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The Relationship Between Typewriting And Reading Achievement

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THE RELATIONSHIP BETWEEN TYPEWRITING
AND READING ACHIEVEMENT

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Master of Science

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by

LaRuth Cleveland Ross

August, 1979

DEDICATION

It gives me a great pleasure to dedicate this study to my husband, James S. Ross, and son, Adrian Lamont, for their love, encouragement, sympathetic understanding, and the help of God have made this endeavor possible.

L. C. R.

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CHAPTER I

THE PROBLEM AND ITS SETTING

Almost everyone engaged in teaching students agrees that one of the most perplexing problems educators are faced with is the reading handicap of many students. As inability to read effectively contaminates other dimensions of education, there is a growing interest in various approaches to reading achievement.

There are a number of students taking typewriting courses in which great emphasis is placed upon reading for understanding. Some teachers believe that those students who do well demonstrate more reading efficiency than students not enrolled in such typewriting courses.

THE PROBLEM

Statement of the Problem

There is a paucity of information about the effectiveness of typewriting as an aid to reading achievement. The purpose of this study, therefore, was to generate information by comparing pretest and posttest scores of a group of tenth-grade students with typewriting instructions with a comparable group of tenth-grade students without typewriting instruction at San Marin High School. The comparisons were made to determine

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whether the development of skill in typewriting and the application of that skill to typewriting problems was related to reading achievement.

HYPOTHESES

The following null hypotheses were established to determine the relationship between typewriting instruction and reading achievement of the tenth-grade students at San Marin High School, Novato, California:

Hypothesis 1. There is no significant difference between typewriting students' mean score and social studies students' mean score in reading achievement as measured by the reading pretest.

Hypothesis 2. There is no significant difference between typewriting students' mean score and social studies students' reading achievement mean score as measured by the posttest.

Hypothesis 3. There is no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling pretests.

Hypothesis 4. There is no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling posttest.

LIMITATIONS AND ASSUMPTIONS

Limitations

This study was limited to the consideration of
relationships between typewriting and reading achievement by
comparing only two groups--students in a social studies class
without prior typewriting instructions and students in a
social studies class with prior typewriting instruction.
Other variables not considered in this study include sex,
intelligence quotient, psychological characteristics, social,
and economic backgrounds which may have influenced its outcome.

Assumptions

Much of what has not been measured might very well
influence results of this study. For instance, the student's
own self-image--whether he/she shows characteristics of success
and approbation or of failure and rejection might have affected
his/her performance.

Habits and tastes of the students could influence
responses. The amount of television viewing which could cut
into reading time--even to time spent on comics--might affect
student responses.

IMPORTANCE OF THE STUDY

The development of methods and materials which will help
students improve their reading abilities is of particular
significance. Many students need a great deal of help to
bring their reading proficiency to a point where they can

complete their studies at a satisfactory rate and/or level of performance with mimimum time and effort.

A problem of increasing frequency in many business education classes is the poor reading skills possessed by the students enrolled. For many business teachers, the problem of teaching students whose reading level are vastly exceeded by the reading abilities of the written instructional materials is one of the first magnitude. Many students in introduction to business, clerical office practice, and record keeping courses suffer reading skill deficiencies which seriously affect their ability to learn the subject matter presented.

In general, subject matter teachers, including business teachers, have considered reading to be outside their domain although business teachers have paid considerable attention to vocabulary development and spelling. Comments of teachers at all levels generally focus upon their lack of knowledge about reading problems and reading techniques and the pressing time constraints under which they must operate to present the subject matter they feel is required in their courses.

Fortunately, there is a growing awareness in the teaching profession that more attention must be paid to the learning disabilities and deficiencies which prevent students from mastering subject matter. Several educators long connected with reading and/or business teacher education have developed

a series of papers which will help business teachers think through the reading problem and their role in its solution.

It is hoped that this study will stimulate the business profession to a greater awareness of the reading difficulties afflicting our students and to the teaching techniques which can be used in business education classrooms to help poor readers. It is also hoped that this study will help stimulate business researchers to study teaching approaches, diagnostic techniques, and curriculum materials to ameliorate the profound reading difficulties encountered by increasing numbers of students who enter business education classrooms at all levels.

DEFINITION OF TERMS USED

Specific reference is made here to the following terms which have relevance to this study:

Ability. The term ability refers to the "power to perform."[1]

Language Arts. Language Arts include "the subjects (as reading, spelling, literature, and composition, etc.) taught in elementary and secondary schools that aim at developing the learner's comprehension of written and oral language as well as his/her use of it for communication and expression."[2]

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[1]Peter Davis (ed.), The American Heritage Dictionary of the English Language, (Publishers, Dell Publishing Co., Inc., New York: 1976), p. 2.

