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Comparison of the Effects of Daily and Weekly Three-Minute Timings on Straight-Copy Typewriting and Production Typewriting Speeds in First-Year Typewriting and the Secondary School Level

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A COMPARISON OF THE EFFECTS OF DAILY AND WEEKLY THREE-MINUTE TIMINGS
ON STRAIGHT-COPY TYPEWRITING AND PRODUCTION TYPEWRITING SPEEDS
IN FIRST-YEAR TYPEWRITING AT THE SECONDARY SCHOOL LEVEL

by

Diane E. Johnson

An Independent Research Study

Submitted to

Dr. Thomas V. Buchl, Associate Professor

Business Education Department

at

Northern Michigan University

Marquette, Michigan

Submitted in partial fulfillment of the requirements

for the degree of

Master of Arts in Education

July, 1972

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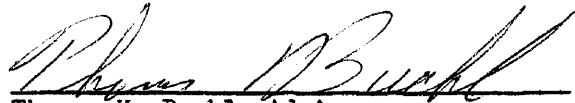
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This independent study submitted by Diane E. Johnson in partial fulfillment of the requirements for the degree of Master of Arts in Education at Northern Michigan University, Marquette, Michigan, is hereby approved by the advisor under whom the work was done.


Thomas V. Buchl, Advisor

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
ABSTRACT	viii

Chapter

I. INTRODUCTION	1
Statement of the Problem	
Purpose of the Study	
Need for the Study	
Definition of Terms	
Limitations	
Delimitations	
II. REVIEW OF RELATED LITERATURE	7
III. PROCEDURES	17
IV. FINDINGS	22
Initial Performance Summary	
Mid Performance Summary	
Final Performance Summary	
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	34
Summary	
The Initial Performance Evaluation	
The Middle Performance Evaluation	
The Final Performance Evaluation	
Conclusions	
Recommendations	

	Page
APPENDIX A	40
APPENDIX B	53
APPENDIX C	57
SELECTED BIBLIOGRAPHY	61

LIST OF TABLES

Table		Page
1	INITIAL COMPARISON OF STRAIGHT-COPY SPEED SCORES	23
2	INITIAL COMPARISON OF STRAIGHT-COPY ACCURACY	24
3	INITIAL COMPARISON OF PRODUCTION SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS	25
4	INITIAL COMPARISON OF PRODUCTION SPEED SCORES IN TERMS OF GROSS WORDS PER MINUTE	25
5	INITIAL COMPARISON OF PRODUCTION ACCURACY SCORES	26
6	MID PERFORMANCE COMPARISON OF STRAIGHT-COPY SPEED SCORES	27
7	MID PERFORMANCE COMPARISON OF PRODUCTION SPEED SCORES IN TERMS OF GROSS WORDS PER MINUTE	27
8	MID PERFORMANCE COMPARISON OF SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS	28
9	MID PERFORMANCE COMPARISON OF STRAIGHT-COPY ACCURACY	29
10	MID PERFORMANCE COMPARISON OF PRODUCTION ACCURACY	29
11	FINAL COMPARISON OF STRAIGHT-COPY SPEED SCORES	30
12	FINAL COMPARISON OF PRODUCTION SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS	31
13	FINAL COMPARISON OF PRODUCTION SPEED SCORES IN TERMS OF GROSS WORDS PER MINUTE	32
14	FINAL COMPARISON OF STRAIGHT-COPY ACCURACY	32
15	FINAL COMPARISON OF PRODUCTION ACCURACY	33
16	INITIAL EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY SPEED SCORES	41
17	INITIAL EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY ACCURACY SCORES	42

	Page
18	INITIAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE 43
19	INITIAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION ACCURACY SCORES 44
20	MID EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY SPEED SCORES 45
21	MID EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE 46
22	MID EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY ACCURACY SCORES 47
23	MID EXPERIMENTAL AND CONTROL GROUP PRODUCTION ACCURACY SCORES 48
24	FINAL EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY SPEED SCORES 49
25	FINAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE 50
26	FINAL EXPERIMENTAL AND CONTROL GROUP STRAIGHT-COPY ACCURACY SCORES 51
27	FINAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION ACCURACY SCORES 52

ABSTRACT

A COMPARISON OF THE EFFECTS OF DAILY AND WEEKLY THREE-MINUTE TIMINGS
ON STRAIGHT-COPY TYPEWRITING AND PRODUCTION TYPEWRITING SPEEDS
IN FIRST-YEAR TYPEWRITING AT THE SECONDARY SCHOOL LEVEL

Diane E. Johnson, Master of Arts in Education

Northern Michigan University, 1972

Purpose

The purpose of this study was to determine which, if either, is more valuable in building typewriting skill on straight-copy and production typewriting in a first-year typewriting class, a three-minute timed writing each day or a three-minute timed writing once a week.

Methods and Sources

Students in two sections of Beginning Typewriting at Gwinn High School, Gwinn, Michigan, comprised the sample population used in the study. All of the students were secured through normal scheduling processes. No attempt was made to assign students to specific sections or to match students on an individual basis.

The classroom assignments and the teacher were the same for both groups; only the number of timed writings given to each group differed. The Experimental Group took a three-minute straight-copy timed writing five days a week while the Control Group was timed on straight-copy material once each week.

The classroom research took place over a fifteen-week period beginning the ninth week, immediately after the students had mastered the keyboard. A total of 75 three-minute straight-copy timed writings were administered to the Experimental Group and 15 three-minute straight-copy timed writings were administered to the Control Group. In addition, each class took seven production tests. Of these, three timed writings and three production tests were used for evaluation in this study.

The initial performance evaluation took place in both sections at the end of the first week of the classroom research. The test consisted of a three-minute straight-copy timed writing and a production test containing a personal note in unarranged form and a postal card in semi-arranged form. A t-test computer program was designed and administered to determine whether there was a significant difference between the two groups in initial performance skills.

At the end of the eighth week of the classroom research both groups participated in the second (middle) performance evaluation which consisted of a three-minute straight-copy timed writing and a performance test made up of a letter in semi-arranged form. These tests were scored for speed and accuracy and a t-test analysis was made.

A final measure of performance was made at the end of the fifteenth week on the last day of the classroom research. A three-minute straight-copy timed writing and a production test consisting of an outline in unarranged form comprised the final evaluation procedure. The tests were scored for speed and accuracy and a t-test analysis was made of the data.

Summary of the Findings

The results of the t-test showed no significant differences between the two groups in straight-copy speed, production speed, or accuracy. These

findings, as shown in the recorded scores, prevailed throughout the analysis of the accumulated data.

At no interval, initial performance, middle performance, or final performance, did either group prove to have a significantly higher performance level than the other.

Based on the results of the research, the following conclusion was reached:

There is no significant difference in straight-copy speed, production speed, or accuracy between first-year typewriting students receiving three-minute straight-copy timed writings five times a week and those receiving three-minute straight-copy timed writings once a week.

CHAPTER I
INTRODUCTION

Statement of the Problem

Opinions concerning the value of straight-copy timed writings have always varied widely among business educators. Many business teachers accept the concept of and use straight-copy timed writings in their classes. Typewriting textbooks offer a wealth of straight-copy material from which the instructor can choose that which he wants to use. At the same time, however, many of these same teachers question the effectiveness of the timed writing in relation to other classroom activities.

