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A COMPARATIVE ANALYSIS OF THE EFFECTS OF MANUSCRIPT AND CURSIVE HANDWRITING ON DECODING AND ENCODING SKILLS OF 40 THIRD GRADE STUDENTS

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has been accepted towards fulfillment of the requirements for

Ph.D. degree in <u>Administration</u> and Curriculum

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By

Thomas Henry LaHaie

A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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ABSTRACT

By

Thomas Henry LaHaie

This study was concerned with the effects of manuscript and cursive handwriting formats on specific decoding and encoding skills of 40 third grade students entering fourth grade. The subjects were divided into below average and above average reading achievement groups based on teacher judgment which was verified with an informal word pronunciation test and oral reading of graded paragraphs.

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Subjects were tested for dominant visualization format of words. They identified letters in lower case cursive and manuscript formats. Students pronounced matched word lists presented in typed, manuscript, and cursive formats. Students read matched paragraphs, at first grade reading difficulty, in typed, manuscript, and cursive formats. They encoded the lower case alphabet and eight words in manuscript and cursive formats. Subjects indicated a preference for reading and handwriting in either manuscript or cursive formats. A repeated measures analysis of variance and other measures of significance lead to the following conclusions. The predominant format for visualization of words by both groups is lower case manuscript. Above average students can readily identify lower case cursive letters, but below average reading achievement students exhibit varied abilities with some students having considerable difficulty in cursive letter identification. Both groups can identify cursive letter errors in manuscript format and have no difficulty with letter recognition of lower case manuscript letters.

Both groups pronounce matched word lists more slowly in cursive format than in manuscript format. The cursive word format was not found to be a greater detriment for the below average than the above average reading achievement students.

Both groups read handwritten cursive paragraphs more slowly than typed or handwritten manuscript paragraphs. The cursive paragraph format was not found to be a greater detriment for the below average than the above average reading achievement students.

Encoding in cursive format is slower than encoding in manuscript for both groups. For several students in both groups, cursive encoding is significantly slower than manuscript encoding. A few students experience serious difficulty with cursive handwriting, taking nearly twice as long to encode when compared to manuscript handwriting. Student preferences for reading and handwriting manuscript and cursive formats are varied and were not found to be significantly different.

DEDICATION

A scholar, a gentle man, and a friend,

Dr. George Sherman

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CHAPTER I

DEFINITION OF THE PROBLEM

Introduction

There are many possible factors which contribute to delayed progress in learning to read. Learning to read is a complex process requiring several perceptual and cognitive tasks. Some of the tasks are subjective in nature in that they are dependent upon factors unique to the individual and are frequently classified as physiological, psychological, linguistic, educational, and socioeconomic influences. Other tasks are objective in nature in that they relate to the scope and sequence of instruction that the child receives while learning to read. These tasks include phonics skills, structural analysis of words, recognition of high frequency words, the ability to read words in phrases with appropriate response to punctuation as well as reliance upon syntactic and semantic contextual information. Because of the complexity involved in learning to read, progress in reading achievement in the primary grades is varied with students learning at different rates.

At the end of third grade, some students are considered to have below-average reading achievement because they have not acquired adequate proficiency in the decoding

skills of word analysis and word recognition which facilitate fluent reading. One explanation for this delayed progress in learning to read may be related to the visual perception tasks which require accurate recognition and use of the graphic symbol system. The visual perception tasks of letter and word recognition required to decode and encode the manuscript and cursive symbol systems are the primary interest of this thesis.

From preschool until second grade, students normally learn to read and handwrite using an unjoined manuscript letter symbol system. During the second or third grade, a joined cursive letter symbol system is usually taught to these students. This transition to a somewhat different visual symbol system occurs at a sensitive time in the process of learning to read. It may confound some students who have inadequacies in word analysis and word recognition skills and may either delay or retard decoding and encoding achievement. These students have not acquired a relative degree of mastery in decoding and encoding skills in the manuscript format, and the tasks which they are attempting may be made more difficult as a result of this transition to and use of a second symbol system.

This study will examine the relationships of manuscript and cursive handwriting to decoding and encoding skills of 40 students entering fourth grade who have below average and above average reading achievement levels. More

specifically, it will investigate how students visualize words and how manuscript and cursive handwriting affect the decoding skills of letter recognition, word pronunciation, and oral reading of paragraphs. It will also investigate student abilities to encode letters and words in manuscript and cursive handwriting formats. A part of the study will be concerned with student preferences for reading and handwriting the two symbol systems.

The remainder of this chapter includes a general definition of the thesis problem. It will begin with a background description of the scope and sequence of reading and handwriting skills from preschool through the primary grades. The focus of the study, which involves the nature of the controversy of using two symbol systems, will be stated. The purposes and goals will be described and related to the hypotheses which will be tested. The hypotheses will be stated, and terms used in the study will be defined. The chapter will conclude with an outline of the remaining chapters in this thesis.

Background

A major component in the reading process is the ability to decode the symbol system used to record written language. This decoding ability includes the visual perception task which requires recognition of graphic stimuli and subsequent response which may include corresponding auditory response. The sounds of letters, syllables, and

words are associated with their visual representations. Simply stated, decoding is the recognition of the link between the written words and spoken words.

Successful reading and handwriting are both predicated, in part, on accurate visual perception of the graphic symbol system consisting of letters and words. The first step in the reading process is the ability to decode the symbol system. The first step in the handwriting process is the ability to encode the symbol system. Research by Tinker, Hildreth, and others indicates that there is a positive correlation between legibility and the degree to which letters and words of the symbol system have distinctive features which resemble the print used in machine printed materials.

In his classic work, <u>Legibility of Print</u> (1963), Tinker discusses the nature of legibility and the reading process

Legibility, then, is concerned with perceiving letters and words, and with the reading of continuous textual material. The shapes of letters must be discriminated, the characteristic word forms perceived, and continuous text read accurately, rapidly, easily, and with understanding . . . In other words, legibility deals with the coordination of those typographical factors inherent in letters and other symbols, words, and connected textual material which affect ease and speed of reading (p. 7).

Hildreth (1960) applies this same concept of legibility to handwriting systems.

All perception studies show that the farther hand-written letter forms depart from the vertical the less legible they become. Joining the letters, increasing the slant, elongation of the letters, and added loops all decrease legibility, because legibility is directly proportionate to the degree of similarity between machine printed type-face and handwriting style . . . To the extent that word forms in handwriting deviate from machine printed words, the words are less legible (p. 5).

It is reasonable to question that manuscript and cursive symbol systems may have different degrees of legibility and that children confronted with decoding and encoding the two systems may have varying degrees of success with these tasks due to legibility differences. Until children reach the second or third grade, they usually decode and encode only the manuscript symbol system. Their progress in learning to decode and encode is varied with some students learning faster than others.

In the second or third grade, students normally are introduced to the cursive symbol system. This system resembles the print used in machine printed materials to a lesser degree than does the manuscript system. It may prove to be less legible in that the beginning reader will require more time to decode letters and words as well as increase their error rate in letter recognition and word pronunciation. The use of the cursive system for encoding tasks may also retard the child's performance on decoding tasks.

A description of the scope and sequence of decoding and encoding skills from preschool through third grade

should provide additional insight into the problem and purpose of this study. The following description of this developmental sequence is based on this writer's 10 years of teaching experience in the primary grades. This experience includes seven years as a first grade teacher and five years as teacher/supervisor in remedial reading clinics sponsored by Michigan State University. The scope and sequence of reading and handwriting skills are highly similar to the reading process in preschool years and the primary grades as described by Durkin (1966, 1970, 1980).

Preschool children begin their efforts to read and handwrite using upper case letters of the manuscript alphabet. These letters are used in television and other advertisements. Children copy their names, words such as MOM, DAD, LOVE, SANTA CLAUS, and other meaningful words which they have seen and want to handwrite.

During the half day sessions of kindergarten, a major part of the curriculum is concerned with readiness skills for learning to read and handwrite. Students learn the names and sounds of letters and practice writing them. At the end of the year, these five and six year old students become first graders who go to school all day and who are expected to learn to read and handwrite before advancing to second grade.

Most students are relatively successful in learning to read, handwrite, and spell while in first grade. They begin to read from books and materials which have large

print similar to the manuscript writing system that they are learning to handwrite. At the end of first grade, they know all of the letters of the alphabet, can recognize many high frequency words, can sound out words using phonics skill, are aware of word expansion techniques, use punctuation signals, and can read groups of words and phrases with a degree of fluency comparable to their spoken language. They are capable of copying and handwriting words and sentences using manuscript letters.

This reading and handwriting instruction is mutually reinforcing and allows the transfer and use of similar skills in each of the language processes. Students read their own handwriting and writing that has been done by others. Their handwriting experiences are opportunities to understand similarities and differences in words which helps in the areas of word recognition, expansion of sight vocabulary, and development of accuracy in spelling. In general, students entering second grade are unable to read or handwrite the cursive alphabet system.

During the second grade and third grade years, students continue to develop reading skills and are expected to read much greater quantities of material than during their first grade experience. They continue to practice their handwriting skills using manuscript letters for spelling and writing assignments. It is at this sensitive developmental stage in the sequence of beginning reading and handwriting learning that the cursive symbol system is

added. A transition is made from the previously used manuscript alphabet to the cursive alphabet. The use of two symbol formats, manuscript and cursive, and their effect on decoding and encoding skills is the genesis of the problem of the thesis.

Statement of the Problem

The problem of this study can be stated in the form of a central question: does the use of two graphic symbol systems confound visual perception tasks required to decode and encode letters and words which are initial steps in learning to read and handwrite?

When the cursive system is introduced at the second or third grade level, students are now confronted with the visual perception tasks of recognizing not only 52 new letters with different, distinctive features, but also words which are visually different from their manuscript and machine printed appearances. They are expected to learn to read cursive handwriting successfully in a few months with limited instruction. They begin to practice spelling assignments using the cursive alphabet and are expected to use cursive handwriting in their compositions and to reduce the use of the manuscript style.

Students may be confused by and have difficulty with letter recognition of the cursive alphabet. They may have difficulty with the pronunciation of high frequency words when presented in cursive format. They may experience

difficulty in reading material which is written in cursive handwriting. The transition to the cursive handwriting system may confuse them in their abilities to encode letters and words. There may be a differential effect which indicates that tasks involving cursive symbols in decoding and encoding present a more difficult learning task for the below average reader than the above average reader.

Purpose of the Study

The purpose of the study is to investigate the relationships of manuscript and cursive handwriting to decoding and encoding skills of third grade students entering fourth grade and having different reading achievement levels. The investigation will test hypotheses developed from the following questions.

In what format do students visualize words? Can students identify letters in manuscript format which they have incorrectly identified in cursive format? How do student abilities differ in the pronunciation of matched words in manuscript and cursive formats? How do student abilities differ in the encoding of letters and words in manuscript and cursive formats? Does a differential effect operate in the use of the cursive symbol system to the greater detriment of the below average readers? What are student preferences for the reading and handwriting of the two symbol systems?

Statement of Hypotheses

Hypothesis One

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL VISUALIZE WORDS IN

Hypothesis Two

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL CORRECTLY IDENTIFY LETTERS IN MANUSCRIPT FORMAT THAT PREVIOUSLY HAD BEEN IDENTIFIED INCORRECTLY IN CURSIVE FORMAT.

Hypothesis Three

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL PRONOUNCE MATCHED WORD LISTS MORE SLOWLY IN CURSIVE FORMAT THAN IN MANUSCRIPT FORMAT.

Hypothesis Four

THERE WILL BE A RATE DIFFERENTIAL BETWEEN BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE IN THEIR ABILITIES TO PRONOUNCE MATCHED WORDS IN CURSIVE AND MANUSCRIPT FORMATS.



Hypothesis Five

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL DECODE MATCHED PARA-GRAPHS MORE SLOWLY IN CURSIVE FORMAT THAN IN MANUSCRIPT FORMAT.

Hypothesis Six

THERE WILL BE A RATE DIFFERENTIAL BETWEEN BELOW AVERAGE AND ABOVE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE IN THEIR ABILITIES TO DECODE MATCHED PARA-GRAPHS IN CURSIVE AND MANUSCRIPT FORMATS.

Hypothesis Seven

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL ENCODE LETTERS AND WORDS MORE SLOWLY IN CURSIVE THAN IN MANUSCRIPT FORMAT.

Hypothesis Eight

THERE WILL BE A RATE DIFFERENTIAL BETWEEN BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE IN THEIR ABILITY TO ENCODE LETTERS AND WORDS IN CURSIVE AND MANUSCRIPT FORMATS.