[2]Philip Babcock Grove (ed.), Webster's Third New International Dictionary, (Publishers, G & C Merriam Co., Springfield, Massachusetts: 1968), p. 1270.

Reading Achievement. Reading achievement refers to the comprehension and interpretation from written or printed material successfully.

Typewriting Ability. Typewriting ability refers to the ease with which a typist can reproduce printed copy on a typewriter with proficiency (gross words a minute, net words a minute and production rate a minute).

Word Study. Word study refers to close examination of a letter or a combination of letters that symbolizes and communicates a meaning.

SUMMARY AND ORGANIZATION OF THE STUDY

Chapter 1 has identified the problem and its setting. Four (4) hypotheses were established to determine the relationship between typewriting instruction and reading achievement of the tenth-grade students. The limitations and assumptions were discussed in this chapter. The importance of the study and the definition of terms used in this were recognized.

In Chapter 2 is a discussion of the review of literature and a research study dealing with the relationship between typewriting instruction and reading achievement. The chapter presents information on using the typewriter as an aid to reading achievement and using the typewriter as an aid to word study.

Chapter 3 involves the methods and procedures used to gather the data and the treatment of the data. The <u>Wide Range Achievement Test, Level II</u> were administered to the four classes involved in the study. The test consisted of a reading subtest and a spelling subtest. The procedures called for the use of a <u>t</u> test to establish the comparability of the groups and to measure statistical differences between the performances after the acquisition of typewriting ability.

The findings of the study are reported in Chapter 4. Each hypothesis was statistically tested, and analyzed for significance at the .05 confidence level.

In Chapter 5 is a summary, conclusions, and implications of the study.

Following Chapter 5 is a bibliography which includes titles of books, periodicals, and a research study used to investigate the problem.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of literature which follows is limited to
that which dealt with the relationship between typewriting
instruction and reading achievement. This chapter presents
information on using the typewriter as an aid to reading
achievement, using the typewriter as an aid to word study
and a summary.

USING THE TYPEWRITER AS AN
AID TO READING ACHIEVEMENT

Erickson[1] indicated the basic skills and knowledges
which a student must bring into the program if he/she is
to have an effective business education learning experience.
These skills are the traditional 3 R's-- reading, writing,
and arithmetic. These skills must be developed to meet
the specific needs of business education. Achievement levels
in the basic 3 R's should be determined for beginning students
in business education. If possible, steps should be taken
to bring these achievement levels to the minimum adequate
for effective participation before admission to the business
program. If students with inadequate reading, writing and
arithmetic skills must be admitted, appropriate learning

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[1] Lawrence W. Erickson, Basic Components of Office Work--
An Analysis of 300 Office Jobs., Monograph 123, (Cincinnati:
South Western Publishing Co., 1971), p. 28.

activities could be included in the presentation of simpler elements of the basic components. These simpler elements might include sorting items by words or numbers, using simple mathematical processes to show the numerical arrangement of the sorted items, logging or listing the item, reading simple instructions for these operations, and demonstrating comprehension by performance. Thus the slow learner or below--achievement level student would have the opportunity to improve his/her basic 3 R's skills while learning simple elements of the most frequently occurring basic components of office work. Ideally, instruction should be individualized to meet specific needs of these students and allow them to progress at their own rates in any business course.

Various reasons were cited for using typewriting as an aid in reading achievement. Kiley[2] investigated the idea that junior high typing can provide opportunities for creative writing and be an effective tool in improving students' vocabulary, reading comprehension, spelling, and even their speech habits. He stated:

> A standardized reading inventory was administered at the beginning and at the end of the project to all students participating. Test results confirmed the team teachers' assumptions that students showed improvement in spelling, vocabulary and reading comprehension. Composition ability was not tested by the standardized instrument, but members of the experimental teaching team

[2]Margarett A. Kiley, "Improving Language Skills Through Junior High Typewriting," Business Education Forum, March, 1973, Vol. 21, p. 17.

believed that the students showed remarkable improvement in the ability to express themselves on paper and, equally encouraging, developed an enthusiasm for writing."[3]

Reading can be incorporated in a typewriting course, according to Hasselriis[4] who says the reading objective is tow-fold: typing for content and reading to become word conscious. The reading materials selected from the textbook should be determined by the reading level of each student.

