions that the instructional time the students receive using a word processing program is also more productive.

Children using word processors can practice writing differently than they do with pencil and paper. According to Kahn (1988), they write longer, more detailed pieces, edit them more thoroughly, and revise in ways they have not tried with pencil and paper. When revising their compositions, Collier (1983), found increases in the number and complexity of operations students used when utilizing a word processing program in the classroom as compared to pencil and paper. By making these revisions, and developing organizational patterns, these writers are using words in novel ways. Daiute (1983), presents another advantage of word processing or desktop publishing. The alteration of words in this way is known as structural creativity. "We have preliminary evidence that writing

with word processing can stimulate structural creativity."

However, it does seem possible to some researchers that the computer itself may inhibit experimentation. Perl (1980), noted that writers need to skim their text in order to "maintain control over the evolution of ideas." Harris (1985), found that the small amount of text allowed on a monitor at one time seems to deter students from making changes. Although these researchers have credible arguments, these factors can be overcome by the ability to print out a hard copy via the computer and printer. The student is then able to view a copy of the printed material and make decisions about changes or corrections.

The evidence suggests that using word processing programs does affect the quality of student compositions. Students are often motivated to deal with higher level aspects of writing such as coherence and idea content. (Balajthy, et. al., 1987) Snyder (1993), indicates that these texts, using adequate word processing software, are more effective than those written with traditional tools.

Utilizing adequate and appropriate software is very important to student success. The use of simple and well written word processing or desktop publishing software programs such as The Children's Writing and Publishing Center, require no prerequisite knowledge such as programing and keyboarding. (Kahn & Freyd,

1990) This is especially important for first grade and was the software chosen for this study as well as the software available in the Gloucester Township School District.

The Children's Writing and Publishing Center is "extremely easy to learn and young people can produce professional-looking documents in record time. (Eiser, 1989) As one child explained, "It's easier to push a button [to make a single letter of the alphabet] than to write a letter." (Cochran-Smith, Kahn, & Paris, 1986)

The software is also a tool that facilitates output and encourages students to experiment with language. (Balajthy, Ernest; et. al., 1987) Students are able to share and talk about their work with a partner or a group. They can help each other with editing, and expanding their ideas. There are many possibilities when each student is eager to print out and proud to share what appears to be a professional document. In this way the writing process becomes less teacher and more student centered. As discussed earlier, the students tend to revise more and studies have found an improvement in quality. (Snyder, 1993) Overall, the majority of research favor word processing because of the new freedom they give writers. (Snyder, 1993)

When determining the benefit of a children's desktop publishing program, it is important to examine compositions written

by children who have utilized such a program, and children who have not. There are many aspects of a student composition to examine, however, studies have shown that the length and detail of a composition are good indicators of early elementary writing abilities. This study will examine the length and detail of writing compositions of first grade students who were taught the process of writing using a computer desktop publishing program as compared with those who were taught the process of writing using pencil and paper. This research is not simply testing a hypothesis, but rather getting hypotheses to work in exploring and expanding the nature of writing instruction in first grade. This is seen as the real and potential benefit of studying young children. (Harste, Woodward, Burke; 1984)

As the age of technology, and specifically computers, as a primary source of communication continues to emerge, it is important that educators understand the nature of their impact on students' writing and classroom culture. (Snyder, 1993)

In the Gloucester Township School District, the following computer studies curriculum objectives were adopted for first grade by the Superintendent, Assistant Superintendent, Director of Curriculum and Instruction, and the Gloucester Township Computer Committee in June, 1994:

1. Students will identify the parts of a computer system.

2. Students will identify and use letter and number keys.
3. Students will identify and use common special purpose keys.
4. Students will engage in computer activities which will facilitate the development of skills identified for first grade.

Taking these objectives into account, it would seem that the first grade classrooms would be equipped with computers. Unfortunately, this is not the case. It is the intention of this study to demonstrate the importance of these objectives and to guide in the future development, revision, and planning of the use and distribution of computers in Gloucester Township Schools, especially James W. Lilley, Jr. Elementary School, in which this study has been conducted.

Statement of the Problem

This study is based on the following question:

Could it be that first grade students who receive primary writing instruction using The Children's Writing and Publishing Center computer software program, compose longer, and more detailed texts than those first grade students who receive traditional primary writing instruction using pencil and paper?

Purpose of the Study

This study was conducted to determine if there were any significant differences in the length and detail of composition writing between first grade students taught the process of writing by means of a desktop publishing program and those taught the process of writing by means of the more traditional pencil and paper approach.

Statement of the Hypothesis

The following hypothesis was generated specifically for this study.

There will be no significant difference in the length and detail of the composition writing produced by those first grade students who receive primary writing instruction using The Children's Writing and Publishing Center, and those first grade students who receive the more traditional pencil and paper approach.

Method of Study

This study examined two groups of students:

Group I are those students who received an instructional writing program using The Children's Writing and Publishing Center desktop publishing software program.

Group II are those students who received a more traditional writing instruction program using pencil and paper instruction.

This study included a class of 24 first grade students from a middle-class area. The class was divided into two groups: those with a combined Reading and Language subject- area grade point average of 85% or above, and those with an average of 84% or below. An even number of students were randomly selected from each group to form Group I and Group II. These two groups were matched in Reading and Language abilities as closely as possible.

Group I received 40 minutes per week of primary writing instruction using the desktop publishing program, while Group II received 40 minutes per week of primary writing instruction using pencil and paper.