Hypothesis Nine

BELOW AVERAGE AND ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL REPORT IT IS EASIER TO READ MANUSCRIPT THAN CURSIVE HANDWRITING.

Hypothesis Ten

BELOW AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL REPORT IT IS EASIER TO HANDWRITE USING MANUSCRIPT RATHER THAN CURSIVE HANDWRITING.

Hypothesis Eleven

ABOVE AVERAGE READING ACHIEVEMENT STUDENTS ENTERING FOURTH GRADE WILL REPORT IT IS EASIER TO HANDWRITE USING CURSIVE RATHER THAN MANUSCRIPT HANDWRITING.

In summary, the use of different handwriting systems is a source of controversy among educators because of suspected difficulties which are confronted by students who are learning to read, handwrite, and spell. It also is alleged that there is a high degree of illegibility of students' handwriting in the upper grades and adults' handwriting which is frequently a composite of various symbol systems. The difficulties in learning to read and handwrite may be partially the result of the teaching of two handwriting systems. There is a need to investigate this situation in an attempt to find answers to several questions which may facilitate learning to read, handwrite, and spell and improve the legibility of handwritten communications within the schools and in other circumstances in which legible handwriting is important. An important outcome of the study will be to suggest additional related questions and theoretical concepts which might be

researched in the continuing effort to improve reading and handwriting instruction.

Thesis Outline

Chapter I has been concerned with a general definition of the problem of this dissertation and includes a definition of key words used in the study.

Chapter II will be a review of precedent literature and will establish a rationale for the development of the hypotheses. Primary sources, related to the construction of the hypotheses, will be reported and critiqued. Secondary sources, related to the dual system controversy, will be chronologically reviewed.

Chapter III will be devoted to the statement of the hypotheses. It will include a description of the subject population and rationale for group selection. There will be a statement concerning limitations and assumptions pertinent to the thesis. There will be a description of the instruments used to measure subject performance and a scope and sequence of tasks to be performed by the subjects. Methods of preliminary data recording and the use of computer processing will be explained.

Chapter IV will be an analysis of data to test the hypotheses and will include a description of the statistical techniques used in the analysis of the data. The methodology is based on a correlational design which investigates the interaction effects among the variables in

the hypotheses. A repeated measures analysis of variance will be used to determine if there is a statistically significant interaction present in the data concerned with typed, manuscript, and cursive formats of the two different subject groups for word pronunciation, paragraph reading, and encoding tasks. The chi square test of significance will be applied to determine if a significant difference is present in the data concerning reading and handwriting preferences of the two groups. Correlation coefficients will be obtained to quantify the extent to which the variables are related.

Chapter V will be the conclusion of the study with recommendations for additional research related to this dissertation. Appendices and bibliographic information will follow the final chapter.

Definition of Terms in the Study

<u>Manuscript</u>: an alphabet style in which letters are made mostly with straight lines and circles and are unjoined when writing words.

<u>Cursive</u>: an alphabet style in which letters are made mostly with curved lines, loops, and circles which are joined when writing words.

Lower case: the smaller letters of an alphabet sometimes referred to as minuscules.

<u>Upper case</u>: the larger letters of an alphabet sometimes referred to as capital letters or majuscules. <u>Visualization</u>: how letters and words are perceived mentally in their graphic form; the process of stimulus recall which involves mental perception of images; how letters and words are seen behind the eyes.

Letter identification: the task of responding with the name of a letter when presented with the stimulus of its graphic representation.

<u>Word lists</u>: isolated words arranged in vertical columns that are pronounced by an individual to assess knowledge of high frequency words and decoding skills.

<u>High frequency words</u>: words which occur most often in various kinds of reading material.

<u>Pronunciation</u>: the task of saying a word when presented with the stimulus of its graphic representation.

Oral reading: the task of saying aloud words and phrases which make up sentences and text of various kinds of reading material.

<u>Graded paragraphs</u>: paragraphs written at various grade levels with controlled vocabularies and sentence length.

<u>Speed</u>: the time required to perform a task; in this study, time was measured in seconds for performance of decoding and encoding tasks.

<u>Accuracy</u>: the degree to which a task is performed correctly; in this study, the tasks were to identify letters, to pronounce words, and to encode letters and words. <u>Decoding</u>: associating graphic stimuli with a corresponding auditory response.

Legibility: the rate, measured in time and accuracy, of decoding graphic material.

Encoding: the visual motor task of handwriting graphic symbols.

Below average: an arbitrary grouping which indicates performance in the lower one-third achievement range.

<u>Above average</u>: an arbitrary grouping which indicates performance in the upper one-third achievement range.

<u>Preference</u>: an indication that one type for format is more desirable than an alternative format.

<u>Symbol</u>: a graphic representation with which a meaning is associated.

<u>Format</u>: the style of a graphic representation such as typewritten, cursive, or manuscript.

Handwriting: the visual motor task of encoding letters and words.

<u>Differential</u>: a form of measurement which indicates that performance on a task is higher or lower than a predicted expectation.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The purpose of this chapter is to review precedent research and opinion based on experience to provide a historical background and a rationale for the development and formulation of the hypotheses of this study. The literature was identified through an ERIC computer search and manual searches of <u>Dissertation Abstracts</u>. Extensive bibliographies from key studies and articles also provided pertinent reference material (Voorhis, 1931; Monroe, 1952; Harris, 1958; Hildreth, 1960; Anderson, 1965; Otto, 1969; Peck, 1980).

The review will begin with an examination of the historical background which led to the evolution of the two handwriting systems and contemporary viewpoints concerning the incidence and use of manuscript and cursive writing in the schools and adult life. Primary sources, consisting of research related to the controversy of use of manuscript and cursive writing and articles having seminal ideas and opinions related to previous research and this study will be thoroughly reported and critiqued. Secondary sources, consisting primarily of articles in which opinions are

stated concerning the use of the two handwriting systems will be chronologically reviewed. These sources have a less direct bearing on the nature of this study but are relevant in that they provide additional insight into the nature of the problem, its development, and the content of the primary sources.

This review of the historical background and the primary and secondary sources will conclude with some specific questions that are the concern of this study. These questions will provide the basis for the articulation of the hypotheses which are to be tested. The hypotheses and the means of testing them for accuracy will be the content of Chapter III.

Historical Development and Contemporary Viewpoints

The renowned calligrapher Alfred Fairbank (1970, 1975, 1977) thoroughly discussed the evolution of the various styles of handwriting in his several works. Along with extensive bibliographies, he presented photographs and facsimilies from ancient Greek and Roman eras to contemporary times to demonstrate the evolution of handwriting styles.

1

During the first five centuries A.D., only upper case, capital letters were used in handwriting. A later development was the use of lower case letters. Fairbank dates the use of lower case letters to the early part of the sixth century. For the most part, handwriting during the first Ł

<u>15</u> centuries consisted of the use of manuscript type lettering. Various styles of unjoined script were used, and some such as the Gothic were quite difficult to write and read. Fairbank also gave a few examples of joined cursive script which appeared as early as the sixth century. He attributed the use of cursive from the <u>15</u>th to the <u>20</u>th centuries to the use of copper plates for certain types of reading materials. Strokes were joined to facilitate alignment and spacing which were difficult to consistently reproduce using unjoined strokes and the manuscript alphabet.

Fairbank's preference for a writing style was an italic cursive, similar to styles used in the <u>15</u>th and <u>16</u>th centuries. Italic cursive joined manuscript letters and was highly similar to the modern D'Nealian alphabet in its transitional stage between unjoined, slanted manuscript letters and joined cursive script which was like the cursive styles of many other commercial cursive alphabets.

Fairbank (1975) said the "child needs a simple but practical and interesting system" (p. 13). He wrote that "legibility is obviously the first essential virtue of handwriting" (p. 20). He believed that letters should have "simple, distinctive, and proportioned form" with no unnecessary parts that may be the "cause of confusion" (p. 21). Print-script, he asserted, is of "assistance in teaching both reading and writing, since one alphabet serves two purposes" (p. 26).

Edward Johnston was credited by Fairbank (1977) with the introduction of manuscript into schools in England. Johnson (1906) suggested an "ideal course" for children's penmanship. Soon after

London schools began experimenting . . . and printscript, consisting of letters made of straight lines, circles, and parts of circles, and having some relationship to Johnston's skeleton letters, began to replace the hands of the copperplate tradition in the infant's schools (p. 25).

Teachers were enthusiastic about this new handwriting system because there "was a seeming economy in having to learn but one alphabet for both reading and writing, and enthusiasm was felt for the simplicity of the system" (p. 25).

According to Keim (1931), prior to the 1920s there was only one school in the United States that taught manuscript writing. This new style of handwriting was introduced in the United States by Marjorie Wise. In 1921 she taught courses in this style of writing at Teachers College, Columbia University. Keim agreed with Wise that manuscript was "more legible than cursive, that less time is consumed in teaching beginning reading and writing when a similar alphabet is used for both, and that manuscript is easier to acquire" (p. 125). Wise (1924), Hill (1924), and Kimmins (1924), along with Keim, contended that manuscript was a revival of the original handwriting from which present print and handwriting forms have evolved.

Keim stated that, 10 years after its introduction into American schools, there was an "experimental attitude

toward manuscript writing" and that its use was "confined to schools that are free to experiment in education" (p. 126). Freeman and Polkinghorne conducted separate surveys in 1946 to determine the incidence of use of manuscript and cursive writing in schools throughout the United States. Freeman (1946) included respondents from several states and 727 school systems in his survey. He reported that 84% of the cities of the country used manuscript writing in the first and second grades.

Polkinghorne (1946) included private schools and teacher-training institutions in her survey. Her report included 180 respondents from 44 states. She reported that almost 90% of the schools used manuscript writing for beginning instruction and that 66% of the schools shifted from manuscript to cursive writing in the third grade.

Another survey was conducted by Herrick (1963). His extensive survey of over 600 school systems found nearly 80% teaching both manuscript and cursive handwriting. Seventy percent of the respondents made the transition from manuscript to cursive somewhere between the last half of the second grade and the first half of fourth grade. In general, most commercial handwriting systems recommend transition at the mid point of second grade and publish transitional materials for the second grade level.
Nature of the Controversy and Need for Research

Anderson (1965) reported that "the manuscript-cursive controversy for the most part has centered around the following factors: (1) legibility, (2) speed, and (3) ease of learning" (p. 116). It was his opinion that most evidence

. . . would indicate that manuscript is more legible than cursive, that it can be written as fast or possibly faster than cursive, that it can be learned more easily by both children and adults than cursive (p. 119).

Of similar opinions were Hildreth (1960) and Templin (1964). Hildreth stated that cursive writing was a "manifest source of waste" which should be eliminated. Templin argued in favor of manuscript writing and against cursive stating that "such duality of learning and performance" (p. 386) does not exist in other areas of the curriculum. She also believed that there were many indications that the transition from the manuscript to the cursive styles of handwriting at any age or at any grade level tended to result in less legible adult handwriting.

Templin's concern about the illegibility of adult handwriting echoed a study done by Newland (1932). He concluded that, based on his analysis of over 2000 writing samples of children and adults, illegibilities tended to increase with age. "It is interesting to note," Newland wrote, "that the adults wrote more than three times more illegibly than did the elementary school children" (p. 254).

O'Brien (1959) commented on the economic waste resulting from the dual system. Illegibility in the use of cursive writing caused millions of letters and other mail to remain undelivered by the postal service. Nearly 400,000 tax returns are delayed each year because of illegible preparation. "Commercial errors due to illegible penmanship (cost business) approximately a million dollars a week" (p. 8). O'Brien cited reform in the Philadelphia public schools. The Philadelphia Simplified Alphabet eliminated "fancy capital letters" and all "unnecessary and potentially misleading scrollwork" and other elements characteristic of cursive alphabets.

Bell (1968) suggested that manuscript writing be used after the primary grades "since manuscript writing is a practical form of writing that can serve all writing needs" and "it may be used in connection with cursive writing, or it may be used exclusively" (p. 81). She contended that manuscript is easier for children who have poor coordination and that "some teachers have found that children with major spelling problems improved when they changed from cursive to manuscript" (p. 83).

Groff (1960) also questioned the efficacy of changing from manuscript to cursive. His review of the literature found no research evidence available to suggest that children prefer cursive to manuscript or that use of cursive resulted in improved quality of written composition. He stated that there was "substantial evidence" to refute

opinions that "cursive handwriting is easier to learn, easier to write, and that errors made in cursive are easier to correct" (p. 100). Groff believed that "none of the research evidence indicates that cursive handwriting is more legible than manuscript" (p. 100).