As stated·by Jackson, teachers throughout the nation are in general agreement that one of the great weaknesses of students today is their lack of effective communication skills--the inability to read, write, listen, use correct grammar, and the lack of an adequate vocabulary. The ability to understand the meaning and use of words--is an essential employment tool.

Typewriting teachers have an excellent opportunity to teach correct, concise, clear writing, and to help students acquire a broad business vocabulary, while at the same time teaching the fundamentals of rapid and accurate keyboard manipulation.[5]

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[3]Ibid.

[4]Peter Hasselriis, "Strategies for Teaching Reading in Business Education," National Association for Business Teacher Education Review, (1973), p. 66.

[5]J. Howard Jackson, "Professional Typewriting Teacher's Corner," Century 21 Reporter, (Fall, 1976), p. 9.

Reading for understanding, oral reading, and proofreading skills are some of the methods used in typewriting classes that will have bearing on reading achievement. Typewriting can help in reading for understanding.[6] There are several methods that can be used to check on reading for understanding. One method is to have students read directions in a typewriting book, close their books, and then have them type as many of the directions as they remember. Another method is to put directions on the board that are slightly different from the usual directions given in the book. After all students have had time to read the directions, erase the board and instruct the students to proceed with their problems. Both methods are weak because students often have to ask questions as they forget what they read.

According to Willard[7] a classroom experience shows clearly that directions in "telegraph" style are easier and quicker to read, assimilate, and refer to than those in paragraph form. Testing under classroom conditions, however, reveals that teachers and students alike prefer the telegraph style because they do not have to "wade through so many words to get under way with the work."[8] A recent learner-verification

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[6]Carol H. Behrman, "Typing As A Language Art," Century 21 Reporter, (Fall 1975), pp. 7-8 and 15.

[7]B.H. Willard, "Learner-Verification Study of Century 21 Typewriting," Second Edition, Unpublished independent research report, 1978.

[8]Ibid.

study of high school typing materials reported that of more than 1,000 students questioned, over 90 percent said that directions in telegraph style were very easy to moderately easy to understand and follow.[9]

The Seltzers stated that the area of typewriting has usually been reserved for the middle and secondary school student. However, emphasis on the relationship between the reading and typing areas of concentration and on the use of typing as a way to reading and language enrichment on the elementary level have recently come into focus.[10]

The utilization of the typewriter in reading programs, especially in language experience programs, has resulted in many practical activities that can be incorporated into other language programs. A review of some of the related literature revealed programs designed to emphasize the relationship between typing and language arts.[11]

According to the Seltzers, the follow-through program of the Huntsville, Alabama, City School System emphasized the language experience approach to reading and language instruction. In this approach, the utilization of the typewriter played an integral role. An informal survey of

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[9] Ibid.

[10] Ronald and Dianne Seltzer, "Typing Keys Unlock the Doors to Reading Enrichment," Business Education Forum, February, 1978, Vol. 32, No. 5, pp. 10-13.

[11] Ibid.

classroom teachers and assistant teachers in this program
revealed that the typewriter could be used for the following:
(1) self-identification, (2) vocabulary words, (3) learning
alphabetical order, (4) completing sentences, (5) copying
sentences, (6) typing language experience charts into story
form, (7) original writings, (8) typing letters, and (9)
class newsletters.[12]

The Seltzers, indicated that one of the researchers
advocated that children can learn to type and learn to
read and spell at the same time. The words used for
typewriting practice are the sight words most frequently
found in basal reader series. They cited the following
advantages of a typing program when it is coordinated with
a reading program:

1. Learning to type fascinates children bored with a
   regular class.

2. A typing program adds uniqueness to remedial reading
   and makes an exciting summer school program.

3. A good deal of incidental reading instruction takes
   place in the typing lessons, such as reinforcement
   of the basic sight words.

4. Spelling is also aided through the typing lessons.

5. The child experiences frequent success through the
   short lessons and praise techniques such as the
   progress chart and the typewriting diploma at the
   end of the course.[13]

The idea of utilizing the typewriter to improve various
aspects of communication is not an innovative technique in

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[12]Ibid.

[13]Ibid.

education. Early studies in the thirties, such as the
Wood-Freeman study, cited the effective use of composing
creative writing at the typewriter.[14] Even without formal
instruction in the "touch" system, the students' output
of written material greatly increased.

A controlled study with 24 matched pairs of fifth
graders was conducted at the Henry Barnard Elementary
school for a period of five academic months.[15] A formal
instruction in typewriting was provided, and comparative
results revealed that the students who used the typewriter
for their written work excelled in spelling and capitalization.