A thorough review of literature was conducted to explore the positive and negative effects of integrating the computer into the

writing process. The components that received primary focus were: the role of the teacher, materials used, grouping procedures, and evaluation procedures. The specific question and hypothesis were generated after the review of literature.

The length and detail of the compositions written by the students taught the process of writing by means of a desktop publishing program, were compared and contrasted with the length and detail of the compositions written by those students taught the process of writing by means of the traditional pencil and paper approach.

Limitations of the Study

This study has identified several limitations:

1. The majority of the students used in this study are from the middle socioeconomic class.
2. The number of students included in the study was small.
3. First grade students are relatively inexperienced with computers and desktop publishing programs; they did not receive any type of keyboarding instruction.

4. First grade students are inexperienced with the writing process, as this was their first attempt.

Considering these limitations, it took the six and seven year old students a great deal of time to compose a single piece of writing.

Definition of Terms

computer - an electronic device that can be given a series of commands to perform a specific task

creativity - applied cognition, where the class of problems is one which requires a different or novel way of approaching familiar material (La Greca, 1980)

desktop publishing - includes word processing in addition to producing hard copy which combines graphic images and a variety of font and text styles

keyboard - a device which allows one to input characters via typing

keyboarding - the process that enables students to enter text in the computer, including the skills of learning letter position and the basic principles of hand and finger placement on the computer keys

software - ready-made programs that will guide the computer through a variety of tasks

word processing - an applications program which enables the user of the computer to produce stories, letters, reports, etc., by performing functions similar to a typewriter with the added advantage of easy revision using particular commands

Organization of the Study

This study has been done to determine whether first grade students who are taught primary writing instruction with a desktop publishing software package, produced longer and more detailed texts, than those students instructed more traditionally using pencil and paper.

Chapter One contains an overview of the study. It presents the

significance of the study, identifies the problem and the purpose of the study, and also notes the hypothesis. The method of study, including the design and instrumentation are included. This chapter mentions some limitations of the study and defines terms to be used throughout the paper.

Chapter Two contains a overview of pertinent information on the philosophy, theory, research findings, and review of the literature relevant to this study.

Chapter Three identifies the study in detail by describing the design of the study, setting, and the student population of both the control and experimental groups. The data gathering instruments and procedures followed are presented.

Chapter Four presents, analyzes and evaluates the data which pertains to the rejection or acceptance of the specific hypothesis of the study.

Chapter Five summarizes the findings of the study, conclusions based on the data collected, notes important trends, and suggestions and recommendations for further research or future study.

Chapter Two

Review of Related Literature

Word processing and desktop publishing software programs have increasingly become widely available among the current writing tools in elementary classrooms. (U.S. Office of Technology Assessment, 1988) "A number of studies have found that students produce more effective texts with word processors than with traditional tools." (Snyder, 1993) These studies have examined the ways in which writers write with the new tool, and the characteristics of the texts they produce. Originally developed as tool software for adult professionals, word processing has been widely endorsed for use by student writers, including elementary school children for whom it may offer special advantages (Bridwell & Ross, 1984; Smith, 1981).

According to Guddemi (1987), one of the most appropriate ways to introduce computers into early childhood programs is with word processing and/or desktop publishing. He states that young children are enthusiastic writers, and the computer simply offers them another tool for fostering their emerging literacy. The students' sequence of approach to writing is very like that with paper and pencil (Guddemi, 1990), however, when using the keyboard, the frustrations of forming letters are diminished. (Guddemi, 1987) Smith (1987), states that for young children, the physical difficulties of writing are so overwhelming that it is surprising that children ever write anything at all. As a writing tool, word processing precludes a narrow concentration on aesthetics, temporarily removes the difficulties of print production that often preoccupy young writers, and facilitates the physical manipulation and revision of text without necessitating rewriting and recopying tasks which are often laborious and sometimes even counterproductive for elementary school age children. (Cochran-Smith, Paris, & Kahn, 1991) Accordingly, it has been proposed that word processing may be an ideal use of the microcomputer for elementary school instruction. (Daiute, 1985; Edelsky, 1984; Green 1984) Although the children are using the keyboard as opposed to handwriting their compositions, Moxley (1990), assures that they

still learn about the alphabetic principle and the functions of writing.

Studies have taken into consideration that the children have not yet been exposed to keyboarding skills. Kahn (1990), suggests that elementary level children should learn to type incidentally while they learn to write. "Many students who have been hunting and pecking for years successfully learn tough typing in high school when they are motivated to do so and where it is easy to find time and equipment." (Kahn, 1990) When insisting on touch-typing skills, instead of making writing easier for young children, it instead substitutes one difficulty for another. The purpose of teaching word processing to young children is not for them to learn a secretarial skill. (Kahn, 1990) When students begin to use word processing or desktop publishing, there will be an initial keyboarding/systems learning period, the length of which is dependent in part on the student's prior keyboarding experience. Student writers of all ages are able to master keyboarding and word processing strategies for use in age-appropriate writing activities. (Cochran-Smith, 1990)

"Well written software such as The Children's Writing and Publishing Center, requires no prerequisite knowledge of either keyboarding or programing. Children do not need extensive preparation in order to use this desktop publishing program." (Kahn, 1990) "Classroom Computer Learning," (February, 1989), selected

The Children's Writing and Publishing Center as the 'cream of the crop' of software programs that are the 'best of a breed.' "Classroom Computer Learning" also mentions that the emphasis of the software is "creative writing." This was the software selected for this study. Most of the following research refers to the term "word processing." Desktop publishing incorporates all of the aspects of word processing with the added capability to incorporate and manipulate pictures within the document.