Western (1977) also was of the opinion that there was a strong case against the use of cursive. Because of the difficulty of learning cursive and using this style of handwriting, he alleged that the quantity and quality of students' compositions were reduced. "Insistence on cursive script in the middle grades and later is simply indefensible. It displaces valuable activities and has no value of its own" (p. 3).

King (1964) and Enstrom (1960, 1968) argued in separate articles that cursive writing was preferred by children as a handwriting style and that it was also preferred by their parents as the type of writing which should be taught to their children. They agreed with Groff that cursive writing had a strong traditional reason for being taught. It was, according to these authors, "grown-up writing" and a "sign of growing up."

During the past five years, this researcher has collected hundreds of handwriting samples from high school and college students, elementary and secondary school teachers, and other adults. Most of the samples are of cursive handwriting but also included in the collection are many examples of manuscript handwriting. These individuals were

asked to handwrite material using both manuscript and cursive formats. As a general observation, it has been found that both styles can be written with comparable speed and ease. Legibility of the samples, however, favors manuscript writing. There is a great deal of variation in cursive styles and a great deal of similarity in manuscript styles. Informal testing also indicates that it is easier for most individuals to read manuscript samples than cursive samples. Based on these observations, it would appear that reading material of a highly similar content is read more quickly and with fewer errors by adult readers if it is in manuscript rather than cursive handwriting format.

Three major articles have appeared in the <u>Encyclopedia</u> of <u>Educational Research</u> on the general subject of handwriting and each has an extensive bibliography. West and Freeman (1941) wrote that "the lack of constructive basic research in the field of handwriting still continues" (p. 528). They reported that

. . . greater rapidity and legibility of manuscript writing and the greater volume of manuscript writing which is produced by children of the primary grades indicate that it is easier to learn than is cursive writing (p. 525).

They stated that "children who use manuscript writing also learn to read more rapidly and are somewhat more accurate in spelling." As the main advantage of manuscript, they cited the "ease of learning and an aid to learning both reading and spelling" (p. 528).

Harris (1958) reported that "there is still need and opportunity for further basic research into those factors directly involved in the handwriting process" (p. 622). He cited the persistent issue of the role of manuscript writing and believed that the evidence supported this style as easier to learn, as being as fast as cursive, and more legible than cursive. He cautioned that "the very terms quality, legibility, and readability as applied to handwriting tend to resist precise definition" (p. 621) and that satisfactory experimental evidence had not been produced to resolve the question of the relative effectiveness of the two styles of handwriting, especially in terms of speed and its effect upon guality. Noting that this was a problem of international concern, Harris noted that "many countries have adopted simple forms of writing to help children overcome certain difficulties in the beginning stages of handwriting instruction" and that this "simplified form of writing is called variously script, print-script, or manuscript writing" (p. 616).

Otto and Anderson (1969) confirm the now nearlyuniversal practice of manuscript writing in grades one and two with a transition to cursive writing in grade two or three. They believed that "no end to the manuscriptcursive discussion is in sight, but perhaps the scope of the discussion will be expanded" (p. 575). Several studies were reported and summarized in favor of the use of manuscript.

There may be little evidence to recommend a change from manuscript to cursive. The former seems to meet the writing needs of adults in terms of both speed and legibility and to be most defensible as a beginning style for children (p. 574).

Peck and others (1980) reported handwriting research done in the 1970s with critical comments and encouragement for further research. They noted that little research had been directed to the production and legibility of letter forms. More research is needed, they suggested, "to identify what modifications in letter forms might be made to make them more legible as well as more easily learned by children" (p. 284). Also mentioned was a need for research to focus on the increase of cursive and manuscript handwriting speed through the grades and the influence of speed on legibility. Concerning the issue of handwriting style in beginning instruction, which is still being debated, they stated that "studies need to be designed comparing the effect of both styles on the handwriting of learning disabled children" (p. 295). In evaluating the quality of research during the 1970s, Peck observed that the research had been more focused on pertinent questions. She concluded, however, that the subject of handwriting and its relationship to the development of the other language arts did not appear to have been thoroughly researched.



Primary Sources: Nature of Manuscript and Cursive Arguments

The review of primary sources will begin with precedent research and opinion which favors the use of the manuscript system. The more limited literature which favors the use of the cursive system will follow the promanuscript arguments.

Marjorie Wise is credited with the introduction of manuscript writing in the United States in 1921. Kimmins (1924) wrote in the introduction to Wise's book On the Technique of Manuscript Writing that manuscript can be written as rapidly as cursive by both boys and girls, ages 7 through 13, based on his research with several thousand children in London schools. Along with acceptable speed of production, Kimmins stated that manuscript "practically removes the disadvantage of two kinds of script with which the child had to content in learning to read and write" (p. 27). He also contended that manuscript was easy for "all children (and) there are no failures as in the case of cursive writing" (p. 27). Kimmins praised the legible nature of manuscript style and suggested that teachers were "practically unanimous" in their beliefs that manuscript results in improvement of spelling. If there were to be a transfer to cursive, Kimmins asserted that manuscript was an excellent basis for transition efforts.

Within a decade of its introduction into the public school curriculum, Gates and Brown (1929) reported that the

use of manuscript writing had been considerably debated but not extensively investigated. Along with Voorhis (1931), they listed the following claims by the proponents of manuscript and the counter claims of the advocates of cursive writing which make up the nature of the debate and an agenda for possible research.

In the 1930s proponents of manuscript writing made the following claims for this style of writing:

- 1. Manuscript is easier for the beginner to learn.
- 2. Manuscript is more rhythmical to write.
- 3. Manuscript satisfies the beginner's desire to write.
- Manuscript writing product is more satisfying to the beginning writer.
- 5. Manuscript is an individualistic as cursive.
- 6. Manuscript is easier to write with less physical strain than cursive.
- 7. Manuscript is easier to write with less eye strain than cursive.
- 8. Manuscript can be written as rapidly as cursive.
- 9. Manuscript is more legible than cursive.
- 10. Manuscript is more pleasing to read.
- 11. Manuscript contributes to the learning of spelling and reading.
- 12. Manuscript contributes to the learning of spelling and composition.
- Manuscript removes the necessity of learning two alphabets, thereby reducing time and effort.

- Manuscript letters form a basis for cursive writing if transition to cursive style is desired.
- Manuscript has received the approval of business men in both England and America.

Advocates of cursive writing denied many of the above claims for manuscript and made the following arguments for cursive writing.

- 1. Cursive is more rapid than manuscript.
- Cursive writing may be difficult to read for children who have been taught manuscript writing.
- Cursive writing promotes individuality in writing whereas manuscript tends toward a stereotyped letter form.
- Cursive is more useful for personal, business, and social needs.
- Cursive writing, rather than manuscript, is generally accepted in the business world.

Nearly four decades later, Gray (1969) wrote that further research was needed before final conclusion could be reached. He also stated that the relative advantages of script and cursive writing have not been studied as extensively as they should. Plattor and Woestehoff (1967) indicated that their "review of the literature reveals a paucity of research dealing with the reading of cursive letter symbols" (p. 50). Hildreth (1960) stated that studies of the relation of reading and writing provided a promising area for research. She contended that there is a need for research on elementary school handwriting: ". . . in this day of urgency in teaching literacy not only in America but around the world, the whole area of handwriting instruction needs to be thoroughly explored" (p. 12).

In their study, Gates and Brown (1929) examined the speed and legibility of student writing in grades one through six using their own data involving 44 first graders and Reeder's (1926) data involving 272 second through sixth graders. Their conclusions were indefinitely stated, and they suggested that "gaps found in the studies here reported, especially in grades two and three, should be filled" (p. 14). Their reported facts indicated little difference in speed of handwriting and legibility of product in all grades regardless of the use of either manuscript or cursive formats. The authors implied that, in their opinions, manuscript should be used in grades one through three and cursive should be used in grades four through six.

They addressed the double alphabet issue by stating two reasons for not learning both that are advocated by proponents of each alphabet style.

The first is that only one is needed and that learning the other would be a waste of time; the second that neither can or will be learned well when both are attempted, or, at the least, learning both makes the learning of either a more difficult task. Interference, conflict, disorganization, it has been said, frequently follow attempts to teach two such antagonistic skills (p. 11)

In discussing cursive alphabets, the authors quoted two other researchers who "find evidence that there still remain in typical cursive alphabets superfluous elements

which retard speed (and) some of these unnecessary letter formations also reduce legibility."

Gates and Brown concluded with a recommendation for a "thorough investigation of all forms of manuscript, printscript, and cursive writing for the purpose of determining the particular mertis of each" (p. 14).

Perhaps by selecting the best elements from cursives and print-scripts, a writing alphabet may be discovered which, by combining the merits of the various existing rivals, will be superior to any one and make the learning of two alphabets unnecessary (p. 14).

Gates and Brown investigated the ease of learning to write cursive and manuscript writing; and in a companion study, Voorhis (1931) was concerned with measuring the relative influence of cursive and manuscript writing on first grade reading. Approximately 190 students in first grade classrooms participated in the study. Using the Gates Primary Reading Test which was administered at four intervals during the school year, student achievement in word recognition; word, phrase, and sentence reading; and reading of directions was measured. One group of students had received writing instruction using the cursive style, and the other group had received writing instruction using manuscript style.

The author matched groups according to ability and attempted to reduce the effect of "teacher personality." She concluded by stating that "all data from this investigation indicate that manuscript is distinctly superior to

cursive writing in the facilitation of beginning reading" (p. 51). Based on her extensive review of the literature, she also wrote that manuscript was found to be significantly more legible than cursive, was more pleasing to read, appeared to be as rapid as cursive, and facilitated learning to read and spell.

Turner (1930) conducted a study in which she read handwriting samples from students in grades two through six. A mirror reading technique was utilized in which the author "was required to read the specimens as they appeared upside down in a mirror placed at the top of the page" (p. 780). Two authors (Bell, 1939; Voorhis, 1931) erroneously report that students, rather than the researcher, read the handwriting samples. The mirror method was adopted to make the reading "so difficult that all the details of the words read must be utilized before the words could be identified." Her conclusion was that the data suggest "manuscript writing produced by elementary school pupils is more legible than cursive writing produced by elementary school pupils" (p. 782). In another part of the study, the author found that it was easier for students to recognize grouped consonant letters in manuscript than in cursive in a flash presentation. In a writing test, students in grades two through five wrote manuscript at a faster rate than cursive, and students in grade six wrote cursive faster than manuscript. Table III of her study

erroneously reports "words" written in one minute. The correct reporting should be "letters" per minute.

Long and Mayer (1931) reported a word recognition experiment involving approximately 1000 first grade students. One group received manuscript handwriting instruction, and the other group received cursive handwriting instruction during an eight week period. Using the Detroit Word Recognition Test, the groups were tested at the beginning and end of the instructional period and also at the end of the semester. The authors state that

. . print pupils score higher than cursive pupils . . and there is some evidence that the cursive procedure creates unnecessary difficulties for the pupils for some time after they have begun reading print (p. 355).

In two experiments Bell (1939) compared the legibility of typewritten, manuscript, and cursive materials as read by college students. The subjects read letters, nonsense syllables, and prose which was typewritten in pica or prepared in the two handwriting styles by expert and nonexpert penmen. Part of the experiment made use of eye movement photography to measure fixations and regressions. Bell concluded that typed material was read more rapidly than cursive script, that manuscript was read as rapidly as typewriting, and that manuscript was read more rapidly than cursive script.

In a classic review of his work in the field of legibility of various kinds of print and handwriting spanning nearly four decades, Tinker (1963) discussed the problems

of illegible print and handwriting for poor readers and "especially for children who are learning to read."

For the mature reader, variation in legibility of letters due to mutual confusion of individual letters is a very minor factor and should cause little concern. But for children who are learning to read and for poor or immature readers, confusion of letters of similar form can usually cause difficulty (p. 42).

Downing (1973) reported a study by Eve Malmquist in the primary grades in Sweden in which two groups of children used either manuscript or cursive handwriting in their first through third grade school years. The manuscripttrained group was superior to the cursive group in the legibility of their handwriting and their silent reading comprehension. The difference was attributed to a "reduction in the variety of alternative symbols to which the experimental group was exposed during the first two and a half years" (p. 198) which led to both an improvement in reading as well as in writing achievement.

Experimental data strongly suggest that cognitive clarity was readily developed in his experimental group because the superfluous variety of symbols was reduced. The amount of unnecessary "noise" in the stimulus situation was cut down sufficiently for these students to perceive more rapidly the important structural elements of the code and the way they operate. In contrast, the control group were hindered in their groping for cognitive clarity by the extra superfluous variations in the cursive characters thrust upon them before they had mastered the manuscript symbols (p. 198).