Some typewriting teachers feel practice in this area serves a valuable purpose in building speed for use in production typewriting. They often contend that there is a transfer of skill. If a student types rapidly on a timed writing, he should perform well on production tests. Many typewriting teachers, however, question the true effectiveness of timed writings on straight-copy material in any realm except that of merely building straight-copy typewriting speed. According to Nelson, "It is conceivable that timed writings contribute little or nothing to the ultimate skill achievement of the beginning typewriting student."¹

In an effort to determine the effects of daily and weekly three-minute timed writings on production typewriting, this study was undertaken. With this discovery in mind, the study was conducted over a fifteen-week

¹George E. Nelson, Jr., "Do Timed Writings Contribute to Typewriting Skill Development?" Business Education Forum, Vol. 24 (November, 1969), pp. 18-19.

period during which the results of a three-minute timed writing given daily in one Beginning Typewriting class (from here on referred to as the Experimental Group) were compared with the results of a three-minute timed writing given only once a week in another Beginning Typewriting class (from here on referred to as the Control Group). From the information received, a determination of the impact of these experiences on building speed on straight-copy and production typewriting was made.

Purpose of the Study

The purpose of this study was to determine which, if either, is more valuable in building typewriting skill on straight-copy and production typewriting in a first-year typewriting class, a three-minute timed writing each day or a three-minute timed writing once a week.

Need for the Study

In this day of mechanization, innovation, and automation, great stress is being placed on the concept of accountability. As teachers we are all accountable to our school systems and to ourselves; primarily, however, we are accountable to our students. It is their employability at the end of a course that should be the primary concern of every teacher involved in vocational education. If this is our ultimate goal, we must be concerned with every activity in which we engage our students.

One area which raises a difference of opinion is that of the use of timed writings. There exists now, as there has always existed, a conflict among business educators concerning the use and value of timed writings in typewriting classes. Regardless of the stand taken, however, most instructors of Beginning Typewriting spend a great amount of time building typing speed as well as working on the application of theories.

In a society that advances as rapidly as does ours, however, we are confronted with an overwhelming amount of material to present and a limited amount of time in which to present it. Conservation of time is an important consideration in the classroom. If we are to conserve time and still be able to develop the greatest potential in our students, we must be keenly aware of those items to include in the daily classroom activity and those to exclude.

A determination must be made of the value of each and every activity in which we involve our students. Since timed writings have been the basis of a great deal of controversy, it is imperative that we determine their true value. If there is little or no difference between the effects of three-minute timed writings given daily and those given weekly on the ultimate straight-copy typewriting speed and production speed, these daily timed writings can be eliminated. Approximately ten minutes per day can then be allocated to some other skill-building activity. If, on the other hand, it is shown that daily timed writings contribute conclusively to building straight-copy typewriting and production speeds, they can continue to be given without fear of wasting time.

Definition of Terms

In regard to this study, the following definitions will apply:

Beginning Typewriting: The first year of typewriting at the high school level.

Control Group: Those students involved in this study who were given straight-copy timed writings once a week.

Copy: The material from which the student types. The copy can be in arranged, unarranged, corrected, or rough-draft form.

Error: Any misstroke, spelling mistake, error in placement or spacing

(vertical or horizontal), strikeover, addition to, or subtraction from the instructor's key to the assigned work.

Experimental Group: Those students involved in this study who were given straight-copy timed writings each day of the week.

Gross Words Per Minute (GWPM): The total number of words typed divided by the number of minutes allotted for typing, with no deduction for errors.

Mean (arithmetic mean): The average of all of the given scores; determined by adding together the values of a given number of items and dividing the total of the values by the number of items used.

Production Speed: The number of ten-second intervals used to complete an assigned production task, converted to a words-per-minute score.

Production Test: ". . . application tasks . . . bearing such product labels as letters, memos, tables, reports, et. al., in which errors are corrected and in which the arrangement of the copy on the page is consequential."²

Standard Deviation: A measure of the scatter of the scores that includes the location of every score in a distribution. A procedure used in computing the distance a given observation is away from the mean.

Straight Copy: ". . . ordinary copying in which we fill the page, line after line, from margin to margin without correction of errors, and without regard to layout except for reasonably regular right-hand margins."³

Straight-Copy Timed Writing: Typewriting done stroke-for-stroke like a master copy in a specified period of time from simple paragraph

²Leonard J. West, "Production Proficiency Among Typists--Research and Implications," Business Education Forum, Vol. 22 (November, 1967), p. 5.

³Ibid., p. 5.

copy. While taking a straight-copy timed writing, the typist does not stop to correct errors.

Syllabic Intensity (s.i.): An indication of the average number of syllables per word, expressed in decimals, in the copy used.

Limitations

The classroom situation which exists at Gwinn High School is unique to all schools which educate a majority of military dependents. Approximately seventy-five per cent of the students enrolled at Gwinn High School are United States Air Force dependents who are subject to transfer whenever their fathers retire or are assigned to another base. In some instances students withdrew from the class before the study was completed while others enrolled after the study had begun. Through the course of the study 37 students were enrolled in the Experimental Group and 32 were enrolled in the Control Group; however, because of the transfer rate, only 29 students in the Experimental Group and 23 students in the Control Group could be used to compute the results obtained.

In addition, only two of six sections of Beginning Typewriting were used. The students making up the two groups were not matched in any way since the researcher had no control over scheduling. Those students involved in this study were involved only because they were placed in one of the two classes used in the experiment.

The researcher's ability to analyze and to interpret the data established in this study as well as the time available to conduct the needed research, experimental and library, are also a part of the limitations of this study.

Finally, the fact that the Experimental Group class was five minutes longer than the Control Group class is also a limitation.

Delimitations

This study, comparing the effects of daily three-minute timed writings and weekly three-minute timed writings and their effects on speed building in straight-copy typewriting and production typewriting in Beginning Typewriting, was conducted in two classes taught at the Gwinn High School, Gwinn, Michigan, by the author of this paper during the 1971-72 school year. Taking part in the study were 52 high school students ranging in grade level from the ninth through the twelfth grades. Each of the students had achieved a knowledge of the full keyboard of the typewriter before the actual study took place.

The sources used in the accumulation of related literature were the Northern Michigan University Library and the textbooks and periodicals in the author's own library.

CHAPTER II

REVIEW OF RELATED LITERATURE

While conducting the review of related literature the author found an abundance of controversy surrounding the use and value of timed writings. Most of the authors cited here had little faith in the intrinsic value of straight-copy timed writings. Hanson,¹ for example, states that it is application typewriting which contributes to production skills and, therefore, that time is needed for considerable production drills. Even though opinions such as this prevail, many of the authors imply that if the student was able to apply the speed of straight-copy timings to production work, timed writings would serve a definite purpose. Regardless of the stand taken, however, none of the articles cited advocated the total elimination of straight-copy timed writings.

In evaluating typing speed, the most widely accepted measure of copy difficulty is that of syllabic intensity (average number of syllables per word in the copy used). One must keep in mind that 1.5 s.i. is an average level of difficulty. The achievement level of the students must, therefore, be identified in order to determine at what level of syllabic intensity they should be tested.

Much of a student's typing ability depends upon his readiness to understand, undertake, and perform a given task. In addition, the difficulty of a task in comparison to the student's achievement and

¹Robert N. Hanson, "Application Typewriting: The Foundation for Production Performance," Business Education Forum, Vol. 21 (April, 1967), p. 21.

learning levels must be taken into consideration when attempting to measure success at any level. Robinson² supports this theory when he says that typewriting speed is meaningfully affected by copy difficulty.