Business educators have often advocated the delay of
typewriting instruction for elementary children because of
the small motor-skill involvement in the typing activity.
However, recent experimental programs have revealed that
children, ages 9 to 13 years old, are able to succeed in
the skill development of typewriting and simultaneously
improve their reading and language arts skills.[16]

According to Whitmill, the explanation for delaying
typewriting instruction has been that younger children cannot
develop the small movement skills required. However, results

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[14]Allien R. Russon, Philosophy and Psychology of Teaching
Typewriting, (Cincinnati: South-Western Publishing Co., 1973),
p. 299.

[15]Ibid., pp. 299-300.

[16]Lucille B. Whitmill, "Typewriting: An Integral Part
of the Elementary and Middle School Curriculum," Business
Education Forum, April, 1973, Vol. 27, No. 7, pp. 41-42.

of recent experimental programs indicate that these children
can achieve a satisfactory skill at the typewriter and the
same time improve their reading and language arts skills.[17]

Morrison stated that researchers find that people who
type can compose written communications better than those who
have not learned the skill, because the speed with which a
typist can get thoughts down on paper enables him or her to
capture complete ideas and record them before they escape.
Also, the time spent in composing and typing inevitably
strengthens the typist's mastery of spelling, punctuation, and
sentence structure. When the typing activities are specifically
focused on the language-arts elements-when, for example, learners
practice editing, polishing, and rewriting their own words--
the learning value of typing is even more enhanced.

Because the ability to type has a positive effect on
writing quality, courses in typing are being introduced at
earlier and earlier levels of instruction. More teachers,
researchers, textbook publishers, and authors are seeking
ways to improve students' writing skills, and many of them
have found that typing is at least one way it can be done.[18]

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[17]Ibid.

[18]Phyllis Morrison, "Teaching Students to Write Right
at the Typewriter," Business Education World, Published by
McGraw-Hill, Inc., March-April, 1979, Vol. 59, No. 4, p. 13.

Robinson stated that reading a copy to be typed is different from reading a book. The beginner types one stroke at a time without chaining 2, 3, or more letters in sequence. The reading must be deliberate and with attention to the letters of even the simplest words in the copy. This early typing will be slow because the learner must see, think, and type letter by letter. Just as the way copy is read affects the way it will be typed, so the level of typewriting skill will affect or perhaps determine the way the copy is read.

> Stroking patterns in typewriting are classified into three types of responses: (1) stroke response, when the typist sees, thinks, and types letter by letter; (2) word as a unit rather than letter by letter; and (3) combination response, when the typist sees, thinks, and types some sequences letter by letter, others word part by word part, and some others eventually word group by word group.[19]

As soon as the keyboard has been covered, teach the students to read and try to type many of the short, easy words as words. This should be done more by demonstration, dictation, imitation, and encouragement than by a formal attempt to impose on all learners a specific response pattern to a certain word.

USING THE TYPEWRITER AS AN AID TO WORD STUDY

Interest motivation and word study were two reasons for relating typewriting to reading. The fascination of the

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[19]Jerry Robinson, "Procedures For Refining Typewriting Techniques," Practices and Preferences in Teaching Typewriting, Monograph 117, (Cincinnati: South Western Publishing Co., 1967), p. 40.

typewriter for some children might arouse interest in
reading, according to Misenoff.[20]   She felt that typewriting
activities use many of the basic sight words, but the
important effect of typewriting is that the student will
look at the word carefully, letter by letter, from left
to right. It is careful looking that may set the student
on the road to building a vocabulary of sight words.

Misenoff[21] believed typewriting promoted growth in the
ability to recognize and analyze words. The value of typing
as an adjunct to reading is that it directs attention to the
detailed composition of words. Typewriting exercises are
perhaps most useful as a remedial measure, especially with
children who remain inaccurate in their word perception
because they have not learned to analyze words properly.
Typewriting will help such children learn to identify
their letters, to distinguish between capitals and small
letters, to become better spellers, and to perceive words
more accurately.

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[20]
    Ann Misenoff, "Star: Students' Typing and Reading,"
Business Education Forum, December, 1978, Vol. 33, No. 3,
pp. 5-7.

[21]
    Ibid.