Plattor and Woestehoff (1967) conducted a study to determine the relationship between children's ability to read manuscript writing and their ability to read cursive

writing. They also investigated the relationship between children's ability to read cursive writing and their ability to read cursive writing and their ability to write in cursive style. Their subjects were 27 children in one first grade class, 40 children in two third grade classes, and 45 children in two fifth grade classes. No handwriting samples were obtained from grade one students. The other handwriting samples, from grade three and five students, when compared with reading test scores, indicated "no relationship between the ability to read cursive writing and the ability to write in cursive style" (p. 51).

The researchers administered the Word Recognition Test of the Gates Primary Reading Test to the first grade class and the entire Gates Reading Survey Test to the third and fifth grade classes. They found that children who had learned to read manuscript with reasonable skill had little difficulty in learning to read the new cursive symbols.

However, if children vary in their ability to transfer from manuscript to cursive symbols in reading as well as in writing, and if the range of reading ability expected at any grade level is as great in reading cursive style, then facility in both areas may well be affected by the transition process . . and the child who has experienced difficulty in learning to read will need substantial attention (in learning to read cursive) (p. 52).

Hildreth (1936) is a prolific writer and proponent of the use of manuscript writing. She contended that manuscript is a natural form of handwriting for young children and that they can copy manuscript with greater facility

than cursive writing. She believed that the reason for this was "in manuscript the letters are not joined and each separate letter presents a simpler perceptual Gestalt than the word wholes of cursive form" (p. 127). In her experiment with 26 children of kindergarten age, she found that correct letters were six times as frequent in manuscript as in cursive style. Correct words were nearly 12 times as frequent in manuscript as in cursive style. Hildreth (1944) advocated the use of manuscript writing in the upper grades. She argued against transition, saying "unfortunately, at the end of Grade II is just the point at which the child has acquired a skill that he is actively using to express his thoughts on paper" (p. 85). Transition, she beleived, retarded the development of skill in functional, expressive (manuscript) writing which "may be delayed or even destroyed."

Hildreth stated that manuscript writing was justified in the primary grades because of its ease of learning, its adjustment to growth tendencies of children, its legibility, and its aid to reading and spelling. These are advantages which are also desirable, she felt, in the upper grades. Manuscript writing, she contended, was as rapid and usually more legible than cursive writing. She argued against the dual system, saying that when changing to cursive writing, children "have not only to learn to write the new style but to learn to read it as well" (p. 88). She also felt that transition might cause psychological ill effects which "are

avoided when manuscript writing is continued throughout the grades" (p. 89).

Based on her research study comparing the speed of joined and unjoined writing strokes, Hildreth (1945) believed that manuscript writing can be fast enough in the upper grades for all practical purposes and that children who first learned manuscript writing in the primary grades would do well to continue in that style.

To achieve economy in learning it is recommended that all children who are to learn to read and write material employing the Roman alphabet be taught manuscript writing. Then the material they write by hand and on the typewriter will correspond with the handwritten and printed material they read (p. 101).

Hildreth (1948) was firm in her belief concerning the integration of the language arts and the reinforcing nature of reading and writing. She stated that manuscript writing reinforces word recognition and sentence sense. It increases "awareness of the characteristic features of words" (p. 541), aids in building a sight vocabulary, and aids word recognition. "Familiarity with words is increased by writing experiences."

In her discussion of early writing as an aid to reading, Hildreth (1963) stated that learning to read was reinforced by simultaneous experiences in writing.

Whether a child is reading or spelling, he is dealing with the same set of phonic elements represented with the same graphic symbols . . . The tendency to keep reading and writing apart in beginning reading instruction is unfortunate because of the mutual relationship between the two processes (p. 15).



"The key to writing as an aid to reading in the early stages," she wrote, "lies in the use of manuscript-style writing" (p. 16) which more closely resembles the type of the printed page and typewritten material than cursive style of writing. Hildreth points out that copying words in manuscript calls attention to the details in words and this process of building up the words, though exactly the opposite of reading, reinforces memory for the distinctive features of a word. She continued this line of thinking by implying that there was a process of "fixing words in mind" in manuscript style.

In another article reviewing that status of manuscript writing after 60 years, Hildreth (1960) argued against the use of cursive writing based on the issue of its difference in appearance from machine-printed words.

All perception studies show that the farther hand-written letter forms depart from the vertical the less legible they become. Joining the letters, increasing the slant, elongation of the letters, and added loops all decrease legibility, because legibility is directly proportionate to the degree of similarity between machine printed type-face and hand writing style (p. 5).

In summary, she wrote that "to the extent that word forms in handwriting deviate from machine-printed words, the words are less legible."

In additionto being a natural style for children who are beginning to read and write, Hildreth advocated the use of manuscript for remedial readers who could have made faster progress in remedial reading if they had used print script. "The continuation of manuscript style," she wrote, "is a boon to slow learners who are not so far advanced as others by the third grade" (p. 10). The slow learners may be upset by the "change-over" and they would "benefit from doing things the simplest way, and need this link between writing, reading, and spelling."

In her writings, Hildreth made a strong case for the continued use of manuscript writing for all students from preschool though high school. Her defense of manuscript and her answers to the critics and proponents of cursive appear to be very rational. At times she seemed to overstate the importance of the issue and her arguments.

In view of the fact that our national and world economy demand the most efficient instruction of elementary school children in all phases of literacy, this manifest source of waste in education (the teaching of cursive) should be eliminated at once (p. 11).

Three highly respected authorities in the areas of teaching and learning disabilities, Maria Montesorri, Grace Fernald, and Anna Gillingham, have indicated their preference for the use of cursive rather than manuscript handwriting. Their opinions were based on extensive experience and observation with remedial students and conflicted with the research and opinions of the proponents of manuscript writing.

Montesorri (1964, 1967) discussed the "explosion" into writing that she experienced by young children of preschool years. She argued against print which used vertical lines and circles and contended that round and flowing script was more natural. Accordingly, she had children trace letters of the cursive alphabet as part of handwriting and reading instruction. Photographs and exhibits in her works were examples of children's experiences with cursive writing.

Fernald (1943) also used cursive script in the teaching of spelling, reading, and penmanship. She had children trace and copy letters and words using cursive letters and then typed the words or story for the childre. She wrote that after a story had been written by the child, it was typed for him and he read it in print.

Whatever the individual writes must be typed for him and read to him before too long an interval. Since the individual is able to recognize words in script or print after he has written them, it is essential that his recognition of words in print be established by having him read the printed form of what he writes (p. 41).

Gillingham (1960) also used cursive script exclusively in her remedial instruction. She stated that it was

. . . by definite intention that no special system of penmanship is here recommended (and that) we shall not discuss here the relative advantages of manuscript and cursive script (because) this subject is highly controversial and lies largely outside our immediate field (pp. 345-6).

However, in other parts of her work, she stated that "we are convinced after careful observation that cursive script is somewhat preferable for a child with tendency to mirrorwriting" (p. 346). She also opined that "experience has convinced us that for most remedial pupils the Spencerian form of penmanship is much better than vertical Print



Script" (p. 45). She also stated that "irreparable harm is done by some schools which start with Manuscript and change to Cursive in the second or third grades" (p. 46). Her primary objections centered on the tendency to reverse some letters such as "b" and "d." She alleged that print script employed many more reversible letters. Her mentor, Dr. Orton, was quoted as saying that "impressions made on nerve tissue are never wholly eradicated. They are only whitewashed over. They linger on, confusing later impressions" (p. 46). As proof of her contention, she cited the example of writing in high school papers "where manuscript form asserts itself in the middle of cursive words." She made the general statement that "all of the above difficulties are avoided by cursive script" (p. 57).

E. A. Enstrom (1960), director of research and instructional development for Peterson Handwriting, is a prolific writer on handwriting and a staunch proponent of cursive writing. While agreeing that manuscript may have its advantages for the beginning reader and writer, he wrote that "one serves the writing needs of the less mature individual (manuscript); the other, the needs of the maturing child and the adult (cursive)" (p. 362).

Enstrom (1969) believed that cursive writing was faster than manuscript and that it was "really" writing and that manuscript was a less mature form of handwriting that served primarily as a tool for transition to cursive writing. "If cursive style is not taught when the child is

ready for it, he invents cursive form of his own" (p. 329). Print, he contended, often became so individualized that it could not be read. He also believed that spacing in handproduced print between letters and between words presented a serious problem in legibility. Enstrom mentioned that "research clearly showed that small, finger-produced print handwriting does not stand up under pressure of use over longer periods of time." In this instance, he was quoting his own research which may have been somewhat biased. He made a plea to elminate "fruitless subject integration" that could only create impossible learning environments and to teach separate, daily cursive handwriting sessions.

To combine lessons on handwriting with lessons in other subjects is not unlike trying to learn to play the violin while learning, at the same time, the history of the invention of the oboe! (p. 332)

Enstrom believed that those who have not been taught cursive have been "cheated" and left feeling "inadequate." He cautioned that "sound educational programs must not be swayed by the whims of the unknowing few" and that cursive writing "needs to be taught with a full appreciation of our prodigious heritage" (p. 332). An evaluation of Enstrom's writing revealed a degree of emotionalism, distortion of research, and bias.

A thorough review of the research concerned with cursive writing revealed mostly opinion concerning its merit and suggestions for methods of teaching the various cursive styles of several publishing companies. Few of the

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serious proponents of cursive debated the issues listed by Gates and Voorhis.

Secondary Sources: Chronological Review of Significant Opinions

Grill (1930) suggested that spelling improvement was a result of the use of manuscript writing because "the mental image of the written word is in practically the same form as the printed word" (p. 410). She advocated the use of one alphabet, manuscript, for both reading and handwriting, "for by doing so the writing then becomes a valuable asset to reading and reading to writing." Grill believed the two subjects should be taught simultaneously "because the child gets visual images of similar forms both in his reading and in his writing." She concluded that "the fact that manuscript writing and print type are so much alike is one of the most convincing reasons for the superiority of manuscript writing," particularly for the visually impaired learner.

Crider (1932) wrote "that the evidence with respect to the relative merits of cursive and manuscript is somewhat conflicting" (p. 622). In his test measuring speed of handwriting, he found that third grade students who had been taught cursive writing in previous grades could switch to manuscript with ease and acceptable performance.

Arnold (1933), however, argued against the use of manuscript. She stated that illegibility of manuscript resulted when speed was desired. She believed that

manuscript was more difficult than connected, flowing cursive handwriting and that "continual lift (of the writing instrument) in manuscript writing retards speed and makes it slow for the adult hand" (p. 620).

Conard (1935) stated that experiments lead her "to believe that it is better to teach children the unjoined forms of letters in lower grades because these resemble more fully the printed forms of letters in books" (p. 170). She supported the integration approach to reading and writing instruction because both were closely associated through using manuscript form of letters.

Cutright (1936) reinforced the pro-manuscript position by stating "there seem to be no studies of any weight which would discredit the statement that manuscript writing is a distinct aid to young children who are learning to read print" (p. 140). She also suggested that manuscript may aid in correct spelling and "may aid children in expressing themselves more freely than does cursive" (p. 160).

Booras (1936), in his study which was concerned primarily with the legibility of cursive, upper case letters, concluded that similarity of forms is the chief cause of confusion and that distinct features and differentiating parts were helpful in perception. He found that for the most part, "print forms are more legible than cursive" (p. 70).

Washburne argued against transition from manuscript to cursive because there was no evidence to support the

dual system of handwriting in the schools and adult life. He reported handwriting norms of adults as being approximately 122 letters per minute in either manuscript or cursive style. This researcher has confirmed the Washburn estimates with samples obtained from five groups of elementary teachers. The mean scores were approximately 120 letters per minute in both cursive and manuscript handwriting styles.

Bell (1944) stated that manuscript was important "in teaching reading since it involves the learning of only one alphabet" (p. 76). The letter forms were not changed as in cursive writing. The child handwrote words that looked like the ones he was asked to read in books, charts, and on the chalkboard. "This similarity helps to eliminate confusion in the child's mind." Bell also supported the concept that reading and handwriting are mutually reinforcing language arts skills. She did write that while young children may have some difficulty in reading cursive, older children usually read it with little difficulty.

Lewry (1947) presented several examples of variations among manuscript alphabets and suggested that "since one of the principal advantages of manuscript writing is the correlation with reading" (p. 515), there should be a uniform manuscript handwriting alphabet which is highly similar to the "type forms with which children are familiar."

Carter (1953) and Hendricks (1955) both believed that manuscript should be continued and used at all grade levels

including high school. Carter stated that it "promotes skill in reading and language" and "correlates better with reading, language, spelling, and art" (p. 2). Carter presented cursive and manuscript handwriting samples and other supporting data to demonstrate that manuscript was faster and more legible than cursive and that its use promoted expressional skills. Hendricks stated that fewer eye movements were required to read manuscript than cursive and that "in fact, it is as easy to read as typewritten material" (p. 448).