A major portion of this study is devoted to the value of timed writings in terms of production skills. Crawford defines production typewriting as a combination of skill which "involves manipulative dexterity at the typewriter, mental alertness, motion economy in materials handling, a thorough knowledge of subject matter, capability with detail, evaluative skill, ability to work independently without supervision or frequent direction, stamina for sustained activity, and a tolerance for pressure-type experiences."³

In promoting the value of production typewriting over that of straight-copy typewriting Schramm⁴ emits the opinion that perhaps the emphasis on timed writings is overdone because speed alone is useless unless the student possesses the ability to transfer this speed to realistic typing situations. He suggests instead that students type half-page themes from timed-writing copy to practice the typing of actual problems.

West agrees with Schramm in theory but takes a slightly different view. Whereas Schramm feels that timed writings are of some value if the student is able to transfer the acquired speed to production typing, West⁵

²Jerry W. Robinson, "The Relation of Copy Difficulty to Typewriting Performance," Delta Pi Epsilon Journal, Vol. 9, No. 2 (February, 1967), p. 9.

³T. James Crawford, "Developing Production Skill," Business Education Forum, Vol. 23 (October, 1968), p. 15.

⁴Dwayne Schramm, "This Business of Timed Writings," The Balance Sheet, March, 1969, p. 305.

⁵Leonard J. West, Acquisition of Typewriting Skills (New York: Pitman Publishing Company, 1969), p. 15.

asserts that there is no clear tendency for those with the highest straight-copy skills to have the highest production skills. More precisely West states:

The heavy focus conventionally put on the development of ordinary copying skill--the kind of thing measured by so-called straight copy tests or speed tests--would appear to be based on the implicit assumption that insofar as all typing activities involve key stroking, skill at straight copy work should make a genuine contribution to skill at all typing activities. However, it should be evident that the manner in which a typist works when he does not have to erase errors (as in straight copy work) differs from his behavior when he does have to erase errors (as in business letter typing). . . . one would predict little by way of positive transfer from Task 1 (straight copy) to Task 2 (business letter typing). . . . the relationship between accuracy at straight copy and accuracy at business letter typing has been shown to be little different from zero.⁶

Nelson conducted a study at Alhambra High School in Phoenix, Arizona, which supports West. In this study Nelson administered timings to one group but used no timed writings in the other group. His purpose was to compare the performances of the two groups according to achievement in speed, accuracy, and production typing. In reporting his findings, Nelson⁷ lists four major points:

1. There were no significant differences in mean typing achievement between the timed and nontimed groups.
2. There were no significant differences in means and variances of production achievement between the timed and nontimed groups.
3. The nontimed group achieved a total typing skill equal to the total achievement of the timed group.
4. Timings may be excluded without fear of minimizing student achievement.

⁶Ibid., pp. 45-46.

⁷George E. Nelson, Jr., "The Effects of the Elimination of Timed Writings Upon the Achievement of Beginning Typewriting Students," Business Education Forum, Vol. 25 (October, 1970), p. 35.

In an earlier study of timed and nontimed groups Nelson⁸ found no significant differences at the .05 level of significance in the performances of the two groups in terms of mean speed achievement, accuracy, and production typewriting achievement.

Crawford⁹ found that those students who were taught by the production-emphasis method have significantly greater production ability than those taught by the speed emphasis method. This same study showed that the nonspeed group gained approximately the same in net stroking skill as did the speed-emphasis group.

Many authors, then, do not believe in a reliance on straight-copy speed to improve production skills. None of these authors, however, is as rigid in his beliefs as is West.

West¹⁰ in a study of the production proficiency of typists found that production speeds as well as errors are greatly below those on straight-copy materials and that gross stroking speed is the only aspect of straight-copy skill that makes any significant contribution to production proficiency. In other words, West is saying that if a typist types rapidly on straight-copy materials he should also type rapidly on production work.

At the same time, however, West found no correlation between straight-copy and production accuracy. He contends that, "Straight copy accuracy makes no apparent contribution to production accuracy"

⁸George E. Nelson, Jr., "Do Timed Writings Contribute to Typewriting Skill Development?" Business Education Forum, Vol. 24 (November, 1969), p. 19.

⁹T. James Crawford, "The Effects of Emphasizing Production Typewriting Contrasted with Speed Typewriting in Developing Production Typewriting Ability," Journal of Business Education, Vol. 23 (January, 1958), p. 175.

¹⁰Leonard J. West, "Production Proficiency Among Typists--Research and Implications," Business Education Forum, Vol. 22 (November, 1967), p. 5.

We can predict nothing about a typist's production accuracy from a knowledge of his straight copy accuracy."¹¹

West squarely places the blame for low production skills and the burden of the responsibility for rectifying the situation on the shoulders of the classroom teacher.

Under the conventional mindless copying of prearranged materials or with much teacher guidance for too long and too late into the training, students never learn to plan efficiently. One result is the enormous discrepancy between production and straight copy speeds. Correct planning decisions, not mere accuracy of key stroking is the heart of production quality."¹²

In another, similar study, West found that only about one-fourth of the factors that determine speed in real typing tasks are also those that underlie straight-copy speed. The errors on straight-copy work have zero relationship to the quality of the work on real jobs. In relating his findings West states:

1. It is inappropriate to invest large amounts of time, once past the initial stages, in continuous building of greater straight copy skill.

2. Since proficiency at job-type activities is mainly based on factors other than those that account for straight copy skill, greater proficiency at job-type activities can be achieved through devoting the bulk of the time to such activities than by spending time on straight copy proficiency.

3. By extension, in evaluating students at terminal stages of instruction, no more than negligible weight should be given to job-type performance.¹³

Although West states his beliefs in more definite terms than do most authors, many of them are in agreement with him.

¹¹Ibid., p. 6.

¹²Ibid., p. 7.

¹³Leonard J. West, "Some Relationships Between Straight Copy Typing Skill and Performance on Job-Type Activities," National Business Education Quarterly, Vol. 30 (October, 1961), p. 63.

Tonne, Popham, and Freeman¹⁴ tend to show agreement with the research of West. They state that the transfer of training does not necessarily take place, especially between straight-copy proficiency and job performance.

As was stated previously, this subject of timed writings is immersed in controversy. Reigel contributes to this controversy through his regard of timed writings as having certain characteristics which make them valuable in evaluation procedures. He states, "The timed writing is an excellent technique for measuring the growth of typing power when it is used intelligently and in conjunction with other evaluation. The timed writing has certain inherent evaluative characteristics."¹⁵ Reigel¹⁶ further states, though, that a more realistic method of evaluating typing speed might exist if students were required to make erasures on timed writings. Because typists are often under pressure to get a job done in a limited amount of time, he feels that this would more closely parallel actual working conditions.

But Reigel does not leave his contention at this point. He goes on to make three very definite statements:

1. It is erroneous to believe that a high production rate can be built on a poor straight-copy rate as measured by a timed writing.

2. It (the timed writing) is an effective device to achieve high standards of production work as well as high standards of straight copy speed.

¹⁴Herbert A. Tonne, Estelle L. Popham, and M. Herbert Freeman, Methods of Teaching Business Subjects (New York: Gregg Division, McGraw-Hill Book Company, 1965), p. 164.

¹⁵Charles Reigel, "The Timed Writing--'either - or'," The Balance Sheet, October, 1960, p. 160.

¹⁶Ibid., p. 160.

3. It (the timed writing) is a ready-made bridging point between the development of straight-copy speed and production-typing speed which go hand in hand.¹⁷

Gades,¹⁸ too, conducted a study. Part of his plan was to answer the following questions:

1. Will high-speed short-duration drills produce greater speed and accuracy in typewriting than the normal textbook methods?

2. Must the length of timed writings be increased as the school year progresses?

3. Is practice on the longer sustained drills necessary to do well on typewriting production work?¹⁹

In the course of the study the experimental group was given high-speed drills for ten to twenty minutes of each class period while the control group was governed exclusively by textbook materials and methods. At the end of each two-week period both groups were administered timed writings.