SUMMARY

A review of the literature dealing with possible relations between typewriting and reading seemed to indicate that typewriting can be related to reading achievement. In particular, word study, reading for understanding, oral reading, and proofreading are all components of typewriting instruction that can promote reading achievement. Reading is an essential ingredient in formal learning. Learning to type is no exception. Typing students must read directions, related information, and copy to be typed. They must also proofread the typewritten copy they produce.

This review of literature also revealed current studies and information on methods which indicated that typewriting could be effective in promoting reading achievement. From both the review of the literature and the increased utilization of the typewriter in the schools, it appears that the correlation between typewriting and the language arts will continue to grow. Typing will become another way to unlock the door to language and reading enrichment.

CHAPTER III

METHODS AND PROCEDURES

The objective of this study was to determine whether the acquisition of typewriting ability will significantly affect reading achievement at San Marin High School. Four (4) null hypotheses were formulated and tested.

Hypothesis 1. There is no significant difference between typewriting students' mean score and social studies students' mean score in reading achievement as measured by the reading pretest.

Hypothesis 2. There is no significant difference between typewriting students' mean score and social studies students' reading achievement mean score as measured by the posttest.

Hypothesis 3. There is no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling pretests.

Hypothesis 4. There is no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling posttest.

THE POPULATION

The population of this study was tenth-grade students at San Marin High School, Novato Unified School District. Because the school is located in a predominantly white area, the students tested consisted of blacks and nonblacks with a heterogeneous mixture of academic abilities.

San Marin High School has an unstable population due to in-transfers, out-transfers, dropouts, truancies, and absences which include those due to illness, counseling, and administrative reasons. For these reasons, the number of completed tests was reduced from a potential of ninety (90) to sixty-three (63).

The population was made up of (1) tenth-grade students enrolled both in social studies and typewriting and (2) tenth-grade students who were enrolled in social studies only. All students were required to complete both the pretest and the posttest. The social studies class consisted of nineteen (19) boys and twelve (12) girls. The typewriting class consisted of six (6) boys and twenty-six (26) girls.

The thirty-one (31) students in two social studies classes and the thirty-two (32) in the typewriting classes were tested for spelling and reading achievement using subtests of the Wide Range Achievement Test, Level II.[1]

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[1]J. F. Jastak and S. R. Jastak, The Wide Range Achievement Test Manual of Instructions, Revised Edition (Wilmington, Delaware: Guidance Associates, 1973), pp. 1 and 4.

INSTRUMENTATION

Validation studies were conducted on the various <u>Wide Range Achievement Test</u> subtests in reading and spelling by its developers. The developers reported that "Correlation coefficients were calculated between the test scores of the reading, spelling, . . . subtests for all ages included in the sampling."[2] Of particular relevance to this study is the correlation coefficient reported between the reading and spelling subtests for students of age 15, approximately the average age of students used in this study. The intercorrelation between these tests was reported to be .928.

<u>The Wide Range Achievement Test, Level II</u>, was administered by the investigator to all four classes involved in this study. The test is considered a convenient tool for the study of the basic school subjects of reading (word recognition and pronunciation) and written spelling. Level II was administered to the students because it is designed for use with persons 12 years 0 months to adulthood. All of the students tested were above 12 years 0 months.

The test was selected to measure reading achievement for this study because of the comparative ease and economy of administration, individual standardization, suitability of contents, and comparability of results over the range of skills in question.

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[2] Ibid.

While the classroom teachers did not participate in the actual testing, they helped students fill in personal data lines. The teachers were extremely cooperative in scheduling classroom time for the spelling subtests and allowing students to participate in the individual reading subtests.

The Wide Range Achievement Test, Level II required approximately fifty minutes to administer. About forty minutes were allowed for the spelling subtest which included filling in personal data--writing name, birthdate, chronological age, and sex.

The test was administered once in each class at the beginning of the semester (February 1979) and again at the end of the semester (June 1979). Because the spelling subtest took about forty minutes of a normal fifty-minute class period, no attempts were made to give make-up spelling tests if the students were absent from class on testing day. As reading tests were administered individually and did not require so much time, various attempts were made on different days or at different class periods to contact a student so that he/she might participate in the reading subtest if he/she had completed the spelling subtest.

READING SUBTEST

To administer the reading subtest, the investigator acquainted herself with the pronunciation of each of the words according to the pronunciation guide included in the directions. Since this is primarily a reading test and not a test

of speech, and diction, mispronunciations were accepted as
correct whenever the investigator was sure of the subject's
ability to associate the printed symbols with his/her own
sound values or those of his/her immediate social group.
The reading subtest is an individual test. The students
were shown a copy of the printed word list and was given
instructions for completing the test. The first time a
reading error occurred, the student was asked to say the
word again. His/her response was scored right if he/she
corrected himself/herself on the second trial. From then
on the first response was scored as either right or wrong
unless the student spontaneously corrected the error he/she
had made.