Templin (1960) stated that it was educationally sound to learn and master a single system of handwriting. She supported the use of manuscript, especially for boys and adult males who, she believed, found this style of writing easier than cursive. Templin believed that the continued use of cursive handwriting in the curriculum resulted from "doing what others do without questioning whether it is right or wrong" (p. 387).

Herrick (1961) discussed the difficulties inherent in the dual system of handwriting. "The transition from manuscript writing to cursive is complicated by the lack of uniformity in the formation of both manuscript and cursive symbols" (p. 266). His review of the literature resulted in two recommendations of either maintaining manuscript or making the transition at a time when it could be efficiently and economically done.

Byers (1963) conducted a study to determine if style of handwriting had any effect on spelling achievement. She used 586 third grade students entering fourth grade as subjects. She concluded that "cursive writing as compared to manuscript writing did not affect accuracy in spelling" (p. 88). Byers qualified the results by stating that groups were not completely comparable, ability levels may not have been equal, and that previous teachers and instructional methods may have altered the resulting scores. There was a "slight difference, though not significant, favoring manuscript writing in so far as spelling accuracy was concerned" (p. 89).

Otto and Askov (1968) conducted a study to determine any effects that time of transition from manuscript to cursive writing may have on reading and spelling performance. Fourth and sixth grade students in 12 school districts participated in the study. The districts made to transition to cursive in either fall or spring of the second or third grades. Results of reading, handwriting, and spelling tests showed "no support for the notion that time of transition may affect subsequent reading performmance" (p. 20) and little influence on handwriting and spelling performance.

A study by Erdmann and Neal (1968) using 72 college students as subjects investigated the effects that letter legibility, word size, and word familiarity have on word legibility. The researchers concluded that "letter

legibility is helpful in predicting word legibility and knowledge of word familiarity further increases the accuracy of such predictions" (p. 409). It would seem to follow and confirm the common belief that accurate letter recognition and rapid recognition of words increase speed of reading.

Barbe (1978, 1980) stated that "manuscript writing is taught in the primary grades because it most closely resembles the letter forms children are learning to read" (p. 1). He believed that manuscript writing should come before cursive writing and cited research which "definitely favors manuscript writing in the beginning grades." Barbe mentioned ease of learning, speed, and legibility as factors supporting the teaching of manuscript writing in the primary grades. He further stated that "manuscript writing helps children with spelling, since many spelling errors are actually handwriting illegibilities" and may foster development in related facets of the language arts. Barbe, who is a consultant for a major publisher of handwriting materials, argued for use of both manuscript and cursive saying that cursive was a "more advanced method of writing" and that it was "perfectly natural to step up to cursive."

Lehman (1979) stated that cursive writing, "even after years of practice (is) accident prone and tends to break down under pressure of everyday use" (p. 6). He advocated the use of italic script and generalized about the results of instruction with commercial cursive handwriting systems

with the criticism that "by the time many students are in seventh grade, the teachers cannot read their illegible scrawls" (p. 13).

Wing (1979) wrote that "unusual letter forms can make reading difficult" (p. 284). He believed that cursive may be difficult to read because "different letter forms are indistinguishable." From his studies Wing has determined that although the joining of letters may increase speed of production, it could negatively affect legibility and "can be a problem for reading" (p. 285).

Gray (1969), after 40 years of limited research and considerable published opinions by others concerning the manuscript versus cursive controversy, summarized the contentions in the literature. It is interesting, from a research point of view, to compare them with the list of Gates and Brown and of Voorhis to note their similarity.

In the 1980s, proponents of manuscript writing made the following claims for this style of writing.

- 1. Manuscript is learned easier and quicker by students in the primary grades.
- 2. Manuscript letters have simpler forms than cursive.
- 3. Manuscript requires no joining strokes although connecting forms are often used.
- 4. Manuscript is similar to drawing with which young children are acquainted.
- 5. Manuscript is suited to the muscular and motor development of primary children.
- 6. Manuscript possibly causes less eyestrain and physical strain than cursive.

- 7. Manuscript allows children to express ideas on paper more quickly so that they get an early feeling of satisfaction.
- 8. Manuscript is more legible and more rapid than cursive for students in the primary grades.
- 9. Manuscript results in fewer failures.
- 10. Manuscript makes written expression easier and encourages creative expression.
- 11. Manuscript has a clearer and more pleasing appearance than cursive writing when used on charts, booklet covers, and art work.
- 12. Manuscript clarity tends to create emotional security.
- 13. Manuscript requires less teacher supervision.
- 14. Manuscript allows comparison of letters with printed ones and thus allows detection of errors in the formation of letters.
- 15. Manuscript uses the same alphabet the children meet in reading and thus eliminates confusion arising from having to learn two forms of each letter.

Advocates of cursive writing denied many of the above claims for manuscript and made the following arguments for cursive writing.

- 1. Manuscript lacks the rhythm of cursive writing.
- 2. There is less chance for individuality of style in manuscript than in cursive writing.
- 3. Children must learn a second form of letters when they transfer to cursive writing.
- 4. Children who learn manuscript may have difficulty in reading cursive writing.
- 5. Children may have difficulty when required to make the change from manuscript to cursive, thus affecting their rate of learing.
- 6. Many teachers are not trained to use or teach manuscript.

7. Parents often prefer cursive writing and insist that it be taught.

Summary of Literature Review

For over 60 years the manuscript versus cursive debate has been argued with little resolve of basic issues. Is cursive writing a curse on the child who is beginning to learn to read and handwrite? Is it a "manifest source of waste" as stated by Hildreth or an important part of our "prodigious heritage" as stated by Enstrom and a valuable skill for the maturing child and adult?

The research questions of this study, which evolved from the review of the literature, will attempt to partially answer some of the questions which are concerned with the effects of manuscript and cursive handwriting on beginning reading and handwriting skills of below average and above average reading achievement students who are entering fourth grade.

The hypotheses of this study were based on the following research questions. In what style of handwriting did these children, in both groups, visualize individual words? In what format, manuscript or cursive, did they visually perceive words in their minds? In what style of handwriting did they most accurately identify individual letters? Can they identify letters in manuscript format that they have misidentified in cursive format? Was the task of word identification in cursive format more difficult for the below average than the above average reader? Was it more difficult for students in both groups to identify words in cursive format than manuscript format? Was the task of decoding paragraphs in cursive format more difficult for the below average than the above average reader? Was it more difficult for students in both groups to decode paragraphs in cursive format than manuscript format? Was the task of handwriting letters and words in cursive format more difficult for the below average than the above average reader? Was it more difficult for students in both groups to handwrite letters and words in cursive format than manuscript format? What style of handwriting did these students prefer to read? What style of handwriting did these students prefer to handwrite?

Hypotheses which could be researched were needed so as to attempt to answer these questions. The hypotheses and the means for testing them are the subject of Chapter III.
CHAPTER III

HYPOTHESES AND METHODOLOGY

Introduction

The purpose of this chapter is to state the hypotheses and to explain the methods for testing them. It will begin with a description of the subjects and the selection process. The ll hypotheses will be stated and clarified. The construction, purpose, and use of measurement devices relative to each hypothesis will be discussed. Methods of administration and preliminary scoring will be explained along with a description of computer processing and statistical analysis techniques. The chapter will conclude with a statement of conditions and assumptions which will limit the scope and generalization of the study.

Selection of Subjects

The subjects were selected from four third grade classrooms in a public elementary school located within 20 miles of Lansing, Michigan. The classrooms have an average class size of 23 students which are heterogeneously grouped in the opinions of the school principal and classroom teachers.

From a total of 92 students, 40 were selected to participate in the study. Twenty subjects were defined as

below average reading achievers, and 20 subjects were defined as above average reading achievers. Each teacher identified eight students in each category and also identified the student she considered to have the highest reading achievement and the student having the lowest achievement level in reading. The highest and lowest reading achievement students were eliminated from the subject group to reduce the possibility of a skewed effect on performance scores.

From each group of 28 students classified as below average and above average, 20 students were selected at random as subjects. The other 16 students participated in the study only to check the readability levels and matched nature of the oral reading paragraphs.

To verify the teacher judgment for inclusion in the two achievement groups, each student was asked to pronounce words on the Slosson Oral Reading Test and to read a graded oral reading paragraph. These tests confirmed teacher judgment and placement of subjects into their respective groups.

Students were selected at the end of third grade level and entering fourth grade because they had received formal instruction in cursive handwriting since the beginning of third grade. They received instruction in manuscript handwriting during their kindergarten, first and second grade years. While in the third grade, they are expected

to make a transition from the manuscript to the cursive system of handwriting. By the end of third grade, these students were expected to complete most written work using curisve handwriting. The basic question posed by this study is whether the introduction of cursive writing may cause decoding and encoding problems for some students. For this reason testing various performance skills at this time seemed opportune and relevant to the hypotheses of this study.

Students were tested during the last week in May and the first week in June. Individual testing sessions for above average subjects lasted for approximately 20 minutes. Testing sessions for below average subjects lasted for approximately 25 minutes.

Hypothesis One

Below average and above average reading achievement students entering fourth grade will visualize words in lower case manuscript.

Accurate visual perception of letters is a prerequisite skill for the application of phonics and word analysis skills. It is necessary for a student to be able to match letter names with their respective visual symbols and the visual impressions which they see in their minds. In a pilot study individuals of various ages usually visualized isolated words in lower case manuscript. Occasionally, the

individuals would visualize the words in upper case manuscript or lower case cursive formats.

Hypothesis One was designed to determine what format, manuscript or cursive, a student entering fourth grade used to visualize words that s/he may be asked to read, spell, and write. In the testing situation the student was asked to pretend to see a large white card or screen with his/her eyes closed. S/He was then told to make the letters of a word, that was pronounced by the examiner, appear on the card or screen. The word "bed" was pronounced by the examiner. The student was told to look at the word very carefully so that s/he could remember what the word looked like when s/he opened his/her eyes. When the student said s/he could see the word and remember what it looked like, s/he was told to open his/her eyes and show what s/he saw by reproducing it on a 3" x 4" card that was placed before him/her. The student then wrote the word on the card using a ball point pen. The task was repeated with the pronounced word being "was." It was expected that students in both groups would visualize and reproduce the two words in lower case manuscript format.

Hypothesis Two

Below average and above average reading achievement students entering fourth grade will correctly identify letters in manuscript format that previously had been identified incorrectly in cursive format.

Accurate letter recognition is a prerequisite skill for the application of phonics and word analysis skills. It is also a required skill for handwriting letters and words. Carroll (1976) lists letter recognition as a very important component of the reading process. "The child must learn to recognize and discriminate the letters of the alphabet in their various forms (capitals, lower case letters, printed, and cursive)" (p. 13). Ekwall (1976) writes that "numerous studies" indicate that letter knowledge identifies children who are "more likely to become better readers than children who lack this knowledge" (p. 64). He also stresses that "children who reach the middle or upper grades without a thorough knowledge of the alphabet are quite likely to be disabled readers" (p. 64).

In a pilot study elementary school students incorrectly identified letters in cursive format that they could correctly identify in manuscript format. Hypothesis Two was designed to determine the frequency of letter miscues in cursive format and the ability of a student to correctly identify the miscued letters in manuscript format.

In the testing situation the student was asked to pronounce all letters of the lower case cursive alphabet. Each letter was seen twice, and the letters were arranged in random order. The examiner noted all identification errors. The student was then asked to pronounce manuscript letters corresponding to any cursive letter error to determine if s/he could correctly identify the letter in

manuscript format. The cursive letter errors, when read in manuscript format, were masked within a group of three other manuscript letters. It was expected that students in both groups would correctly identify letters in manuscript format that they had incorrectly identified in cursive format.

Hypothesis Three

Below average and above average reading achievement students entering fourth grade will pronounce matched word lists more slowly in cursive format than in manuscript format.

Accurate word pronunciation of high frequency words is an important component in the reading process. Ekwall (1976) reviews several studies of high frequency words and believes that the 300 most frequent words may account for 70% or more of the total running words in elementary school reading materials. The ability to pronounce isolated high frequency words is a part of several standardized and informal reading tests.

For this study 100 words were selected from the American Heritage Word Frequency Book. The words were randomly selected from the 300 most frequent words. They were arranged in four columns of 25 words each. The word arrangement was altered slightly on word lists which were prepared in three formats, manuscript, cursive, and typed.