Gades²⁰ listed three conclusive aspects of his findings:

1. The experimental group did significantly better (measured at the .05 level of confidence) on both speed and accuracy on timed writings than did the control group.

2. The length of timed writings need not be increased as the year progresses in order to build higher level typewriting skills.

3. Practice on longer sustained drills is not necessary to do well on production typewriting.

¹⁷Ibid., pp. 160-161.

¹⁸Robert E. Gades, "Sustained Timed Writings: A Necessity in Beginning High School Typewriting?" Business Education Forum, Vol. 23 (November, 1968), p. 6.

¹⁹Ibid., p. 7.

²⁰Ibid., p. 7.

According to Gades the ultimate goal in typewriting should be production ability.

The primary reasons for using timed writings for evaluation should be to measure progress toward development of basic competencies which will aid in production typing. Therefore, it would appear that any timed writing which has sufficient predictive ability should be acceptable.²¹

Niewoehner²² concurs with Gades by contending that the real value of production testing is in locating areas of instructional weaknesses which need emphasis when teaching the subject matter in the tests.

Chiado²³ also concurs with Gades and Niewoehner and proposes further the use of mailable words per minute as a method of appraising typing skill in order to reveal a student's probable performance in an office situation.

In a study similar to that described in this paper Bellemeur²⁴ found that 75 per cent of the straight-copy typewriting speed achieved by a student is used in production typing situations. Basically this means that if a student types rapidly on straight-copy material some of this speed should and will transfer to his production typing. One can also infer from these findings that a student's performance on straight-copy work gives a good indication of his performance on production typing.

²¹Robert E. Gades, "Are Sustained Timed Writings Necessary for Typewriting Evaluation?" Business Education Forum, Vol. 24 (January, 1970), p. 26.

²²Phyllis Street Niewoehner, "A Normative Study of Straight-Copy and Production Typing for the Ninth Grade," (unpublished Masters thesis, San Diego State College, 1966), p. 80.

²³Beverly Ann Chiado, "Evaluating Production Typewriting," Business Education Forum, Vol. 26 (March, 1970), p. 23.

²⁴Raymond Bellemeur, Jr., "Building Production Speed for Occupational Efficiency," Journal of Business Education, Vol. 45 (January, 1970), p. 149.

Von Schlick²⁵ conducted a study to determine the relationship between test scores on straight-copy typewriting and simulated office-production problems. In her findings she reports a significant positive correlation between speed and accuracy test scores on straight-copy and office-production tests. She also reports a significant negative correlation between test scores in regard to the percentage of transfer of speed and accuracy on office-production typewriting.

Knurr²⁶ undertook a study to determine if the length of timed writings administered in a Beginning Typewriting class would have any effect on the final production ability of students after one year of typewriting. In her findings Knurr reports that those students who were administered one-, three-, five-, seven-, and ten-minute timings achieved significantly greater gains in business letter production tests, script production tests, rough-draft production tests, and tabulation production tests than did those students who were administered only one- and three-minute timed writings.

Reigel, however, provides the bulk of the argument in favor of the intrinsic value of straight-copy timed writings by stating:

1. The timed writing provides a standard measurement of typing power which varies only slightly from one administration to another and from one school to another.
2. Timed writings provide an excellent, yet simple, technique which students can readily understand and appreciate. It provides an understandable measure of student comparison among themselves, and an incentive for improvement which the students understand.

²⁵Ruth J. Von Schlick, "The Relationship Between Test Scores on Straight-Copy Typewriting and Simulated Office-Production Problems as Measured on Electric Typewriters," Business Education Forum, Vol. 25 (October, 1970), p. 51.

²⁶Alice Knurr, "The Effects of the Length of Timed Writings on Production Ability in Beginning Typewriting," (unpublished Masters thesis, Wisconsin State University at Whitewater, 1968), p. 87.

3. Timed writings provide an excellent source for comparison to various production rates and goals.

4. They provide an excellent situation of typing under pressure.²⁷

Reigel concludes by saying, "The problem is not whether the timed writing should or should not be used, but rather a problem of the most effective use of the timed writing."²⁸ In effect, this study was meant to do just that--to determine the effectiveness of daily and weekly three-minute timed writings in building straight-copy and production typing skills.

²⁷Reigel, "The Timed Writing--'either - or'," p. 160.

²⁸Ibid., p. 161.

CHAPTER III

PROCEDURES

Data collected during classroom testing sessions in two Beginning Typewriting classes at Gwinn High School, Gwinn, Michigan form the basis for this study. The sample population was made up of a total of 52 students, 29 students in the group which met from 12:30 p.m. until 1:30 p.m. and 23 students in the group which met from 1:35 p.m. until 2:30 p.m.

The students enrolled in each section were acquired through normal enrollment procedures without regard to age, sex, grade level, or intelligence. Enrollment was completed by school guidance counselors during the final two months of the 1970-71 school year. Therefore, the author had no control over those students placed in each group; as a consequence, individual matching was not possible.

Because the Gwinn School System represents an impacted school district by being the primary educator of military dependents from K. I. Sawyer Air Force Base, many of the students who were initially enrolled in the two classes had to be eliminated from the study because their fathers retired from the Air Force or were assigned to another Air Force base before the study had been completed. In addition, other students had to be eliminated because their fathers were not transferred to K. I. Sawyer Air Force Base until after the beginning of the school year, and thus they had received their initial typewriting instruction somewhere else. A total of 69 students was enrolled in the two classes from the beginning of the study until the conclusion of the study. Nine students

from the first group and nine students from the second group were finally eliminated from the study. These students participated in the activities involved in the classroom research, but their scores were set aside and not used in computing the findings shown in this report.

Those students whose performances were evaluated as a part of this research had no prior training in typewriting, and none of the students had any knowledge of the experiment in which they were involved until the classroom research had been completed. Thus, the assumption that the two classes were initially equal in ability was made. The author, however, had no control over any additional, out-of-class practice that individual students chose to undertake.

During the first eight weeks of the school year both classes were instructed in the same manner. The same material was covered in each class and the same activities were assigned. The author taught both classes. At the end of eight weeks both groups had the ability to perform at the typewriter and had mastered the entire keyboard. In addition, the students knew the parts of the typewriter and had typed simple messages in proper form.

At the beginning of the ninth week of class the study got underway. It was arbitrarily decided that the group which met from 12:30 p.m. until 1:30 p.m. would constitute the Experimental Group and would be given a three-minute straight-copy timed writing five days a week. This decision meant that the group which met from 1:35 p.m. until 2:30 p.m. would be called the Control Group and would be given a three-minute straight-copy timed writing only on Friday of each week. In addition, periodic production tests were planned to help determine what effect, if any, the difference in the number of timed writings would make on production speed and

accuracy as well as the difference it would make on straight-copy speed and accuracy.

The initial performance evaluation took place on Friday, October 29, 1971, during the first week of the study. Both classes were treated identically during this and all evaluation procedures.

Immediately after the beginning of the class period, each class was administered a three-minute straight-copy timed writing at 1.3 s.i. (See Appendix B, page 54). The students were given preliminary instructions for setting up their typewriters and the timing was given. When the timing had been completed, three minutes were allotted for proofreading the timed writing. The timed writing was evaluated on gross words per minute; errors were accumulated but were not deducted from the total words achieved. There was no error limit placed on the students in taking the timed writing; the students, however, were instructed to type on the control level.

Following the timed writing, each class was assigned the material prepared for the production test. The first production test consisted of typing a personal note from unarranged copy and a postal card from semi-arranged copy (See Appendix C, page 58). The students were given an unlimited amount of time in which to complete the problems which totaled 132 words. At the same time, however, the two groups were informed that the tests would be evaluated both on speed and on accuracy.