As a result of a study conducted by Kahn (1990), it was found that the tool of word processing deemphasized the mechanics of neat handwriting and eliminated the need for reproducing final copies of written work. Over time, he found that word processing helped children who had been preoccupied with print production shift the focus of their attention in writing. Eventually, they can understand writing with word processing as well as with paper and pencil as an activity that is centered on topic, information, and audience. At the same time, word processors made it possible for young writers to follow through on their evolving theories of writing because adding onto, inserting into, and deleting from initial texts was easy to accomplish.

Computers facilitate the development of compositions over time by simplifying the revision process. Students can easily add,

delete, or change texts by using only a few word processing commands. The basic commands of most word processing and/or desktop publishing programs can be learned by students very quickly, and new commands can be taught as needed. Cochran-Smith (1991), stated several general propositions about word processing that the literature seems to justify: She stated that students make more revisions when writing with word processing than they do when writing with pencil and paper. Word processing students tend to write longer texts than students using pencil and paper, and also produce neater and more error-free texts.

The texts produced by word processing or desktop publishing have been found to have fewer errors than those written with pencil and paper, and many students write longer texts with word processors than with traditional tools. Students also tend to revise more, and studies have found an improvement in quality. (Snyder, 1993) Typical word processing allows users to make changes to text that would have been more cumbersome on paper. The effects of these functions may be twofold. First, they offer a particular representation of the nature of text, text as a fluid and easily transformed communication and therefore closely connected to thinking and speaking. Second, they allow the user to attend to higher order decisions (e.g., revision for clarity of communication) by

removing the mechanical difficulties involved in changing text. Users of word processing might therefore compose longer documents and engage in more revision of their documents. (Bangert-Drowns,1993) The usefulness of word processing as a revision tool is interactively related to the skills and strategies of the individual writer.

Collier (1983), found increases in the number and complexity of operations students used to revise their compositions. Students using word processing made two-thirds more substitutions and reordered their sentences twice as often as students not using word processing. It enables students to mindfully attend to more complex mental tasks by performing simpler, time-consuming tasks. (Bangert-Drowns, 1993)

Daiute (1983), and Smith (1985), suggest that the age of the student is an important variable determining how much revision can be expected. Perhaps the more sophisticated tasks of adding, deleting and moving material are not as important to very young writers, not conceptually possible. However, according to Smith (1985), even these students will work more readily when they can correct easily and leave no trace. One child remarked, "When you erase, you don't mess up your paper, and it's easier to read my writing." (Moore, 1989) Research on writing with computers has established that children find using a keyboard easier than writing

with pencil and paper. (Kahn, 1990) Students do not complain of writer's cramp, and it saves a lot of paper. (Moore, 1989) Children also appreciate that computers are a naturally reinforcing learning tool. They are nonjudgemental.

It has been established that computer usage frees young students from the taxing demands of letter formation, and therefore, children are also able to direct more attention to the spelling of their words. The letters typed on a computer screen look more like those in our environment, making spelling more readable and easily checked. Letters and words can be readily learned, changed, and/or revised until their appearance is satisfactory to the child. (Moxley, 1990)

First grade is a particularly important group because it is precisely this group of children who are in the process of developing as writers and who are always, by a certain definition, weak writers. Word processing can be used for print exploration and letter/word recognition as well as for more specific tasks such as journal writing. (Guddemi, 1990) In first grade, students have a great deal of information about themselves and their own experiences. But accessing information and composing sentences are only part of the writing task for young children. Transforming oral language into written language is a major source of difficulty. (Kahn, 1990)

Children will view the computer as another "playground" to explore and manipulate their ideas. (Huber, 1985)

Past research has suggested that inexperienced writers lack a high level of cognitive development and therefore benefit from the easy storage and recall capability of word processing equipment that compensates for students' underdeveloped short term memory. Word processing, also has the capability to make multiple, legible copies in seconds creates new opportunities for communication in classrooms that are more difficult to provide with pencil and paper. (Kahn, 1990) After several years of researching the effects of word processing in the classroom, educators have found that students do not automatically engage in such in-depth experimentation. (Hansen & Wilcox, 1984) There is a statistically significant difference in the amount of writing and revision done by children using word processing than by those using pencils. (Balajthy, et. al., 1987) When it is accompanied by instruction that invites students to view their writing as meaning-making activity, using word processing may facilitate the production of discovery-centered texts and increase meaning-level revisions.

There is evidence to suggest that using word processing programs for writing and revision will also affect the quality of student compositions. Instead of limiting their changes to the more

superficial tasks of correcting misspellings or punctuation errors, students using word processing are often motivated to deal with higher level aspects of writing such as coherence and idea content. (Balajthy, et. al., 1987) Sudol (1985), claims that the word processor facilitates easier revision and editing, and eliminates the need to recopy. Daiute (1983), explains that word processing allows for more flexibility in alteration, change, correction, revision, and expansion. Each change is neatly incorporated in the text, clean copies evolving at all times, so that the writer can evaluate the effects of each change.