SPELLING SUBTEST

To administer the spelling subtest, the investigator
studied the word list and the pronunciation guide in the
directions. On the first page of the test, blank space was
reserved for the spelling test. Three columns furnished
space for 46 words. The students were told that single
words would be dictated and that the words should be written
on the lines provided for in the test blank. For greater
ease in scoring, the words were written downward in the
columns in the order which they were listed. The investigator
pronounced each word carefully, read a sentence with the word

in it, then said the word to be spelled once again. If requested or necessary, the word was repeated. No other help was given during the dictation.

DATA COLLECTION

The administration and scoring of the Wide Range Achievement Test requires no specialized training. The test may be accurately given by teachers, educational examiners, social workers, psychologists, and psychiatrists if the directions are carefully studied beforehand and if all the instructions contained therein are faithfully observed. The instructions are clearly written. Pronunciation guides for both reading and spelling subtests are included in the directions.

SCORING OF THE READING SUBTEST

One point for each word correctly pronounced yielded a possible score of 74 points. If the student obtained a score of 10 points or less in the regular reading part, he/she was asked to name the 13 capital letters printed above the word list and to name two (2) letters in his/her name. The total score for the pre-word level was 15 points. The 15 points were added to the total raw score of the reading subtest. The total maximum score for the reading subtest was 89 points (74 + 15) and the minimum score was 15 points.

SCORING OF THE SPELLING SUBTEST

For persons obtaining a raw score of four (4) or less, there was a pre-spelling level score of three (3) points for copying 18 marks and two (2) points for printing or writing his/her name. The five (5) points were added to the total raw score of the spelling subtest. The maximum score for the spelling subtest was 51 points (46 + 5) and the minimum score was 5 points.

TREATMENT OF THE DATA

The techniques used in this study were based on the procedures outlined by Spence et al.[3] for establishing the comparability of groups and for the testing of statistical significance between two groups. The procedures were particularly suited to this study because of the non-random techniques used in the selection of the samples. The procedures called for the use of a t test to establish the comparability of the groups and to measure statistical differences between the performances after the acquisition of typewriting ability.

The Wide Range Achievement Test reading subtest and the spelling subtest were given. Thus, scores for both tests were available. Statistical tests of significance were also computed to demonstrate the relationship to the original variable under study--the effects of the acquisition of typewriting ability on reading achievement.

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[3] Janet T. Spence, et al., Elementary Statistics, 2nd Edition (New York: Appleton-Century Crofts, 1973), pp. 133-46.

Approximately four months after the administration of the reading and spelling pretest and after members of the typewriting classes had demonstrated proficiency in typewriting, the reading and spelling subtests were readministered to both groups.

SUMMARY

Four (4) null hypotheses were formulated and tested to determine whether the acquisition of typewriting ability will significantly affect reading achievement. The population was made up of (1) tenth grade students enrolled in social studies and typewriting and (2) tenth-grade students who were enrolled in social studies only at San Marin High School.

The procedures called for the use of a t test to establish the comparability of the groups and to measure statistical differences between the performances after the acquisition of typewriting ability. The Wide Range Achievement Test reading subtest and the spelling subtest were given. Statistical tests of significance were also computed to demonstrate the relationship to the original variable under study--the effects of the acquisition of typewriting ability on reading achievement.

CHAPTER IV

THE FINDINGS

The following conditions were set to statistically test the hypotheses formulated in this study:

1. To fail to reject a hypothesis, the computed t value must be less than the critical t value at the .05 confidence level.

2. To reject a hypothesis, the computed t value must be equal to or larger than the critical t value at the .05 confidence level.

HYPOTHESES TESTING

Each hypothesis was statistically tested, and analyzed for significance at the .05 confidence level as follows:

Hypothesis 1. There was no significant difference between typewriting students' mean score and social studies students' mean score in reading achievement as measured by the reading pretest.

For the typewriting group and the social studies group pretest mean scores, standard deviations, and t value were computed, see Table 1, page 28. The mean score for the 32 typewriting students was 49.78, and was higher than the mean score for the 31 social studies students, 45.06. The standard deviation from the mean was 13.29 for the typewriting group and 11.48 for the social studies group.