Hypothesis Three was designed to determine if handwriting format, manuscript or cursive, had an effect on the

ability of a student to pronounce matched word lists. In the testing situation the student was asked to pronounce as many words as s/he could during a 30 second period from the typed list. All errors were noted. The student then was asked to pronounce the same words on the manuscript and cursive lists in a 30 second period. All errors were noted. The handwritten lists were presented alternately with subjects to reduce any practice and fatigue effects. It was expected that students in both groups would pronounce fewer words in cursive than manuscript format.

Hypothesis Four

There will be a rate differential between below average and above average reading achievement students entering fourth grade in their abilities to pronounce words in cursive and manuscript formats.

It was expected that below average reading achievement students would pronounce fewer words in 30 seconds than above average reading achievement students in all formats. Hypothesis Four was designed to determine if cursive format was a greater detriment for the below average group. Analysis of mean scores will establish a performance standard for each group when pronouncing words in the typed and handwritten formats. It was expected that there would be a performance differential which would indicate that cursive format would result in more errors and fewer pronounced

words for the below average students and that cursive format would be a greater detriment for the below average group.

Hypothesis Five

Below average and above average reading achievement students entering fourth grade will decode matched paragraphs more slowly in cursive format than in manuscript format.

Informal reading inventories consisting of grade level paragraphs are frequently used, in addition to pronunciation of graded word lists of high frequency words, to assess reading ability and achievement. Maranzo (1978) cautioned that "the graded word list is not a short cut to an IRI" (p. 647) in reading skills. LaPray (1978) wrote that "were teachers limited to the use of only two tests in the area of reading, one should be a graded word list, and the other an oral paragraph test" (p. 66). Hypothesis Five was designed to determine if handwriting format, manuscript or cursive, had an effect on the ability of a student to read matched oral paragraphs.

Three paragraphs, written at the first grade level of difficulty, were selected from the Ekwall Reading Inventory. Each paragraph consisted of 75 words arranged in 10 sentences. One paragraph was prepared in typed format. Two paragraphs were prepared in both manuscript and cursive formats. In the testing situation the student was asked to read the typed paragraph and time of performance was noted. If the student paused, became confused, or didn't know a word, the examiner gave assistance after approximately three seconds. The student then was asked to read paragraphs in manuscript and cursive formats. Paragraphs and formats were alternated with subjects to reduce any unmatched content and fatigue effects. Time of performance was noted. It was expected that students in both groups would read cursive paragraphs more slowly than manuscript paragraphs.

Hypothesis Six

There will be a rate differential between below average and above average reading achievement students entering fourth grade in their abilities to decode paragraphs in cursive and manuscript formats.

It was expected that below average reading achievement students would read paragraphs in all formats more slowly than above average reading achievement students. Hypothesis Six was designed to determine if cursive format was a greater detriment for the below average group. Analysis of mean scores will establish a performance standard for each group when reading paragraphs in the typed and handwritten formats. It was expected that there would be a performance differential which would indicate that cursive format would result in slower reading of paragraphs and that cursive format would be a greater detriment for the below average group.

Hypothesis Seven

Below average and above average reading achievement students entering fourth grade will encode letters and words more slowly in cursive than in manuscript format.

The ability to encode letters and to handwrite words accurately and with acceptable speed is necessary in spelling and composition tasks. Hypothesis Seven was designed to determine a student's ability to handwrite lower case letters of the manuscript and cursive alphabets and eight words having all the letters of the alphabet.

In the testing situation the student was asked to copy the lower case letters in alphabetical order in both manuscript and cursive formats. The student also copied eight words (<u>the</u>, <u>quick</u>, <u>brown</u>, <u>fox</u>, <u>jumps</u>, <u>over</u>, <u>lazy</u>, <u>dog</u>) in both manuscript and cursive formats. Handwriting format was alternated to reduce any practice and fatigue effects. Time to complete tasks was noted. It was expected that students in both groups would encode letters and words more slowly in cursive format than manuscript format.

Hypothesis Eight

There will be a rate differential between below average and above average reading achievement students entering fourth grade in their ability to encode letters and words and words in cursive and manuscript formats.

It was expected that below average reading achievement students would encode letters and words more slowly than

than above average reading achievement students in both formats. Hypothesis Eight was designed to determine if cursive format was a greater detriment for the below average group. Analysis of mean scores will determine if there is a performance differential. It was expected that cursive format would be a greater detriment for the below average group.

Hypothesis Nine

Below average and above average reading achievement students entering fourth grade will report it is easier to read manuscript than cursive handwriting.

Hypothesis Ten

Below average reading achievement students entering fourth grade will report it is easier to handwrite using manuscript rather than cursive handwriting.

Hypothesis Eleven

Above average reading achievement students entering fourth grade will report it is easier to handwrite using cursive rather than manuscript handwriting.

Students were asked which format they believed was easier to read and which format was easier to handwrite. At the end of the testing situation, students indicated their preferences and their responses were noted. It was expected that below average reading achievement students would prefer to read and handwrite manuscript and that



above average students would prefer to read manuscript but would prefer to handwrite using cursive. Hypotheses Nine, Ten, and Eleven were designed to determine student preference for reading and handwriting using manuscript and cursive formats.

Computer Processing and Statistical Analysis

Following the testing situation with each student, scores were recorded and files for each of the 40 individuals were prepared for future reference. Data included name, sex, and chronological age of each subject. Visualization format preference was noted along with number of cursive letter errors. Word pronunciation scores for typed, manuscript, and cursive formats were recorded as number of words pronounced in a 30 second interval. Scores for oral reading of paragraphs in typed, manuscript, and cursive formats were recorded as number of seconds required to read each paragraphs. Scores for encoding the lower case alphabet, and eight words were recorded as number of seconds required to complete the encoding task. Student preferences for reading and handwriting manuscript and cursive formats were noted.

These data were keypunched on computer cards and verified for accuracy with handscored information. Using the Statistical Package for the Social Sciences (1975), the data were processed by computer to yield measurements of central



tendencies and distributions for the total group and each of the two subgroups.

A repeated measures analysis of variance was used to determine if there was a statistically significant interaction effect present in the data concerned with typed, manuscript, and cursive formats for the two different subject groups for word pronunciation, paragraph reading, and encoding tasks.

The chi square test of significance was applied to determine if a significant difference was present in the data concerning reading and handwriting preferences of the two groups. Pearson Correlation Coefficients were obtained to quantify the extent to which the format variables were related. Borg (1979), Van Dalen (1979), and Isaac (1981) were used as primary references for the statistical design used in this study. Analysis of the statistical results and their application to the ll hypotheses are the subject matter of Chapter IV.

Limiting Conditions and Assumptions

Generalizability of the Results of the Study

The results of the study may not be generalizable to all third grade students entering fourth grade. The results may be generalized as applying to those students who have characteristics similar to the subjects of the study.

Previous Instruction Effect

Subjects in the study received one year of formal instruction in cursive handwriting during the third grade. Handwriting instruction in previous school years was in manuscript. It is expected that the subjects will be more compentent in the use of manuscript and the design and methodology recognized this factor.

Teacher Variable Effect

Students may perform at various levels of achievement as a result of having different teachers. No attempt was made to control or adjust for this factor.

Practice Effect

In tasks which are repeated using matched materials, there may be higher scores as a result of using the same materials. Formats were alternated in an attempt to reduce the practice effect.

Fatigue Effect

In tasks which are repeated using matched materials, there may be a variance in scores as a result of a fatigue effect. Formats were alternated in an attempt to reduce the fatigue effect.

Matched Content Effect

Formats were alternated in an attempt to reduce unmatched content which may occur in the oral paragraphs.

Subject matter and words differed in the oral paragraph selections.

Decoding and Reading

Decoding refers to the pronunciation of words when presented with their graphic representation. Decoding does not consider the semantic and syntactic nature of the reading material. No attempt was made to measure comprehension of material that was decoded.

Test Materials

Materials in cursive format were prepared by a handwriting consultant employed by a major publisher of handwriting instructional materials. Materials in manuscript format were prepared by an experienced first grade teacher. It is assumed that they are of similar quality.

Significance

The level of probability for assessing statistical significance is p = .05. In general, statistical significance is referred to in the study, and no value judgments are made concerning educational significance.



CHAPTER IV

ANALYSIS OF FINDINGS

Introduction

The purpose of this chapter is to report the research data, to statistically analyze these data, and to accept or reject each of the ll hypotheses. Factual information will be reported and evaluated for each hypothesis. The results will be discussed as they apply to the subject groups and the possibility of their application to similar populations will be considered. It will also be appropriate, in some instances, to discuss the performances of individual subjects. Charts of group mean scores and correlation coefficients will be reported and evaluated to further clarify the findings of the study. The chapter will conclude with a synthesis and summary of results.

Hypothesis One, Visualization

Thirty-eight of the 40 students reproduced the pronounced words "bed" and "was" in lower case manuscript letters. Only two students reproduced the words using lower case cursive format. The hypothesis is accepted since 100% of the below average and 90% of the above average group visualized the two words in lower case manuscript

rather than lower case cursive letters. This result is , significant and could be expected of other students who resemble the subject groups.

Hypothesis Two, Letter Identification

Students incorrectly identified from 2 to 15 of the 52 lower case cursive letter presentations and, in all but three instances, were able to correctly identify the cursive letter errors in manuscript format. The cursive letters \underline{u} , \underline{v} , \underline{z} , \underline{b} , \underline{d} , \underline{q} , and \underline{f} were the most frequent errors. Students usually called a letter name which had distinctive features which were highly similar to the stimulus letter, such as w for u and g for q.

It appears that the seven named letters are the most difficult to identify and that cursive letter format is significantly more difficult than manuscript letter format for students in the below average group. The below average group mean score for letter errors was 5.15 as compared to the above average score of 1.95. These results indicate that both groups made errors in cursive letter format that they corrected in manuscript format. Hypothesis Two is accepted.

Hypothesis Three, Word Pronunciation

In periods of 30 seconds, students pronounced between 18 and 69 words in typed format, between 22 and 68 words in manuscript, and between 12 and 71 words in cursive format. Subjects initially pronounced words on the typed list. They then pronounced the same words, in a slightly different order, in manuscript and cursive format word lists.

The mean scores for the below average group were 36.70 pronounced words in 30 seconds in typed format, 40.35 words in manuscript format, and 32.35 words in cursive format. The below average group pronounced, on the average, 8.10 more words in manuscript than cursive format.

The mean scores for the above average group were 56.05 pronounced words in 30 seconds in typed format, 60.00 words in manuscript format, and 53.50 words in cursive format. The above average group pronounced, on the average, 6.5 more words in manuscript than cursive format. The hypothesis is accepted, indicating that both groups pronounced the matched word lists more slowly in cursive than in manuscript format.

The analysis of variance indicated a statistically significant difference in performance (p = .00001) between groups as was expected because of different levels of reading achievement. The multivariate tests of significance also indicated a significant difference in performance (p = .00001) between formats. The univariate F-tests indicated a significant difference in performance (p = .00001) between manuscript and cursive scores.

As could be expected, those words which were incorrectly pronounced in typed and manuscript formats were also incorrectly pronounced in cursive format. Although



students missed other words in the cursive list the number of errors was quite small.

Hypothesis Four, Word Pronunciation Differential Effect

The repeated measures analysis of variance indicated that there was no statistically significant differential effect on group performance (p = .73570) due to the effect of manuscript and cursive formats. There was no interaction effect or performance differential present in the data concerned with typed, manuscript, and cursive formats for the two groups in the word pronunciation task. In other words, after making allowance for different levels of reading achievement, it can be concluded that cursive format is not a greater detriment for the below average group in word pronunciation.

Figure 1 graphically illustrates the mean scores which indicate a high degree of parallelism and a lack of significant interaction between reading achievement levels and symbol formats. Hypothesis Four is rejected.

Hypothesis Five, Oral Paragraph Reading

Students required between 19 and 105 seconds to read a 75 word, 10 sentence paragraph in typed format. They required between 21 and 115 seconds to read the matched manuscript format paragraph and between 25 and 137 seconds to read the matched cursive format paragraph. Subjects

		Typed	Manuscript	Cursive
	70			
Number	60	above	average gr	oup
of Words Pro- nounced in 30 Seconds	50	(56.05) below (36.70)	(,	(53.50)
	40		average (40.35)	aroup
	30			(32.35)
	20			
	10			
	0			

Figure 1. Mean Scores: Word Pronunciation, Hypotheses Three and Four

> Number of Words Pronounced in 30 Seconds

	Typed	Manuscript	Cursive
Above average:	56.05	60.00	53.50
Below average	36.70	40.35	32.35

initially read the typed paragraph. They then read matched paragraphs in manuscript and cursive formats.