"Word processing in writing instruction may provide lasting educational benefits to users because it encourages a fluid conceptualization of text and frees the writer from mechanical concerns." (Drowns, 1993) Robinson (1985), believes that the word processor facilitates both the formulation of thoughts and their expression at all levels, from the juxtaposition of words and ideas to the logical development of paragraphs and cohesion of argument or narrative. Because word processing takes over much of the mechanical operation involved in the writing process, the student is released to concentrate on the logic, organization and clarity of the piece. Thus, according to Robinson, stories produced on the word processor are both longer and more complex. Word processing

presents students with a new way of conceptualizing written text, as a fluid, alterable communication similar to thinking and speaking. It also may free users to practice thinking about "higher level" aspects of writing (e.g. organization and clarity) by simplifying mechanical tasks. (Bangert-Drowns, 1993)

Daiute (1983), believes that the word processor not only encourages more and higher-order revision, but its interactiveness also stimulates writers to take the reader's point of view by distancing them from the text. Writers are forced into the role of observers of what is being created, while it is being created. Chandler (1987), explains that since the word processor simulates a potential audience, writers are concerned to communicate clearly. This can be useful, explains Chandler, in making students objective about their writing, enabling them to evaluate and alter it. "As a tool with production and revision capacities that are revolutionary in the history of writing, word processing has unique potential to support the goals of elementary writing curricula with a process emphasis, (Calkins, 1983,1986; Graves, 1983), where language is used as a vehicle for learning and not just a mode through which students demonstrate what they have already learned. (Harste, Woodward, & Burke, 1984)

Learning to write on the computer "parallels childrens' early

childhood method of learning to speak-playfully, through delighted experiences of discovery-through repeated exposure to language forms and patterns, by creating imitation and manipulation, and by personal trial and error, with some assistance from adults." (Lefevre, 1970) "They expanded and elaborated language in a meaningful, functional environment. Language learning became an act of self knowledge and self discovery as they distinguished meaning and made meaning more explicit. Students manipulated and imitated language through trial and error with "kindly correction' from their teacher." (Moore, 1989) Young children want to write and the variety and number of language-related experiences they have will directly influence their command of oral and written language. Computers add another means to meet this need by increasing children's experimental activities and opportunities for risk taking with emergent literacy activities. (Guddemi, 1990)

It is one of the goals of education to enable students to communicate and to understand what others have communicated. Using word processing this way is a natural way to explore written language in an environment which does not separate reading, writing, language, and real life experiences. It helps the child understand the connection. It is a continuous and recurring transaction between reading and writing. The composing becomes

the process rather than a product. (Moore, 1989)

This increased ease of editing has helped students develop a more positive attitude toward writing. (Piper, 1983; Rodriguez, 1984) Word processing experience has a motivational impact, encouraging students to engage in writing tasks more wholeheartedly. A motivational impact could result in roughly equal effect for short or long term interventions, whereas actual skill improvement would more likely show consistent improvement over time. Increased motivation could have the greatest effect on students who are in some way disaffected from their writing instruction. (Bangert-Drowns, 1993) "Computers are highly motivating learning tools that actively engage students in the writing process." (Montague, 1990) Computer writing is an alternative for students who have handwriting problems. (Montague, 1993) Both mechanical and content revision can be challenging and fun with the computer. (Montague, 1993) The benefits are probably derived from motivational gains attributable to increased work efficiency and the quality of tool-assisted products. (Bangert-Drowns, 1993)

Bangert-Drowns (1993), finds that when supplemented with instruction, with even the simplest of tools, there will be a positive effect on the performance of the users. Bangert-Drowns finds that the benefits are probably derived from the motivational gains

attributable to increasing work efficiency and the quality of the software. Evidence from several areas of research suggest that these small benefits can be amplified if the tool promotes higher order thinking. It seems reasonable to expect such gains from the use of word processing in writing instruction.

"Although we know a great deal about the capacities of word processing influences students' writing, we know much less about the ways this technology is actually introduced and used in school setting over time." (Cochran-Smith, 1991) As word processors become more widely used in schools, it is important that educators understand the nature of their impact on students' writing and classroom culture." (Snyder, 1993) Simply making word processors available to students will not automatically improve their writing or revisions skills. (Balajthy, et.al., 1987) Word processors must supplement writing instruction, not replace it. Teachers still need to teach students the writing process, guide their construction of compositions and provide feedback helpful for revision. Word processors are simply tools that facilitate student output and encourage students to experiment with language; viewing written text as fluid rather than static, is the key concept instructors should communicate to students. (Balajthy, et. al., 1987) If embedded in the context of writing instruction that emphasized the writing

process, rather than analytically focusing on decomposed writing subskills, one might expect the use of the word processor to have lasting effects on aspects of students' writing. (Bangert-Drowns, 1993) In any effective writing process approach to teaching composition, the teacher's role will remain crucial as modeler and monitor. With easy to learn word processing programs available, microcomputers will inevitably play an increasingly central role in writing instruction. (Balajthy, et. al., 1987) It will be necessary for teachers to model revision for the students. It is also necessary for teachers to monitor revision by providing feedback on the appropriateness of revisions. This is central to successful use of word processing teach revision skills. (Balajthy, et. al., 1987) Teachers can monitor students' performance and intervene at any time to teach or refine a skill, interact with them regarding the content of the composition, or help them reflect on what they have written. (Montegue, 1993) Computers facilitate discussion about writing. With teacher guidance, students learn to discuss ideas and develop plans for compositions. Then, as they write, they learn to evaluate the content, organization, and style of their story. (Montegue, 1993) Desktop publishing can make the writing experience pleasurable for students who otherwise would be reluctant to write. As students become more familiar and comfortable with the writing process and

desktop publishing, the quality and quantity of their writing will improve. (Montegue, 1993) The opportunity to work individually with students is a major benefit of word processing, turning writing from a "you write/I grade" process into a partnership that leads to greater students understanding of writing skills. "We become readers together. We apply critical reading skills directly to the students' own writing. Students become more objective and more critical of their own writing." (McGarvey, 1986) It seems clear that "the instructor cannot remain passive and let the students figure out for themselves how they will write on the machines." (Hansen & Wilcox, 1984) Shifts in emerging writers to follow on their evolving theories of writing were not the result of simply using the tool of word processing, however, rather, the adults who worked with them and changes that developed in the structure of their learning opportunities played critical roles in the process. These roles are discussed in more detail in Cochran-Smith, Paris, and Kahn (1991).