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The computed t value with 61 degrees of freedom was 1.48. As the computed t value did not reach 2.00 at the .05 confidence level, the data failed to reject the hypothesis. There was no significant difference between typewriting students' mean score and social studies students' mean score in reading achievement as measured by the reading pretest.

TABLE 1

A Comparison of the Reading Achievement
Pretest Mean Scores and Standard
Deviation for 32 Typewriting
and 31 Social Studies
Students

N = 63

STUDENTS	MEAN	STANDARD DEVIATION
Typewriting	49.78	13.29
Social Studies	45.06	11.48

Obtained t = 1.48   df = 61   .05 Confidence Level
* 2.00 Critical Value

Hypothesis 2. There is no significant differences between typewriting students' mean score and social studies students' reading achievement mean score as measured by the posttest.

The typewriting group and the social studies group posttest mean scores, standard deviations, and t value were computed, see Table 2, page 29. The mean score for the 32

typewriting students' scores were 52.66, and were higher
than the mean score for the 31 social studies students'
scores, 46.84. The standard deviation from the mean were
13.51 for the typewriting group and 10.66 for the social
studies group.

The computed t value with 61 degrees of freedom was
1.86. As the computed t value did not exceed 2.00 at the
.05 confidence level, the data failed to reject the hypothesis.
There was no significant difference between typewriting
students' mean score and social studies students' reading
achievement mean score as measured by the posttest.

TABLE 2

A Comparison of the Reading Achievement
Posttest Mean Scores and Standard
Deviation for 32 Typewriting
and 31 Social Studies
Students

N = 63

STUDENTS	MEAN	STANDARD DEVIATION
Typewriting	52.66	13.51
Social Studies	46.84	10.66

Obtained t = 1.86   df = 61   .05 Confidence Level

* 2.00 Critical Value

Hypothesis 3. There is no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling pretests.

The typewriting group's and the social studies group's pretest mean scores, standard deviations, and t value were computed, see Table 3 below. The mean score for the 32 typewriting students, 24.12, was higher than the mean score for 31 social studies students, 21.45. The standard deviation from the mean were 7.24 for the typewriting group and 8.41 for the social studies group.

The computed t value with 61 degrees of freedom was 1.33. As the computed t value did not exceed 2.00 at the .05 confidence level, the data fail to reject the hypothesis. There was no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling pretests.

TABLE 3

A Comparison of the Spelling Achievement
Pretest Mean Scores and Standard
Deviation for 32 Typewriting
and 31 Social Studies
Students

N = 63

STUDENTS	MEAN	STANDARD DEVIATION
Typewriting	24.12	7.24
Social Studies	21.45	8.41

Obtained t = 1.33   df = 61   .05 Confidence Level

* 2.00 Critical Value

Hypothesis 4. There is no significant difference
between typewriting students' mean score and social studies
students' mean score in spelling achievement as measured by
the spelling posttest.

The typewriting group's and the social studies group's
posttest mean scores, standard deviations, and t values were
computed, see Table 4, page 32. The mean score for the 32
typewriting students 26.00, was higher than the mean score
for the 31 social studies students, 22.29. The standard
deviation from the mean were 8.12 for the typewriting group
and 9.15 for the social studies group.

The computed t value with 61 degrees of freedom was
1.68. As the computed t value did not exceed 2.00 at the
.05 confidence level, the data failed to reject the hypothesis.

There was no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling posttest.

TABLE 4

A Comparison of the Spelling Achievement
Posttest Mean Scores and Standard
Deviation for 32 Typewriting
and 31 Social Studies
Students

N = 63

STUDENTS	MEAN	STANDARD DEVIATION
Typewriting	26.00	8.12
Social Studies	22.29	9.15

Obtained $\underline{t}$ = 1.68   df = 61   .05 Confidence Level

* 2.00 Critical Value

SUMMARY

This chapter presented the data for establishing comparability of groups and for testing of statistical significance between the typewriting and reading achievement in the study. The procedures called for the use of a $\underline{t}$ test to establish the comparability of the groups and to measure statistical differences between the performances after the acquisition of typewriting ability and reading achievement.

Four (4) hypotheses were formulated and statistically tested using the $\underline{t}$ test, presenting the (1) mean scores, (2) standard deviations, (3) $\underline{t}$ values (4) degrees of freedom, and (5) a 2.00 critical $\underline{t}$ value at the .05 confidence level.