The mean scores for the below average group were 50.00 seconds to read the typed paragraph, 51.00 seconds to read the paragraph in manuscript format, and 61.95 seconds to read the paragraph in cursive format. The below average group required, on the average, 10.95 seconds more to read the cursive paragraph than the manuscript paragraph.

The mean scores for the above average group were 30.00 seconds to read the typed paragraph, 29.90 seconds to read the paragraph in manuscript format, and 36.10 seconds to read the paragraph in cursive format. The above average group required, on the average, 6.20 seconds more to read the cursive than the manuscript paragraph. The hypothesis is accepted, indicating that both groups decoded matched paragraphs more slowly in cursive than in manuscript format.

It is interesting to note that the time required to read typed and manuscript formats was nearly equal with a difference of 1.0 seconds for the below average group and .10 seconds for the above average group. It would appear that manuscript format is read with equal facility when compared to typed format.

With an alpha level of .05, the analysis of variance indicated a significant difference in performance (p = .00016) between groups as was expected because of different levels of reading achievement. The multivariate tests of

significance also indicated a significant difference of performance (p = .00001) among formats.

The univariate F-tests indicated no significant difference in performance (p = .63819) between ability to read typed and manuscript format paragraphs. There was a significant difference in performance (p = .00001) between ability to read the manuscript and cursive format paragraphs in favor of the manuscript format.

Hypothesis Six, Oral Paragraph Reading Differential Effect

The repeated measures analysis of variance indicated that there was no statistically significant differential effect on group performance (p = .22515) due to the effect of manuscript and cursive formats. There was no interaction effect or performance differential present in the data concerned with the reading of paragraphs in typed, manuscript, and cursive formats for the two groups. In other words, after making allowance for different levels of reading achievement, it can be concluded that cursive format is not a greater detriment for the below average group in paragraph reading.

Figure 2 graphically illustrates the mean scores which indicate a high degree of parallelism and a lack of significant interaction between reading achievement levels and symbol formats. Hypothesis Six is rejected.





Figure 2. Mean Scores: Paragraph Reading, Hypotheses Five and Six

Seconds	Required	
to Read	Selection	

	Typed	Manuscript	Cursive
Above average	30.00	29.90	36.10
Below average	50.00	51.00	61.95



u.

Hypothesis Seven, Encoding

Students required between 66 and 168 seconds to encode 26 letters and 8 words in lower case manuscript format. They required between 79 and 408 seconds to encode 26 letters and eight words in lower case cursive format.

The mean scores for the below average group were 122.60 seconds to encode using manuscript and 208.50 seconds to encode using cursive letters. The below average group required, on the average, 85.90 seconds more to encode letters and words in cursive format rather than manuscript format.

The mean scores for the above average group were 103.95 seconds to encode using manuscript and 157.15 seconds to encode using cursive letters. The above average group required, on the average, 53.20 seconds more to encode letters and words in cursive format rather than manuscript format. The hypothesis is accepted, indicating that both groups encoded letters and words more slowly in cursive than in manuscript format.

With an alpha level of .05, the analysis of variance indicated a significant difference in performance (p = .00161) between the two groups and a significant difference in performance (p = .00001) between manuscript and cursive formats.

Hypothesis Eight, Encoding Differential Effect

The repeated measures analysis of variance indicated that there was no statistically significant differential effect on group performance (p = .24620) due to the effect of manuscript and cursive formats. There was no interaction effect or performance differential present in the data concerned with the encoding of letters and words in manuscript and cursive formats. In other words after making allowance for different levels of achievement, it can be concluded that cursive format is not a greater detriment for the below average group in the encoding of letters and words.

Figure 3 graphically illustrates the mean scores which indicate a degree of parallelism and a lack of significant interaction between reading achievement levels and symbol formats. While it appears that the lines are diverging, the extent of the interaction is not statistically significant. The task of encoding in cursive is more difficult for the below average group but not to the extent which would indicate that cursive is a greater detriment for the below average group in the encoding of letters and words. Hypothesis Eight is rejected.

Hypotheses Nine, Ten, and Eleven, Reading and Handwriting Preferences

Twelve students in the below average group preferred to read manuscript and eight students preferred to read





	Seconds Required to Encode Letters and Words		
	Manuscript	Cursive	
Above average	103.95	157.15	
Below average	122.60	208.50	

Figure 3. Mean Scores: Encoding, Hypotheses Seven and Eight

cursive. This same ratio for reading preference was indicated by students in the above average group. The chi square test of significance indicated no significant difference (p = 1.0000) present in the data.

In the total group, eight more students preferred to read manuscript rather than cursive handwriting, and Hypothesis Nine is accepted. The results, however, are neither conclusive nor significant.

Eleven students in the below average group preferred to handwrite manuscript, and nine students preferred to handwrite cursive. Seven students in the above average group preferred to handwrite manuscript, and 13 students preferred to handwrite cursive. The chi square test of significance indicated no significance (p = .3404) present in the data. Hypotheses Ten and Eleven are accepted, but the results are neither conclusive nor significant.

Table of Correlation Coefficients

To further clarify the findings of the study, it is

helpful to refer to Table II (Appendix B) which reports correlation coefficients. These coefficients are measures of the strength of relationship between variables but do not necessarily imply a cause and effect relationship. The coefficient, when squared and multiplied by 100, indicates the percentage of variance held in common by each variable.

Letter identification in cursive format is related to the subject's ability to pronounce words in cursive (r =-.7082), to read paragraphs in cursive (r = .5175), and to encode cursive handwriting (r = -.6532). The abilities to pronounce typed words and to pronounce manuscript format words are highly correlated (r = .9315). Similarly, the abilities to read typed paragraphs and paragraphs in manuscript format are highly correlated (r = .9554).

The ability to encode cursive handwriting is highly correlated with the ability to read words in cursive format (r = .7753) and the ability to read paragraphs in cursive format (r = -.5116). The ability to encode cursive handwriting is also highly correlated with the ability to encode using manuscript letters (r = .8027). Another notably high correlation is the relationship between abilities to read paragraphs in manuscript formats and cursive formats (r = .9174).

Individual Performances

It is generally agreed among educators that individualized instruction to meet individual needs is a worthy goal. For this reason, in a study such as this, it may be helpful to examine individual performances. This kind of individual diagnosis is frequently a prerequisite for successful remediation on an individual basis.
Student #17 in the below average group made 15 cursive letter errors. He correctly identified all manuscript letters. Although he could pronounce 40 words in manuscript format during a 30 second interval, he could pronounce only 12 words in cursive format. In paragraph reading he required 70 seconds to read the cursive paragraph as contrasted with 48 seconds for a typed paragraph and 40 seconds for a manuscript format paragraph. Encoding cursive letters and words required 320 seconds which is nearly twice the time required to accomplish the same task using manuscript letters.

These results indicate a serious difficulty with both decoding and encoding using the cursive symbol system. It may be that this student is experiencing both perceptual and cognitive confusion and is realtively unable to do letter identification and translation between manuscript and cursive formats.

It would seem appropriate to postpone reading and handwriting in cursive format until these skills are firmly established in manuscript format. The results do indicate that this student is relatively successful in decoding and encoding of the manuscript symbol system.

Student #35 in the above average group had similar problems which were most likely the result of the dual symbol system. His performances on cursive word pronunciation and cursive paragraph reading were much poorer than the same tasks in typed and manuscript formats. Encoding in

cursive was a laborious undertaking for this student. He required an average of seven seconds to reproduce each cursive letter as compared to less than three seconds to encode a letter using the manuscript symbol system. It would seem appropriate to postpone or perhaps abandon efforts to teach cursive handwriting to this student and to allow handwriting using the manuscript alphabet. The results do indicate that this student is relatively successful in encoding of the manuscript system.

Chapter Summary and Conclusions

The testing of the ll hypotheses using a repeated measures analysis of variance along with an analysis of mean scores and correlation coefficients indicates the following conclusions which can be applied to the subject group and other populations which resemble them.

 The predominant format for visualization of words by third graders entering fourth grade is lower case manuscript.

2. Above average reading achievement students can readily identify lower case cursive letters, but below average reading achievement students exhibit varied abilities with some having considerable difficulty in cursive letter identification.

3. Both groups can identify cursive letter errors when presented in manuscript format and have no difficulty with letter recognition of lower case manuscript letters.

4. Both groups pronounce matched word lists more slowly in cursive format than in manuscript format.

5. The cursive word pronunciation task is not significantly more difficult for the below average than the above average reading achievement student. After making adjustments for different levels of reading achievement, it can be determined that there is not a statistically significant interaction due to formats and that cursive is not a greater detriment for the below average reader.

6. Both groups read handwritten cursive paragraphs more slowly than typed and handwritten manuscript paragraphs.

7. The cursive paragraph reading task is not significantly more difficult for the below average than the above average reading achievement student. After making adjustments for different levels of reading achievement, it can be determined that there is not a statistically significant interaction due to formats and that cursive is not a greater detriment for the below average reader.

8. Encoding in cursive format is slower than encoding in manuscript for both groups. For several students in both groups, cursive encoding is significantly slower than manuscript encoding. A few students experience serious difficulty with cursive handwriting, taking nearly twice as long to encode when compared to manuscript handwriting.

9. Student preferences for reading and handwriting manuscript and cursive formats are varied and not significantly different.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this chapter is to summarize the study, to state conclusions, and to make recommendations for other needed research. This study was intended to analyze the effects of manuscript and cursive handwriting on reading skills and handwriting skills of 40 third grade students.

Chapter I stated the research questions in general terms and included definitions of key terms used in the study. The nature of the controversy centering on difficulties which are confronted by students who are learning to read, handwrite, and spell and the incidence of handwriting illegibility was discussed along with the need for research in these areas.

The scope and sequence of beginning reading and handwriting skills and their interrelationships from preschool years through third grade were outlined. The focus of the investigation was narrowed to the effects of cursive handwriting on the decoding and encoding skills of third grade students entering fourth grade who have either below average or above average reading achievement.

Chapter II reviewed precedent research and opinions which provided a historical background and a rationale for the development of the hypotheses of the study. A review of primary and secondary sources indicated the persisting nature of the controversy concerning the use of manuscript and cursive handwriting. For over 60 years the manuscript versus cursive debate has been argued with little resolve of basic issues.

The basic issues that the study was concerned with included the predominant format for visualization of words and the abilities of students to identify lower case letters in both formats. Student abilities to pronounce matched word lists and to decode matched paragraphs in manuscript and cursive formats were investigated. Student abilities to encode lower case letters in the two formats were measured. Another concern was to determine if learning and using the cursive symbol system was more difficult for students having below average reading achievement than for students having above average reading achievement.

Chapter III explained the method of selection of subjects and their group classification into below average reading achievement and above average reading achievement. The ll hypotheses were stated with clarifying remarks. Testing procedures and recording of scores were explained for each hypothesis.

Computer processing and the statistical design of the study were described. A repeated measures of analysis was

used to determine if there was a statistically significant interaction effect present in the data concerned with various formats for the two different subject groups for word pronunciation, paragraph reading, and encoding tasks. The chi square was applied to determine if a significant difference was present in the data concerned with reading and handwriting preferences of the two groups. Correlation coefficients were obtained to further clarify the findings of the study. Limiting conditions and assumptions of the study were stated as a part of Chapter III. The limited generalizability of the results of the study was explained along with the possible effects of previous instruction, different teachers, practice, fatigue, and unmatched content which could prejudice the data. The nature of decoding as one component skill of the reading process was clarified.

Conclusions

A repeated measures analysis of variance and other measures of significance concerned with the effects of manuscript and cursive symbol systems on the decoding and encoding skills of 20 students having below average reading achievement and entering fourth grade and 20 students having above average reading achievement leads to the following conclusions.

The predominant format for visualization of words by both groups is lower case manuscript. Above average students can readily identify lower case cursive letters, but

below average reading achievement students exhibit varied abilities with some students having considerable difficulty in cursive letter identification. Both groups can identify cursive letter errors in manuscript format and have no difficulty with letter recognition of lower case manuscript letters.

Both groups pronounce matched words lists more slowly in cursive format than in manuscript format. The cursive word pronunciation task was not significantly more difficult for the below average than the above average reading achievement students. After making adjustments for different levels of reading achievement, it can be determined that there is not a statistically significant interaction due to formats and that cursive is not a greater detriment for the below average reader.

Both groups read handwritten cursive paragraphs more slowly than typed and handwritten manuscript paragraphs. The cursive paragraph reading task was not significantly more difficult for the below average than the above average reading achievement students. After making adjustments for different levels of reading achievement, it can be determined that there is a not a statistically significant interaction due to formats and that cursive is not a greater detriment for the below average reader.