As the students finished the problems, their papers were marked according to the number of ten-second intervals they used in completing the assignment. These ten-second interval scores were later converted to gross-words-per-minute scores.

The second performance evaluation used as a part of this study took place on Friday, December 10, 1971, approximately half-way through

the experimental research. The procedures followed were identical to those of the first performance evaluation.

A three-minute straight-copy timed writing at 1.6 s.i. was administered at the beginning of each class period (See Appendix B, page 55). Again errors were counted but were not deducted from the total words typed.

The production test at this point involved typing a 118-word modified block style letter from semi-arranged copy (See Appendix C, page 59). As on the initial performance evaluation the students' papers were first marked in ten-second interval scores which were later converted to gross-words-per-minute scores. Errors were counted but were not deducted from the total words in order to determine the mean accuracy of each group.

On Friday, February 18, 1972, the final day of the classroom research, the final performance evaluation was made for both groups. The pattern was the same for both groups and was identical, except for the actual materials used, to the procedures adhered to in the previous performance evaluations.

The beginning of the class period saw each group take a three-minute straight-copy timed writing at 1.6 s.i. (See Appendix B, page 56). An accumulation of errors was then made and recorded for each student.

The final production test took the form of an outline to be typed from unarranged form. The problem totaled 166 words (See Appendix C, page 60). Again the ten-second interval scores initially recorded for each student were later converted to gross-words-per-minute scores. In addition, a count of the errors made by each student was made and recorded.

Throughout the fifteen weeks of the classroom research the Experimental Group took 75 timed writings and the Control Group took

15 timed writings. In addition, 7 production tests were given to each group at irregular intervals. As a unit of study was completed and the students had mastered the necessary techniques, a production test utilizing the learned techniques was administered. For ease of presenting and understanding the data compiled, however, only three comparisons have been made, one at the beginning of the research, one in the middle of the research, and one at the completion of the research. These three points illustrate the progress of the two groups over the fifteen weeks and give the reader insight into their similarities as well as their differences at the beginning, the middle, and the end of the classroom research.

Once the data had been gathered a statistical comparison in terms of a t-score was made. The results obtained are reported in the "Findings" chapter of this study.

CHAPTER IV

FINDINGS

A total of 69 students were enrolled in the two groups throughout the course of this study; however, only 52 completed the study, 29 out of 37 in the Experimental Group and 23 out of 32 in the Control Group. Experimental Group students Nos. 2, 9, 30 and 37 and Control Group students Nos. 1, 2, 19, 27, and 32 were dropped from the study because they were transferred before the research was completed. Experimental Group students Nos. 15, 35, and 36 and Control Group students Nos. 28, 29, 30, and 31 were eliminated because they enrolled after the study was underway. In addition, Experimental Group student No. 6 was eliminated from the study because of having previously been enrolled in a six-week typewriting class. After the elimination of these students' scores, the results for 29 Experimental Group students and 23 Control Group students are recorded here.

Initial Performance Summary

This study was begun on October 25, 1971. On Friday, October 29, 1971, each group was administered an identical three-minute timed writing (See Appendix B, page 54) to be used for initial speed comparison of the two groups. Through the use of a t-test computer program run on the results of this initial timed writing, it was determined that there was no significant difference in initial straight-copy speed performance (gross words per minute) or in initial accuracy scores.

An initial mean straight-copy speed of 23.55172 words per minute was recorded for the Experimental Group while the Control Group scored an initial mean straight-copy speed of 21.91304 (See Table 16, Appendix A, page 41). A mean difference of 1.63868 in favor of the Experimental Group showed no significant difference at the .05 level of significance when analyzed as a t-score of .09783 (See Table 1, below). When interpreted, the t-score showed that the two groups were significantly the same in performance levels on this first performance evaluation.

TABLE 1
INITIAL COMPARISON OF STRAIGHT-COPY SPEED SCORES

	Mean Straight-Copy Speed	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	23.55172	5.99186	50	.09783	2.01
Control Group	21.91034	6.59323			

This initial timed writing was also designed to measure the accuracy of each group. The Experimental Group had a mean error rate of 4.93103, and the Control Group had a mean error rate of 6.00000 (See Table 17, Appendix A, page 42). The mean difference of 1.06897 yielded a t-score of 1.25376 which revealed no significant difference at the .05 level (See Table 2, page 24).

Even though the Experimental Group scored better than the Control Group on mean straight-copy speed and typed with fewer mean errors, the difference was not great enough to make one group superior to the other. Both groups were essentially the same in performance levels.

TABLE 2
INITIAL COMPARISON OF STRAIGHT-COPY ACCURACY

	Mean Straight-Copy Accuracy	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	4.93103	3.25820	50	1.25376	2.01
Control Group	6.00000	2.76625			

The initial production test (See Appendix C, page 58) was evaluated in three ways: 1) by the time (in ten-second intervals) needed to complete the exercise, 2) in terms of gross words per minute typing speed, and 3) by the total number of errors found.

The test consisted of a personal note in unarranged form and a postal card in semi-arranged form and was administered to both groups on the same day. These two items contained a total of 132 words. Each group was given an unlimited amount of time to complete the test but was told that time as well as accuracy would be evaluated.

The Experimental Group required a mean of 128.17241 ten-second intervals to complete the exercise. This is an average of 6.71620 gross words per minute. In comparison, the Control Group averaged 144.56521 ten-second intervals or 6.17173 gross words per minute (See Table 18, Appendix A, page 43). An analysis of the mean difference of the ten-second interval scores of 16.39280 showed a t-score of 1.28911 which is not significant at the .05 level of significance (See Table 3, page 25).

Since the gross-words-per-minute score is based on the number of ten-second intervals, the mean difference of .54447 in terms of a t-score

of .94192 is also not significant at the .05 level of significance (See Table 4, below).

TABLE 3

INITIAL COMPARISON OF PRODUCTION SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS

	Mean Number of Ten-Second Intervals	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	128.17241	36.06992	50	1.28911	2.01
Control Group	144.56521	50.35165			

Table 4 shows that the difference in number and frequency of timed writings did not cause one group to score better than the other, when measured at the .05 level of significance.

TABLE 4

INITIAL COMPARISON OF PRODUCTION SPEED SCORES
IN TERMS OF GROSS WORDS PER MINUTE

	Mean Gross Words Per Minute	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	6.71620	1.75031	50	.94192	2.01
Control Group	6.17173	2.22355			

In terms of the number of errors, the Experimental Group showed a mean of 12.65517 and the Control Group, 11.30434 (See Table 19, Appendix A, page 44). When analyzed, the mean difference in favor of the Experimental

Group by 1.35083 points equaled a t-score of .45998 which is not significant at the .05 level (See Table 5, below).

TABLE 5
INITIAL COMPARISON OF PRODUCTION ACCURACY SCORES

	Mean Production Errors	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	12.65517	13.77472			
			50	.45998	2.01
Control Group	11.30434	6.37546			

Since none of the scores proved significant at the .05 level, it can be assumed that the two groups were essentially equal in performance levels at the onset of the study.

Mid Performance Summary

On December 10, 1971, approximately mid-way through the study, the eighth of fifteen timed writings and the fourth of seven production tests were administered to both of the groups in the study. The results acquired proved to be similar to those of the initial performance summary.