The .05 confidence level was set for rejecting and failing to reject the hypotheses. All four (4) of the hypotheses formulated and statistically tested in this study were not rejected.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS
SUMMARY

The purpose of this study was to generate information by comparing pretest and posttest scores of a group of tenth-grade students with typewriting instructions with a comparable group of tenth-grade students without typewriting instruction at San Marin High School, Novato, California. The comparisons were made to determine whether the development of skill in typewriting and the application of that skill to typewriting problems was related to reading achievement.

The literature examined indicated a need for typewriting teachers in reading programs who would teach keyboard skills so that the instrument could be used effectively. Reading for understanding, oral reading, and proof-reading skills have been suggested as effective methods used in typewriting courses that can promote reading achievement.

A review of the literature related to typewriting instruction and reading improvement revealed a program designed to emphasize the relationship between typing and language arts. The program advocated that children can learn to read and spell at the same time. The review of the literature provide data on current studies and information on methods which would indicate that typewriting could be most effective in promoting reading achievement.

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The experimental method of research was used involving a time period of four months in which typewriting instructions were given to one of the sample groups. In February of 1979, students in two social studies classes and two typewriting classes at San Marin High School, Novato Unified School District, were tested for reading and spelling achievement as measured by the Wide Range Achievement Test, Level II.

In June of 1979, the same classes were again given the Wide Range Achievement Test, Level II. Both pretest and posttest reading and spelling achievement tests were compared to determine reading score gains.

In Chapter 4, the (1) four (4) hypotheses, (2) mean scores, (3) standard deviations, (4) t values and (5) degrees of freedom. The following four (4) hypotheses were formulated and tested:

Hypothesis 1. There is no significant difference between typewriting students' mean score and social studies students' mean score in reading achievement as measured by the reading pretest.

Hypothesis 2. There is no significant difference between typewriting students' mean score and social studies students' reading achievement mean score as measured by the posttest.

Hypothesis 3. There is no significant difference between typewriting students' mean score and social studies

students' mean score in spelling achievement as measured by the spelling posttest.

Hypothesis 4. There was no significant difference between typewriting students' mean score and social studies students' mean score in spelling achievement as measured by the spelling posttest.

The t test was used to determine significant differences between the two matched groups. Analysis of the data showed that the differences in the mean scores of the typewriting and social studies students were not statistically significant at the .05 level. The differences are likely to have occurred by chance and, therefore, the null hypotheses were not rejected.

CONCLUSIONS

In this study an attempt was made to examine some of the relationships between typewriting and reading achievement. Current studies indicated that reading can be incorporated in a typewriting course. This study may provide or establish criteria for continued research in the area of typewriting as an aid to reading achievement.

It might be noted that while there were no statistically significant data, the means scores of the typewriting students were consistently higher than the social studies students.

Perhaps a test other than the Wide Range Achievement Test, Level II might have developed more favorable results.

Some students had no recognition of many of the words used in the test. It is true that many could not spell the last third of the words in the spelling subtest. These were not particularly difficult words but they were not everyday words for this population.

Selection of students might be an area that could be identified with the lack of significance of the acquisition of typewriting ability to reading achievement as determined in this project. There was actually no specific requirement for a student's inclusion in the class groups other than that he/she was a member of either a typewriting class or social studies class.

There was much negative reaction to participation in this study by students who felt they were incapable of getting good scores. Many students were discipline problems. Others had bad attendance records. Students finishing the project were the ones who showed an ability to overcome their behavioral problems--if they had any--and to participate in both tests at the beginning and end of the four-month period in which this study was made.

The time interval between the first and last tests could be identified with the lack of significance of the acquisition of typewriting ability to reading achievement in this project. Perhaps the students were so intent on learning typewriting skills that some of the word study and larger vocabularies that might be associated with the reading of varied materials were neglected.

IMPLICATIONS

Many implications can be made from this study. There usually arises out of any research many needs for further research. Out of this study, then, arises many examples of possible research problems. Of particular interest is the need for concerted effort to be made for selection of particular students who would best benefit from this type of study.

An area which presents possibilities in the development of a concentrated effort by the typewriting instructor to teach a course in reading where students could more effectively use their acquired typewriting ability. In the typewriting classes used for this study, there was no effort made to include the teaching of reading and/or spelling methods to the students.

Inasmuch as the subjects of this study are from an area considered as upper middle income, another area of research might be in relation to using a typewriting course to attack larger issues such as cultural differences.

Perhaps an attack on characteristics of general social attitudes, under-achievement, attendance behavior, cultural diversity might be made. Perhaps a focal point of such a study could be the improvement of self-image which can be considered a component of reading achievement. It is one area which was not studied in this project.

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