Encoding in cursive format was slower than encoding in manuscript for both groups. For several students in both groups, cursive encoding was significantly slower than

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manuscript encoding. A few students in both group experienced serious difficulty with cursive handwriting, taking nearly twice as long to encode when compared to manuscript handwriting. Student preferences for reading and handwriting manuscript and cursive formats were varied and not significantly different.

These conclusions apply to the subject group and have application to other groups which have characteristics which are highly similar to the subject population.

Recommendations

The results of this study and the literature review suggest additional related questions and theoretical concepts which might be researched concerning the merits of cursive and manuscript symbol systems and the larger effort of improving reading, spelling, handwriting, and composition instruction. The first five recommendations are directly related to this study, and the other suggested topics were generated from the literature review and are indirectly related to the study.

1. Additional research studies are needed to determine the speed and accuracy of decoding and encoding of the two symbol systems at various levels including middle school, high school, college, and adult life.

2. Studies to determine ease of learning and preferences for the two symbol systems would be beneficial.



3. The effects of the two handwriting systems on students with special needs should be investigated. There is disagreement concerning the use of manuscript with students classified as learning disabled. Fernald, Gillingham, and others have suggested the use of cursive to correct letter and word reversals and the viewing of words as perceptual Gestalts.

4. Other effects, in addition to those included in this study, on students classified as remedial readers need to be examined.

5. Additional studies are also needed using subjects who have various degrees of sight impairment.

6. Distinctive feature studies of various forms of type and handwriting systems such as D'Nealian are needed to investigate the legibility of letters and to suggest modifications in both upper and lower case letters that will make them easier to decode and encode.

7. A basic question involves the reasons for teaching a second symbol system, cursive handwriting, as an alternative for a replacement of manuscript writing. A study is needed to examine the incidence of use of the cursive symbol system to determine the frequency and efficacy of its use. How often and in what kinds of situations are individuals required to read cursive handwriting? How often and in what situations are individuals required to handwrite the cursive symbol system? How does the incidence of use of cursive compare with the incidence of use of manuscript?

Should cursive be taught as an alternative form for handwritten expression or as a replacement of the manuscript system?

8. Studies concerning encoding by hand as compared to use of a typewriter keyboard need to be updated. The number of available typewriters and computer keyboards is rapidly increasing. A large number of students have access to electric typewriting systems and are using them both at school and at home. The computer revolution may have far reaching effects on both decoding and encoding skills.

9. One of the allegations made concerning cursive is that it results in cognitive confusion for some individuals and that transition from manuscript to cursive can impair progress in learning to read, spell, and handwrite. The effects of cursive on learning to spell and to recognize sight words would be an interesting research topic. Additional research is needed to investigate this spelling and reading issue.

10. There is a possibility that the use of cursive may affect the quantity and quality of composition. Do students write less and is their writing of a lesser quality if they are required to use cursive as the exclusive encoding system?

If these kinds of studies are carefully designed, many of the issues concerning the manuscript versus cursive debate may be resolved; and students will benefit from the

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improvements which are made in the teaching of reading, spelling, handwriting, and composition.

APPENDIX A

SUBJECT DATA

INFORMATION

Subject Data Information

(Students 1-20 are below average; 21-40 are above average.)

Stud	lent	Sex	Chrono - logical <u>Age</u>	Visua- liza- <u>tion</u>	Letter Errors	Reading Pref.	Writing Pref.
1.	DM	m.	122	m	4	m	с
2.	LK	f	104	m	3	С	m
3.	NH	f	108	m	3	с	с
4.	CJ	m	111	m	9	m	m
5.	TR	m	115	m	2	с	С
6.	MG	f	114	m	8	m	с
7.	MF	f	116	m	4	m	С
8.	ME	f	105	m	0	m	С
9.	AF	f	118	m	3	m	с
10.	AN	f	109	m	2	m	m
11.	sv	f	105	m	1	m	С
12.	MW	m	112	m	2	m	m
13.	VR	f	112	m	2	С	m
14.	TW	m	122	m	5	С	m
15.	KA	m	125	m	6	m	m
16.	MV	f	131	m	9	m	с
17.	TB	m	109	m	15	С	m
18.	DH	f	103	m	8	С	m
19.	DN	m	119	m	7	с	m
20.	тB	m	119	m	10	m	m

Stud	ent	Wrds. Tpd.	Wrds. Mnsc.	Wrds. Curs.	Parg. Tpd.	Parg. Mnsc.	Parg. Curs.	Hndw. Mnsc.	Hndw. Curs.
1.	DM	29	35	34	53	42	55	115	155
2.	LK	51	47	43	34	39	57	100	150
3.	NH	36	38	39	45	39	54	135	215
4.	CJ	20	22	20	94	104	137	177	290
5.	TR	22	28	29	76	70	72	125	222
6.	MG	18	25	15	105	115	120	127	220
7.	MF	35	41	32	44	49	48	110	165
8.	ME	39	45	32	40	55	60	133	167
9.	AF	31	36	34	75	55	52	126	185
10.	AN	43	36	35	45	49	55	126	146
11.	sv	50	54	48	36	43	46	104	124
12.	MW	48	50	38	39	43	61	90	207
13.	VR	27	32	37	50	42	51	107	150
14.	TW	28	41	34	44	43	55	96	242
15.	KA	42	46	27	51	34	34	114	228
16.	MV	38	31	34	43	40	45	118	234
17.	TB	37	40	12	48	40	70	163	320
18.	DH	49	65	36	27	26	41	108	215
19.	DN	49	52	37	41	32	36	168	323
20.	TB	42	43	29	52	53	55	110	212

Stud	lent	Sex	Chrono- logical <u>Age</u>	Visua- liza- <u>tion</u>	Letter Errors	Reading Pref.	Writing Pref.
21.	DM	f	103	m	l	m	с
22.	KT	f	105	m	0	m	с
23.	TS	f	113	m	0	С	m
24.	SS	m	107	m	2	С	С
25.	СВ	f	113	с	0	m	с
26.	DB	m	109	m	2	с	m
27.	KS	f	111	с	2	m	с
28.	KP	f	107	m	l	m	с
29.	SB	m	114	m	. 1	m	С
30.	JB	f	109	m	0	m	с
31.	MR	f	113	m	3	С	m
32.	cv	f	109	m	2	m	С
33.	TR	m	112	m	7	m	m
34.	ТА	f	112	m	2	m	С
35.	PM	m	111	m	6	m	m
36.	RK	m	104	m	6	m	m
37.	JG	m	106	m	2	С	с
38.	AM	f	101	m	l	С	С
39.	JP	m	121	m	0	с	m
40.	SP	f	107	m	1	с	с

Stud	lent	Wrds. Tpd.	Wrds. Mnsc.	Wrds. Curs.	Parg. Tpd.	Parg. Mnsc.	Parg. Curs.	Hndw. Mnsc.	Hndw. Curs.
21.	KA	56	64	57	24	28	32	93	130
22.	KT	61	61	58	28	24	22	95	126
23.	TS	56	55	51	32	29	29	103	125
24.	SS	45	48	48	37	32	36	153	214
25.	CB	52	50	41	34	30	38	120	183
26.	DB	65	68	61	30	40	30	124	123
27.	ĸs	50	55	52	35	33	27	94	129
28.	KP	57	61	59	47	62	62	83	92
29.	SB	69	79	62	25	29	21	125	160
30.	JB	52	62	53	30	25	25	98	134
31.	MR	58	66	58	20	21	27	87	147
32.	CV	64	68	51	19	23	27	127	157
33.	TR	49	47	46	28	39	48	126	328
34.	ТА	56	71	62	24	25	31	73	98
35.	PM	44	48	31	40	39	77	150	408
36.	RK	46	50	34	48	34	40	101	164
37.	JG	62	60	62	33	28	27	72	114
38.	AM	55	53	52	26	29	27	76	104
39.	JP	58	62	61	30	27	25	113	128
40.	SP	66	72	71	23	22	26	66	79

APPENDIX B

PEARSON CORRELATION COEFFICIENTS

FOR TEN SELECTED VARIABLES

Variables
Selected
for Ten
Coefficients
Correlation
Pearson

g. Encdg.	05 .0352	376532	89 .5904	67 .5853	99 .7753	593573	033566	445116	00 .8027	
r. Cursv.	50 P=.415	03 P=.001	01 P=.001	01 P=.001	01 P=.001	05 P=.012	06 P=.012	01 P=.001	** P=.001	
Encde	.02 P=.4	P=.0	P=.0	P=.0(P=.0(40	39(. P=.0()464	1 00(P=**:	
Prgph. Cursv.	1232 P=.224	5135 P=.001	7808 P=.001	7474 P=.001	7513 P=.001	.8994 P=.001		1.0000 P=****	4644 P=.001	
Prgph.	1390	.3771	7561	7425	6639	.9554	1.0000	.9174	3903	
Mnscr.	P=.196	P=.008	P=.001	P=.001	P=.001	P=.001	P=****	P=.001	P=.006	
Prgph.	0827	• 3969	7975	7722	6731	1.0000	.9554	.8994	4059	
Typed	P=.306	P=•006	P=.001	P=.001	P=.001	P=****	P=.001	P=.001	P=.005	
Words	.0595	7082	.8515	.8376	1.0000	6731	6639	7513	.6399	
Cursv.	P=.358	P=001	P=.001	P=.001	P=****	P=.001	P=.001	P=.001	P=.001	
Words	.0389	4624	.9315	1.0000	.8376	7722	7425	7474	.5067	
Mnscr.	P=.406	P=.001	P=.001	P=****	P=.001	P=.001	P=.001	P=.001	P=.001	
Words	.0818	4755	l.0000	.9315	.8515	7975	7561	7808	.4789	
Typed	P=.308	P=.001	P=***	P=.001	P=.001	P=.001	P=.001	P=.001	P=.001	
Letter	1733	1.0000	4 755	4 62 4	7082	.3969	.3771	.5175	4337	
Errors	P=.142	P=***	P=.001	P=.001	P=.001	P=.006	P=.008	P=.001	P=.003	
Vsulz.	1.0000 P=****	1733 P=.142	.0818 P=.308	.0389 P=.406	.0595 P=.358	0827 P=.306	1390 P=.196	1232 P=.224	.0205 P=.450	
	Visuali- zation	Letter Errors	Words Typed	Words Mnscr.	Words Cursv.	Prgphs. Typed	Prgphs. Mnscr.	Prgphs. Cursv.	Encdng. Mnscr.	

MATCHED WORD LIST

APPENDIX C

.

	Matched Wor	d List	
on	water	report	late
he	my	home	sea
it	no	small	story
and	did	well	hard
the	could	three	tree
what	take	men	white
or	new	act	seem
have	now	high	few
be	down	here	night
as	first	add	while
your	every	world	letter
when	year	animal	both
were	only	try	always
can	after	need	easy
not	made	light	got
then	help	grow	began
way	great	found	eat
time	just	page	carry
which	name	head	care
an	give	self	river
look	tell	let	main
him	old	eye	color
make	much	between	cut
these	move	food	base
would	different	learn	mountain

APPENDIX D

GRADED PARAGRAPHS

TUFF THE BEAR

Tuff was a big brown bear. He was very fat. He lived in a big park. He liked to eat honey best of all. He also liked to eat bread.

Some people were in the park having a picnic. They were sitting by a big table. Tuff went to the picnic too. When the people saw him they were afraid. They all jumped up and ran away. Then the bear ate all their food.

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THE FIRE STATION

Ann's class went to visit a fire station. One of the firemen was at the door. He said he was happy to see the class.

He showed the class a big fire truck. Then he showed them a car. The car and the truck were both red. The big truck had a long ladder on it.

Then the class went back to school. They were very happy. They told the teacher they wanted to go again.

THE BIRTHDAY PARTY

Steve was going to have a birthday party. He asked all of his good friends to come. His mother made a big cake for him. She put eight candles on it.

Steve's dog was in the house that day. Soon Steve's friends were at the door. The dog began to bark. He was afraid of all of Steve's friends. Steve told his dog to go to his room. Then the children began playing some games. APPENDIX E

HANDWRITING EXAMPLES

Letter Identification Sheet olidcabe × † fjkrszghm n vwyiu q u W e p t l þ f h k n r S m v x y z a d g g o С j p x t o l i d c a b efjkrszgh mnpquvwyiw werstlofkk nm v x y y a d g g ocjp

The Fire Station

Ann's class went to visit a fire station. One of the firemen was at the door. He said he was happy to see the class.

He showed the class a big fire truck. Then he showed them a car. The car and the truck were both red. The big truck had a long ladder on it.

Then the class went back to school. They were very happy. They told the teacher they wanted to go again.

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