Word processing in itself does not teach students how to write. It is important to give the students knowledge and skills to direct their progression. Teachers need to act as facilitators through constant monitoring of students' writing. To achieve the best results, teachers must observe, coach, prompt and raise questions to help with difficulties, clarify ideas, and to reinforce

student decisions. (MacArthur, 1988; Moracco & Neuman, 1986)

The above synthesis indicates that using word processing for writing does affect the composing process of student writers. The effects of word processing interact with the preexisting skills and strategies of individual writers. We have some global indications that the distinction is between weak/strong or inexperienced/experienced writers. (Cochran-Smith, 1991)

In general, the summary statistics regarding the effects of word processing on writing skills based on the research of (Schramm, 1991), are as follows: There is a small, but significant improvement in the writing quality of those students using word processing equipment when compared to those students using traditional writing methods. There is a small, significant, and positive effect in the length of essays produced by students using word processing equipment and those using traditional writing methods. There is a large, significant, and positive effect on the attitude of students toward writing when using word processing as compared to students using traditional writing methods.

Chapter Three

Design of the Study

This study was designed to determine if there were any significant differences in the length and detail of student composition writing between first grade students taught the process of writing by means of a desktop publishing program and those students taught the process of writing by means of the traditional pencil and paper approach.

Setting

The setting of the study was a first grade class in the James W. Lilley, Jr. Elementary School in Gloucester Township, New Jersey. The school presently accommodates approximately 853 students. The present staff of the school is as follows: 1 Full time Principal, 1 Full time Assistant Principal, 31 Full time Regular Classroom Teachers, 2 Full time Basic Skills Teachers, 4 Full time Resource Center Teachers, 2 Full time Reading Specialists, 10 Full time Special Area Teachers (Art, Music, Physical Education, Life Skills, Library, EXCEL, Guidance, Speech), 2 Part time Special Area Teachers, and 9 Support Staff.

The Gloucester Township school district includes 7 elementary schools grades Kindergarten through fifth; and 2 middle schools, grades six through eight; and also a school of Special Education.

Description of the Population

The sample consisted of 24 first grade students from one class, taught by one primary teacher. The class was divided into 2 groups: those with a cumulative grade point average (GPA) in Reading and

Language of 85% and above (Group 1), and those students with a cumulative GPA of 84% and below in Reading and Language (Group 2). Group 1 consisted of 16 students, while Group 2 consisted of 8 students. Group 1 and Group 2 were each divided randomly in half to create Subgroups 1A, 1B, 2A, and 2B. Subgroup 1A (8 students) was combined with Subgroup 2A (4 students) to create Group I. Group 1B (8 students) was combined with group 2B (4 students) to create Group II. The creation of Group I and Group II was an attempt to create 2 groups of children with similar abilities in the same environment. Each group contained 12 students with approximately the same overall cumulative grade point average in Reading and Language.

Description of Instrument

Group I was exposed to The Children's Writing and Publishing Center. Group II was exposed to the traditional pencil and paper approach to process writing. The students were exposed to these different writing mediums for a 10 week period of time as they were learning the process of writing. At the end of the 10 week period of time, both groups were given the same writing assignment. The

texts they produced were evaluated in accordance with the original purpose of the study.

The length and detail of the students' compositions were measured by means of the Chirip Comprehensive Writing Evaluation. This procedure measures and determines the actual comprehensive length and detail in a written composition. The length of a student writing assignment was calculated by defining the number of comprehensive words in the text. The criteria was such that the qualifying words were those utilized by the student in a functional grammatical and literary manner. If any words in the student text did not meet this criteria, they were eliminated from the final word count.

The detail in the students' compositions was determined by defining the number of descriptive words (adjectives) that were included by the students. The criteria was such that the qualifying words were those adjectives utilized by the student in a functional grammatical and literary manner. If any descriptive works in the student text did not meet this criteria, they were eliminated from the final descriptive word count.

The following is an example of the final print out of a student's composition from the desktop publishing group:

THE LION THAT COULDN'T ROAR

Once upon a time there was a big lion who couldn't roar. He tried and tried to roar but he couldn't. In the jungle there was a huge tornado that hit Africa and it damaged the jungle. Big wind. The lion tried to roar and he did! He roared the tornado away and the jungle was safe again!

When evaluating this example using the Chirip Comprehensive Writing Evaluation, it is determined that there are 56 comprehensive words in the length. All of the sentences included comprehensive words except for "Big wind." These words were excluded from the final count. It was also determined that this composition contained 2 descriptive words in the count for detail. The descriptive words are "big" and "huge."

Once the compositions were evaluated, the results of Group I and Group II were compared.

Relationship of the Instrument to the Problem

The data collected from the evaluation of the students' final compositions will guide the future development and revision of a scope and sequence of an elementary school computer curriculum that would be appropriate for students in first grade. It will also guide in the planning, use, and distribution of available computers in Gloucester Township Schools, especially at James W. Lilley, Jr. Elementary School.