The straight-copy typewriting speed of both groups improved. The Experimental Group now scored a mean of 33.82758 gross words per minute, an increase of ten gross words per minute; the Control Group averaged 29.82608 gross words per minute, an average increase of eight words per minute (See Appendix A, Table 20, page 45). This straight-copy typewriting test (See Appendix B, page 55) produced a mean difference of 4.00150 in favor of the Experimental Group. When the final analysis

was made, a t-score of 1.58019 showed no significance at the .05 level (See Table 6, below).

TABLE 6

MID PERFORMANCE COMPARISON OF STRAIGHT-COPY SPEED SCORES

	Mean Straight-Copy Speed	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	33.82758	8.28820	50	1.58019	2.01
Control Group	29.82608	9.33274			

The second production test required the students to type a 118-word letter from semi-arranged copy (See Appendix C, page 59). Production typing word-per-minute speeds of the two groups when analyzed showed a t-score of .71787 (See Table 7, below). The Experimental Group mean was 17.39482, and the Control Group mean was 16.12782 for a mean difference of 1.26700 in favor of the Experimental Group (See Appendix A, Table 21, page 46).

TABLE 7

MID PERFORMANCE COMPARISON OF PRODUCTION SPEED SCORES
IN TERMS OF GROSS WORDS PER MINUTE

	Mean Gross Words Per Minute	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	17.39482	5.01505	50	.71787	2.01
Control Group	16.12782	6.98346			

In terms of ten-second intervals the Experimental Group scored a mean of 45.55172. The Control Group required an average of 54.47826 ten-second intervals to complete the same problem (See Appendix A, Table 21, page 46). Between the score of the Experimental Group and that of the Control Group there existed a mean difference of 8.92654. This means that it took the Control Group an average of 8.92654 ten-second intervals longer to complete the problem than it took the Experimental Group. The mean difference yielded a t-score of 1.43662 (See Table 8, below).

TABLE 8
MID PERFORMANCE COMPARISON OF SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS

	Mean Number of Ten-Second Intervals	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	45.55172	14.30116	50	1.43662	2.01
Control Group	54.47826	26.24279			

The t-score shown in the above table was not significant at the .05 level.

In comparing the accuracy of the Experimental and Control Groups, both the straight-copy timed writing and the production test were used. On the straight-copy timed writings, the Experimental and Control Groups displayed a mean number of errors of 6.55172 and 7.26086 respectively, while typing for three minutes (See Appendix A, Table 22, page 47). The mean difference of .70914 between the two scores yielded a t-score of

.62857 which was not significant at the .05 level of significance (See Table 9, below).

TABLE 9

MID PERFORMANCE COMPARISON OF STRAIGHT-COPY ACCURACY

	Mean Straight-Copy Accuracy	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	6.55172	2.69848	50	.70914	2.01
Control Group	7.26086	4.72014			

On the production test the Experimental Group averaged 5.48275 errors, and the Control Group averaged 6.78260 errors (See Appendix A, Table 23, page 48). The mean difference of 1.29985 between these scores yielded a t-score of .90722 (See Table 10, below). The t-score based on the production accuracy of the two groups was not significant at the .05 level.

TABLE 10

MID PERFORMANCE COMPARISON OF PRODUCTION ACCURACY

	Mean Production Accuracy	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	5.48275	6.03792	50	.90722	2.01
Control Group	6.78260	4.06422			

At the mid-point of the experimental study, then, both of the groups were performing at approximately the same level on straight-copy

typewriting speed, on production typewriting speed, and on accuracy. The two groups appear to have progressed at similar rates. At both the beginning and at the middle of this study, then, none of the tests have indicated any significant differences between the performances of the two groups.

Final Performance Summary

The final performance evaluation was made on February 18, 1972, fifteen weeks (of class) after the beginning of this study and on the last day of the classroom research. Again each group was administered a three-minute straight-copy timed writing (See Appendix B, page 56) and a production test (See Appendix C, page 60).

The mean of the straight-copy words-per-minute scores for the Experimental Group was 37.93103. The Control Group had a mean of 33.69565 (See Appendix A, Table 24, page 49). Although it appears significant that the Control Group averaged approximately the same mean gross-words-per-minute score as the Experimental Group had two months earlier, the mean difference of 4.23538 yielded a t-score of 1.65300 which was not significant at the .05 level of significance (See Table 11, below).

TABLE 11

FINAL COMPARISON OF STRAIGHT-COPY SPEED SCORES

	Mean Straight-Copy Speed	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	37.93103	7.93912	50	1.65300	2.01
Control Group	33.60565	9.74204			

The final production test involved the two groups in typing a 166-word outline from unarranged copy. As on the previous two production tests the two groups were given an unlimited amount of time to complete the exercise. The production typewriting speed of the two groups was measured in terms of ten-second intervals as well as in terms of gross words per minute.

The Experimental Group scored a mean of 93.37931 ten-second intervals on the production test. The Control Group mean was 91.65217 ten-second intervals (See Appendix A, Table 25, page 50). The mean difference was 1.72714, which yielded a t-score of .23809. This score was not significant at the .05 level (See Table 12, below).

TABLE 12

FINAL COMPARISON OF PRODUCTION SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS

	Mean Number of Ten-Second Intervals	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	93.37931	20.84328	50	.23809	2.01
Control Group	91.65217	28.57120			

When the ten-second intervals were converted into words-per-minute scores, the Experimental Group mean was 11.36758 gross words per minute while the Control Group mean was 12.07608 gross words per minute (See Appendix A, Table 25, page 50). The mean difference of .70850 showed that the Control Group had typed slightly faster than had the Experimental Group. This mean difference reflected a t-score of .76016 which was not significant at the .05 level (See Table 13, page 32).

TABLE 13

FINAL COMPARISON OF PRODUCTION SPEED SCORES
IN TERMS OF GROSS WORDS PER MINUTE

	Mean Gross Words Per Minute	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	11.36758	2.67121	50	.76016	2.01
Control Group	12.07608	3.67489			

The accuracy scores on both the straight-copy timed writing and on the production test gave approximately the same results as had previous scores.

A mean of 4.48275 errors was recorded for the Experimental Group; a mean of 5.82608 errors was recorded for the Control Group on the straight-copy timed writing (See Appendix A, Table 26, page 51). These means reflect a mean difference of 1.34333 which yielded a t-score of 1.42107. The t-score did not prove significant at the .05 level (See Table 14, below).

TABLE 14

FINAL COMPARISON OF STRAIGHT-COPY ACCURACY

	Mean Straight-Copy Accuracy	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	4.48275	2.81156	50	1.42107	2.01
Control Group	5.82608	3.66715			

The production test saw the Experimental Group average 4.68965 errors and the Control Group average 3.00000 errors. The mean difference of 1.68965 errors shows that the Control Group typed slightly more accurately than did the Experimental Group (See Appendix A, Table 27, page 52). However, this mean difference yielded a t-score of .84959 which, like the other results cited, did not prove significant at the .05 level of significance (See Table 15, below).

TABLE 15
FINAL COMPARISON OF PRODUCTION ACCURACY

	Mean Production Accuracy	Standard Deviation	Degrees of Freedom	F Ratio	.05 Level of Significance
Experimental Group	4.68965	9.70283	50	.84959	2.01
Control Group	3.00000	3.61157			

CHAPTER V

SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

Summary

This research was conducted to determine whether or not there exist any significant differences in straight-copy and production typewriting skill for students receiving three-minute timed writings five days a week in comparison to the straight-copy and production typewriting skills for students taking three-minute timed writings once each week.

Students in two sections of Beginning Typewriting at Gwinn High School, Gwinn, Michigan, participated in the study. The classroom research took place over a fifteen-week period from October 25, 1971 through February 18, 1972. A total of 52 students were involved in the research. The Experimental Group, comprised of 29 students, met from 12:30 p.m. until 1:30 p.m. and received a three-minute timing each day. The Control Group, comprised of 23 students, met from 1:35 p.m. until 2:30 p.m. and received a three-minute timed writing on Friday of each week.