Procedure

Two groups of students were formed by matching their Reading and Language abilities as closely as possible. Group I was the experimental group that received 40 minutes of primary writing instruction per week using The Children's Writing and Publishing Center, desktop publishing program. Group II was the control group that received 40 minutes of writing instruction per week using pencil and paper. There were 12 students in each group.

Group I (the experimental group) was given primary writing instruction using the program, The Children's Writing and Publishing

Center. The students were monitored as much as possible. These students used the computer program 2 days per week, for 20 minutes each day. The procedures involved 5 process writing lessons over a 10 week period of time. One writing lesson was taught at the beginning of every other week.

Group II (the control group) received 40 minutes per week of primary writing instruction through the more traditional pencil and paper approach. These students worked on process writing for 2 days per week for 20 minutes each day. The procedures involved 5 lessons over a 10 week period of time; equal to the time spent by Group I.

Both Group I and Group II were monitored as closely as possible. Equal treatment was also given to both groups, as the time spent writing and the number of process writing lessons each group received was equal. The 5 process writing lessons that were taught at the beginning of every other week, introduced the same skills to both groups as similarly as possible, given the differences in their writing tools.

Before the study began, the first graders were already familiar with the structure of sentences; including nouns, proper nouns, verbs, adjectives, capitalization and punctuation. The students previously learned the structure of a simple story, and how to

include the following components: characters, setting, conflict, and resolution. They also learned how to brainstorm ideas on paper. It was at this point in the process of composing a piece of writing that the study was initiated.

The first lesson for the first grade children was to refer to their brainstorming and create an illustration from which to develop a story. The desktop publishing group (Group I) was taught how to use the software in order to choose, place, and manipulate pictures in their document. The traditional group (Group II) used paper, pencils, and crayons to draw their pictures. The second lesson was to actually write the story. The desktop publishing group was taught how to use the keyboard to type in the letters that would form words, and how to space between those words. The traditional group simply hand wrote a first draft with pencil and paper. The third and fourth lessons involved how to handle simple editing and revision. Group I was taught how to use the directional keys (arrow keys), and the delete key on the keyboard to go back into their story and insert or delete necessary words. Group II learned how to go back into their stories using a pencil. They learned the editing marks for insert and delete. The fourth lesson involved simple grammatical editing. Group I learned how to go back into their story and insert or delete necessary capitalization and punctuation via the keyboard.

Group II went back into their stories with a pencil and eraser. This group simply erased and fixed any capitalization or punctuation errors. The fifth lesson involved comprehension. The students in the desktop publishing group printed out their stories and read them to a partner in order for both students to evaluate the fluency of their stories. The students then knew how to go back and make changes if necessary. The traditional group read their written draft with a partner and also knew how to go back and make changes if necessary. Finally, the desktop publishing group printed out their stories via the computer printer. The traditional group hand wrote their final copies interpreting and including all of the necessary editing.

At the end of the ten week period of time, all of the students were given the same writing assignment. The assignment was open-ended, as the students were given a topic, but were permitted to create their stories independently. The assignment was to write a story about their favorite animal, as they had been learning about animals this year. The students were required to write their composition by incorporating their newly acquired skills to the best of their ability. They revised and edited their work, made changes, and printed or hand wrote their final copies for classroom publication.

Summary

This chapter describes the setting, population, and testing instruments used. A total of twenty four students were involved in the study, divided into groups that matched their overall Reading and Language abilities. All of the students were given the same writing assignment after the completion of a series of process writing lessons and independent work time. The students' compositions were evaluated and the results of the two groups were compared.

The information in this chapter is vital because the data collected from the evaluation of the students' final compositions will aid the development of the future planning of a comprehensive computer curriculum for grade one at James W. Lilley, Jr. Elementary School, and possibly other elementary schools, in the Gloucester Township School District. It will also guide in the planning of the use and distribution of available computers.

Chapter Four

Analysis of the Data

Introduction

This study gathered information to determine if significant differences in composition writing would result from students who learned the process of writing through the use of two different writing mediums. The writing mediums used were a desktop publishing program and the more traditional pencil and paper. Desktop publishing consisted of structured lessons using The Children's Writing and Publishing Center, and independent student writing time. Each lesson involved a different skill relevant to composition writing. The traditional approach consisted of structured lessons consistently including the same skills as the desktop publishing, however only paper and pencil were used. This

group also received the same amount of independent writing time. The students' writing from each group was evaluated and compared.

Specific writing skills were measured when evaluating the students' compositions. The length and the detail of the students' writing was the focus of the evaluation. The length of the compositions was measured by calculating the number of comprehensive words in the final writing assignment. The detail of the students' writing was measured by calculating the number of comprehensive descriptive words, or adjectives, in the compositions.

The hypothesis tested was:

There will be no significant difference in the length and detail of student compositions between those students who receive primary writing instruction using a desktop publishing program, and those students receiving primary writing instruction using the traditional pencil and paper approach.

Analysis of Data Related to the Null Hypothesis

The results of the length of student compositions for Group I and Group II are shown in Table 1. The number of comprehensive words from each of the groups is shown, as well as the difference mean. The length of compositions for the desktop publishing group

ranged from a low of 33 to a high of 103 number of comprehensive words, resulting in a mean of 71.66. The length of compositions for the pencil and paper group ranged from a low of 31 to a high of 84, resulting in a mean of 62.50.