Because students were scheduled into the class at the close of the 1970-71 school year by the school's guidance counselors, students could not be matched on an individual basis. Therefore, it was assumed that the two groups were initially equated.

During the first eight weeks of class the two groups were treated as equally as possible. They were taught the keyboard and participated in several drills as well as learning the basic manipulation of the typewriter. The two classes were given only short-duration speed drills at

uneven intervals prior to the beginning of the study. Both classes received the same instruction on the same days. At no time during the classroom research did either of the groups question the difference in treatment.

Beginning with the ninth week of class it was arbitrarily decided that the class which met from 12:30 p.m. until 1:30 p.m. would receive a three-minute timing every day and would be called the Experimental Group and that the class which met from 1:35 p.m. until 2:30 p.m. would be given a three-minute timed writing once each week and would be called the Control Group. In addition, the fact that one class period was five minutes longer than the other made the earlier class more conducive to being timed on straight-copy material each day.

Over the fifteen-week period of the study the Experimental Group took 75 three-minute straight-copy timed writings, and the Control Group took 15 three-minute straight-copy timed writings. In addition, each group was administered and evaluated on seven production tests. From these scores three from each group were selected to be used in this study-- the first, middle, and final scores.

The Initial Performance Evaluation

On Friday, October 29, 1971, each group was administered the first three-minute timed writing and the first production test (a personal note in unarranged form and a postal card in semi-arranged form) to be used in this study.

This first timed writing was at 1.3 s.i. It was administered at the beginning of each class period. Both classes were treated identically during the testing period. The results of this first timed writing found the Experimental Group typing approximately two gross words per minute faster than the Control Group. The mean of the Experimental Group was

23.55172 while the Control Group mean was 21.91034. In order for the t-score of .09783 to show a significant difference between the two groups it would have had to reach 2.01. Since it did not, the score was not significant at the .05 level.

When comparing the straight-copy accuracy of the two groups it was found that the Experimental Group made 4.93103 mean errors while the Control Group averaged 6.00000 errors. The resultant t-score of 1.25376 was not significant at the .05 level.

Immediately following the administration of the timed writing each group participated in the first of seven production tests. The groups were given an unlimited amount of time to complete the production problems but were advised that both speed and accuracy would be evaluated. In completing the problems the Experimental Group used a mean of 128.17241 ten-second intervals or 6.71620 gross words per minute. The Control Group completed the problems in a mean of 144.56521 ten-second intervals or 6.17173 gross words per minute. The t-score did not show a significant difference at the .05 level.

The comparison of the accuracy scores on the production test showed a t-score of .45998 which revealed no significant difference at the .05 level.

The foregoing results showed no significant differences between the initial performances of the two groups on straight-copy speed, production speed, or accuracy.

The Middle Performance Evaluation

The second set of scores used in comparing these two groups resulted from tests administered on December 10, 1971, approximately half-way through the classroom research. A three-minute timing at 1.6 s.i.

and a production test consisting of a letter from semi-arranged copy constituted the evaluation instruments. Again both groups were first administered the timed writing and immediately following, the production test.

The straight-copy speed scores at this time had improved for both groups. The Experimental Group scored a mean of 33.82758 gross words per minute; the Control Group scored a mean of 29.82608 gross words per minute. The resultant t-score of 1.58019, however, did not prove significant at the .05 level. The accuracy scores, as reflected by a t-score of .70914, also proved not significant at the .05 level.

When comparing the production test results of the two groups, the Experimental Group was shown to type approximately one mean gross word per minute faster than the Control Group. Neither of the t-scores (1.43662 on the ten-second intervals and .71787 on the gross words per minute) proved significant at the .05 level.

The accuracy scores on both the straight-copy timed writings and on the production tests also showed no significance at the .05 level. The t-score from the errors on the timed writing was .70914; that from the production test was .90722. Since neither of these t-scores reached 2.01, they were, as previously stated, not significant at the .05 level of significance.

From these results one can ascertain that at the mid-point of the study there were no significant differences between the performances of the two groups.

The Final Performance Evaluation

The final performance evaluation used in this study was made on February 18, 1972, the final day of the classroom research. The three-

minute timed writing was at 1.6 s.i., and the production test involved typing an outline from unarranged form.

The speed comparison of the straight-copy timed writing produced a t-score of 1.65300 which was not significant at the .05 level, even though the Experimental Group was typing approximately four gross words per minute faster than was the Control Group.

The production test showed approximately the same results. This time, however, the Control Group was typing approximately one gross word per minute faster than the Experimental Group. The t-scores on the ten-second interval and gross-words-per-minute rates were .23809 and .76016 respectively, neither of which was significant at the .05 level.

The accuracy scores followed the same pattern. The errors on the straight-copy timed writing yielded a t-score of 1.42107. The errors on the production test yielded a t-score of .84959. When compared with 2.01, the results showed only that the two groups were still performing at approximately the same level.

Throughout the fifteen weeks, then, the two groups at no point proved to be significantly different from each other in performance levels. This is borne out by the fact that none of the t-scores presented showed a significant difference at the .05 level of significance.

Conclusions

An analysis of the research conducted leads to the following conclusion:

There is no significant difference in straight-copy speed, production speed, or accuracy at the beginning, middle, or conclusion of this study in which one group took a three-minute straight-copy timed writing five days a week and the other took a three-minute straight-copy timing once a week.

Recommendations

Based on the findings of this study, the following recommendations are made by the author:

1. Straight-copy typewriting timings need only be given once a week in a Beginning Typewriting class.
2. Beginning Typewriting students should be given greater opportunities for building production typewriting skills.
3. The teacher of Beginning Typewriting should plan classroom activities conscientiously, making wise use of the time available.
4. Further studies should be conducted to determine the effect of even greater spacing between timed writings on straight-copy typing speed and on production skills.

APPENDIX A

TABLE 16

INITIAL EXPERIMENTAL AND CONTROL GROUP
STRAIGHT-COPY SPEED SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>GWPM</u>	<u>Student Number</u>	<u>GWPM</u>
1	30	3	25
3	22	4	32
4	24	5	21
5	24	6	24
7	24	7	25
8	17	8	20
10	12	9	38
11	26	10	32
12	32	11	21
13	14	12	23
14	29	13	25
16	17	14	16
17	25	15	19
18	30	16	12
19	37	17	20
20	16	18	22
21	15	20	15
22	22	21	24
23	22	22	11
24	18	23	23
25	21	24	28
26	21	25	17
27	17	26	11
28	28		
29	27		
31	27		
32	26		
33	30		
34	30		
Mean GWPM	23.55172	Mean GWPM	21.91304

TABLE 17
 INITIAL EXPERIMENTAL AND CONTROL GROUP
 STRAIGHT-COPY ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	6	3	9
3	3	4	7
4	0	5	8
5	5	6	7
7	5	7	3
8	1	8	4
10	4	9	6
11	9	10	9
12	2	11	7
13	4	12	4
14	0	13	11
16	10	14	1
17	11	15	7
18	11	16	5
19	8	17	12
20	5	18	7
21	5	20	3
22	0	21	1
23	6	22	4
24	2	23	5
25	4	24	7
26	2	25	7
27	5	26	4
28	9		
29	4		
31	10		
32	1		
33	5		
34	6		
Mean Errors	4.93103	Mean Errors	6.00000