TABLE 1

Results of the Lengths of Student Compositions as Measured by the Chirip Comprehensive Writing Evaluation

<u>GROUP I</u>		<u>GROUP II</u>		
<u>DESKTOP PUBLISHING</u>		<u>PENCIL AND PAPER</u>		
<u>STUDENT</u>	<u>NUMBER OF WORDS</u>	<u>STUDENT</u>	<u>NUMBER OF WORDS</u>	
A	56	A	45	
B	90	B	62	
C	87	C	59	
D	65	D	78	
E	74	E	67	
F	77	F	80	
G	103	G	53	
H	67	H	71	
I	91	I	49	
J	53	J	84	
K	33	K	71	
L	64	L	31	
				DIFFERENCE
MEAN=	71.666		62.500	9.166
RANGE=	70.000		53.000	17.000

The results of the detail of student compositions for Group I and Group II are shown in Table 2. The number of comprehensive descriptive words from each of the groups is shown, as well as the difference mean. The detail of the compositions for the desktop publishing group ranged from a low of 0 to a high of 7 number of comprehensive descriptive words, resulting in a mean of 3.33. The detail of compositions for the pencil and paper group ranged from a low of 1 to a high of 5 number of comprehensive descriptive words, resulting in a mean of 3.17.

TABLE 2
Results of the Detail of Student Compositions as Measured
by the Chirip Comprehensive Writing Evaluation

<u>GROUP I</u>		<u>GROUP II</u>		
<u>DESKTOP PUBLISHING</u>		<u>PENCIL AND PAPER</u>		
<u>STUDENT</u>	<u>NUMBER OF WORDS</u>	<u>STUDENT</u>	<u>NUMBER OF WORDS</u>	
A	1	A	2	
B	3	B	4	
C	4	C	3	
D	2	D	4	
E	3	E	4	
F	3	F	5	
G	6	G	2	
H	4	H	4	
I	7	I	3	
J	4	J	4	
K	0	K	2	
L	3	L	1	
			DIFFERENCE	
MEAN=	3.333		3.166	.167
RANGE=	7.000		4.000	3.000

Table 3 is the summary of the means of the length and detail of Group I, the length and detail of Group II, and the differences. Group I had a length mean of 71.67, while Group II had a length mean of 62.50. The difference mean was 9.167. Group I had a mean of 3.33 descriptive words, while Group II had a mean of 3.17 descriptive words. The difference mean was .167.

TABLE 3

Comparison of the Length and Detail for Group I and Group II

	<u>GROUP I MEAN</u>	<u>GROUP II MEAN</u>	<u>DIFFERENCE MEAN</u>
LENGTH	71.666	62.500	9.166
DETAIL	3.333	3.166	.167

A t-Test was used to determine the statistical significance of the length of the writing of Group I and Group II. The results of the test run using the program STAT VIEW II, are shown in Table 4. The mean of the length for Group I was 71.67, with a standard deviation of 19.50. The mean of the length for Group II was 62.50, with a

standard deviation of 15.80. Thus, there was not a significant difference ($t=.3841$) between the length of compositions of the two groups.

TABLE 4

t-Test for the Difference Between the
Length of Group I and Group II

OBSERVATION	SAMPLE 1	SAMPLE 2
1	56	78
2	90	49
3	87	53
4	65	71
5	74	62
6	77	59
7	103	31
8	67	67
9	91	45
10	53	80
11	33	84
12	64	71
MEANS:	SAMPLE MEAN1=71.666	SAMPLE MEAN2=62.500
	STAN DEV 1 =19.500	STAN DEV 2 =15.800
HYPOTHESIZED DIFFERENCE = 0.0000		
t STATISTICS = 0.3841		
DEGREES OF FREEDOM = 11		
LEVEL OF SIGNIFICANCE = 0.05		

A t-Test was used to determine the statistical significance of the detail of the writing of Group I and Group II. The results of the

test run using the program STAT VIEW II, are shown in Table 5. The mean of the detail for Group I was 3.33 with a standard deviation of 1.90. The mean of the detail for Group II was 3.16, with a standard deviation of 1.20. Thus, there was not a significant difference ($t=0.7949$) between the detail of compositions of the two groups.

TABLE 5

t-Test for the Difference Between the
Detail of Group I and Group II

OBSERVATION	SAMPLE 1	SAMPLE 2
1	1	2
2	3	4
3	4	3
4	2	4
5	3	4
6	3	5
7	6	2
8	4	4
9	7	3
10	4	4
11	0	2
12	3	1
MEANS:	SAMPLE MEAN1= 3.333	SAMPLE MEAN2= 3.166
	STAN DEVI = 1.900	STAN DEVI = 1.200
HYPOTHESIZED DIFFERENCE	= 0.0000	
t STATISTICS	= 0.7949	
DEGREES OF FREEDOM	= 11	
LEVEL OF SIGNIFICANCE	= 0.05	

Summary

The results of the data show that there is not a significant difference between the group which received primary writing instruction using a desktop publishing program and the group which received primary writing instruction using the traditional pencil and paper approach.

Chapter Five

Conclusions and Recommendations

Summary of the Problem

The purpose of this study was to determine if the method of teaching process writing using a desktop publishing program would affect the length and detail of students' compositions. The study involved 24 children from the same first grade class.

The hypothesis for this study stated that there would be no significant difference in the length and detail of compositions written by those first grade students receiving primary writing instruction

using The Children's Writing and Publishing Center, and those first grade students instructed using the traditional pencil and paper approach, as measured by the Chirip Comprehensive Writing Evaluation.

Summary of the Method of Investigation

A total of 24 students from the same first grade class were selected for this study. All of the students were able to receive primary writing instruction from the same teacher. The students were divided into two groups according to their Reading and Language subject-area grade point averages. The students' abilities were matched as closely as possible. Group I, the desktop publishing group, received primary wiring instruction using The Children's Writing and Publishing Center, software package. Group II, the control group, received equivalent writing instruction using only traditional pencil and paper. The students were given equal instructional time and individual writing time. At the conclusion of the study, all of the students were given the same writing assignment which was to utilize all of the skills they had learned over the 10 week period of time. The two groups of compositions

were evaluated. The length and detail of the compositions was determined by the Chirip Comprehensive Writing Evaluation. The results of the writing evaluation were studied and compared.

Summary of the Findings and Conclusion

Both the desktop publishing group and the pencil and paper group produced compositions with a similar degree of length and detail. The detail, specifically, was almost identical. Both methods of instruction resulted in quality compositions produced by the first grade students.

Therefore the null hypothesis of this study was accepted.

Implications

The results of this study show no significant difference in the length and detail of student compositions written by those first grade students who received primary writing instruction using The Children's Writing and Publishing Center, and those first grade students who received primary writing instruction using only pencil

and paper. Most classrooms have limited computer availability and an already crowded schedule. Therefore, teachers must seriously consider the advantages and disadvantages of teaching primary writing instruction through the sole use of a desktop publishing software program. The results of this study seem to indicate that first grade children, provided with sufficient and appropriate primary writing instruction, can produce quality compositions regardless of whether they are exposed to a desktop publishing software program, or pencil and paper. It seems that making the software available in the classroom for occasional publication use may be adequate for first grade students.

Although it could not be proven by statistical analysis, there seems to be a trend toward a longer composition length written by those students who received primary writing instruction using The Children's Writing and Publishing Center. This could be attributed to the possibility that the use of the desktop publishing program may be superior to using pencil and paper. The related literature seems to support this conclusion. This trend could also be attributed to the novelty of having the opportunity to utilize a computer in first grade. The young children seemed to be entertained by the computer itself, and eager to experiment with its capabilities. The computer helped to increase the attention span of these six and seven year olds, and

therefore increased the length of time they spent working on their compositions and the length of the composition itself.

Using the desktop publishing program with first graders also encouraged the interaction between student and teacher, and had a positive effect on their interactions with peers. The students were required to read and reread their own compositions and became involved in reading peers' stories. This group was motivated to share neatly printed stories with classmates, friends, and family. Desktop publishing makes the process and end result very attractive.

Recommendations for Further Study

The following recommendations are based on the findings of this study:

1. A larger and more diverse sample of students should be used. The small size of the sample and the academic abilities of the students involved in this study may have affected the results.

2. A follow-up study should be conducted on the continuing use of desktop publishing in the upper grades to determine if the first grade students who utilized the desktop publishing program

were more successful than those students using the software for the first time.

3. A period of introduction to the computer and keyboard familiarization should have been included to overcome any physical obstacles that may have arisen for those students using a computer for the first time.

4. Further testing should be conducted to determine the value of desktop publishing in first grade.

Appendix

COMMUNITY TYPES AND DISTRICT FACTOR GROUPS

(as defined by the New Jersey Department of Education)

A. Community Types

1. Urban Center (UC): densely populated with extensive development.
2. Urban-Suburban (US): near an urban center but not as highly developed, with larger residential areas.
3. Suburban (S): predominately single-family residential within a short distance of and urban area.
4. Suburban-Rural (SR): rapidly developing area, but still large tracts of open land available for development.
5. Rural (R): scattered small communities and isolated single-family swellings.
6. Rural Center (RC): high-density core area with surrounding rural municipalities.
7. Rural Center Rural (RCR): small developed core area surrounded by rural areas.

8. Vocational (V): primary emphasis on vocational training under a separate jurisdiction.
9. Regional District (RD): an educational jurisdiction established to service several surrounding communities.

B. District Factor Groups

The District Factor Group (DFG) is an indicator of the socioeconomic status of citizens in each district and has been useful for the comparative reporting of test results from the statewide testing programs. The measure was first developed in 1974 using demographic variables from the 1970 United States Census. Since that time, however, the socioeconomic status of some districts may have changed considerably. Therefore, an updating of the DFG designations was needed. The DFG's have been updated using seven socioeconomic variables from the 1980 United States Census. these are:

(1) Educational Level

- 1 = elementary (0-8 years) through high school (1-3 years)
- 2 = high school (4 years)
- 3 = college (1-3 years)
- 4 = college (4 years)
- 5 = college (5+ years)

(2) Occupational Status

1 = laborers

2 = service workers (except private and protective)

3 = farm workers

4 = operatives and kindred workers

5 = protective service workers

6 = sales workers

7 = clerical and kindred workers

8 = craftsmen, foremen, and proprietors

9 = quasi-professionals

10 = managers, official, and proprietors

11 = old and new professionals

(3) Density

number of persons per household

(4) Urbanization

percent of district considered urban

(5) Income

median family income

(6) Unemployment

percent of those in the work force who received some
unemployment compensation in 1979

(7) Poverty

percent of residents below the poverty level in 1979

The variables were combined using a statistical technique called principal component analysis, which resulted in a single measure of socioeconomic status for each district. Districts were then ranked according to their value on this measure and divided into 10 equal-sized groups. Hence, DFG's range from A (lowest socioeconomic districts) to a J (highest socioeconomic districts). In addition, special service districts are not included and all vocational districts are designated DFG "V".

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