TABLE 18

INITIAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE

<u>Experimental Group</u>			<u>Control Group</u>		
<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>	<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>
1	95	8.80	3	187	4.24
3	99	8.10	4	94	8.57
4	106	7.59	5	141	5.67
5	204	3.88	6	117	6.84
7	124	6.47	7	115	6.91
8	136	5.89	8	158	5.04
10	158	5.04	9	58	14.04
11	126	6.29	10	113	7.14
12	118	6.80	11	103	7.72
13	175	4.54	12	144	5.50
14	130	6.17	13	128	6.23
16	113	7.14	14	147	5.43
17	182	4.37	15	133	5.97
18	86	9.30	16	142	5.64
19	80	10.00	17	149	5.39
20	133	5.97	18	117	6.84
21	150	5.28	20	143	5.62
22	118	6.80	21	169	4.70
23	104	7.67	22	247	3.21
24	186	4.26	23	181	4.39
25	218	3.65	24	91	8.74
26	151	5.24	25	144	5.50
27	123	6.50	26	304	2.62
28	107	7.54			
29	126	6.29			
31	100	8.05			
32	101	8.00			
33	83	9.78			
34	85	9.36			

Mean No. of
Intervals: 128.17241

Mean GWPM: 6.71620

Mean No. of
Intervals: 144.56521

Mean GWPM: 6.17173

TABLE 19
 INITIAL EXPERIMENTAL AND CONTROL GROUP
 PRODUCTION ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	3	3	1
3	0	4	7
4	7	5	11
5	5	6	5
7	16	7	11
8	11	8	14
10	29	9	19
11	19	10	6
12	3	11	7
13	76	12	17
14	8	13	5
15	17	14	5
17	16	15	20
18	6	16	23
19	5	17	12
20	17	18	8
21	9	20	16
22	20	21	3
23	4	22	23
24	4	23	5
25	12	24	10
26	6	25	14
27	12	26	18
28	24		
29	11		
31	7		
32	7		
33	3		
34	10		
Mean Errors	12.65517	Mean Errors	11.30434

TABLE 20

MID EXPERIMENTAL AND CONTROL GROUP
STRAIGHT-COPY SPEED SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>GWPM</u>	<u>Student Number</u>	<u>GWPM</u>
1	43	3	31
3	30	4	47
4	33	5	30
5	36	6	30
7	35	7	36
8	27	8	21
10	17	9	54
11	38	10	42
12	46	11	32
13	19	12	32
14	40	13	32
16	25	14	23
17	32	15	21
18	40	16	19
19	55	17	27
20	29	18	34
21	23	20	23
22	35	21	32
23	33	22	17
24	25	23	29
25	28	24	32
26	30	25	31
27	28	26	11
28	36		
29	36		
31	46		
32	34		
33	40		
34	42		
Mean GWPM	33.82758	Mean GWPM	29.82608

TABLE 21

MID EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE

<u>Experimental Group</u>			<u>Control Group</u>		
<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>	<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>
1	43	16.62	3	68	10.54
3	46	15.95	4	29	26.22
4	38	19.03	5	50	14.39
5	60	11.80	6	52	14.05
7	38	19.03	7	36	19.67
8	57	12.69	8	57	12.69
10	92	7.76	9	31	23.14
11	31	23.14	10	19	38.08
12	31	23.14	11	43	16.62
13	58	12.55	12	34	21.85
14	39	18.73	13	36	19.67
16	59	12.42	14	50	14.39
17	47	15.73	15	65	11.24
18	34	21.85	16	107	6.74
19	26	28.10	17	64	11.35
20	48	14.75	18	46	15.95
21	53	13.88	20	57	12.69
22	43	16.62	21	45	16.16
23	32	22.69	22	113	6.38
24	54	13.11	23	45	16.16
25	70	10.35	24	35	21.45
26	45	16.16	25	47	15.73
27	56	12.83	26	124	5.78
28	39	18.73			
29	32	22.69			
31	29	26.22			
32	35	21.45			
33	56	12.83			
34	30	23.60			
Mean No. of Intervals: 45.55172			Mean No. of Intervals: 54.47826		
Mean GWPM:		17.39482	Mean GWPM:		16.12782

TABLE 22

MID EXPERIMENTAL AND CONTROL GROUP
STRAIGHT-COPY ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	5	3	4
3	7	4	6
4	4	5	6
5	7	6	5
7	6	7	11
8	7	8	8
10	5	9	8
11	8	10	17
12	8	11	4
13	9	12	10
14	5	13	1
16	3	14	6
17	4	15	10
18	2	16	3
19	6	17	13
20	9	18	6
21	4	20	8
22	8	21	5
23	8	22	4
24	2	23	5
25	16	24	6
26	7	25	21
27	7	26	0
28	8		
29	6		
31	8		
32	4		
33	9		
34	8		
Mean Errors	6.55172	Mean Errors	7.26086

TABLE 23

MID EXPERIMENTAL AND CONTROL GROUP
PRODUCTION ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	3	3	6
3	3	4	2
4	1	5	5
5	2	6	10
7	0	7	3
8	6	8	10
10	12	9	6
11	6	10	4
12	2	11	8
13	30	12	15
14	2	13	1
15	3	14	4
17	1	15	13
18	2	16	12
19	2	17	12
20	8	18	6
21	12	20	2
22	4	21	4
23	2	22	11
24	2	23	5
25	7	24	5
26	6	25	1
27	1	26	11
28	17		
29	3		
31	4		
32	4		
33	4		
34	10		
Mean Errors	5.48275	Mean Errors	6.78260

TABLE 24

FINAL EXPERIMENTAL AND CONTROL GROUP
STRAIGHT-COPY SPEED SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>GWPM</u>	<u>Student Number</u>	<u>GWPM</u>
1	41	3	36
3	39	4	59
4	39	5	35
5	35	6	29
7	46	7	38
8	30	8	28
10	24	9	54
11	46	10	46
12	47	11	36
13	24	12	34
14	41	13	40
16	27	14	26
17	39	15	28
18	44	16	28
19	54	17	29
20	31	18	38
21	29	20	29
22	39	21	43
23	36	22	19
24	27	23	31
25	34	24	35
26	29	25	30
27	31	26	13
28	42		
29	45		
31	50		
32	44		
33	41		
34	46		
Mean GWPM	37.93103	Mean GWPM	33.69565

TABLE 25

FINAL EXPERIMENTAL AND CONTROL GROUP PRODUCTION SPEED SCORES
IN TERMS OF TEN-SECOND INTERVALS AND GROSS WORDS PER MINUTE

<u>Experimental Group</u>			<u>Control Group</u>		
<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>	<u>Student Number</u>	<u>Number of Ten-Second Intervals</u>	<u>GWPM</u>
1	71	14.43	3	100	10.12
3	72	13.83	4	49	20.40
4	117	8.60	5	64	15.96
5	104	9.65	6	99	10.18
7	97	10.31	7	70	14.56
8	78	12.77	8	76	13.39
10	135	7.44	9	55	18.24
11	72	13.83	10	56	18.04
12	116	8.65	11	73	13.72
13	108	9.22	12	64	15.96
14	81	12.48	13	72	13.83
16	110	9.12	14	90	11.07
17	124	8.14	15	101	10.06
18	71	14.43	16	106	9.54
19	74	13.61	17	100	10.12
20	81	12.48	18	108	9.22
21	106	8.54	20	106	9.54
22	90	11.07	21	116	8.65
23	71	14.43	22	171	5.87
24	108	9.22	23	111	9.07
25	115	8.69	24	83	12.30
26	69	14.69	25	91	10.99
27	112	9.02	26	147	6.83
28	57	17.85			
29	107	9.49			
31	120	8.30			
32	75	13.50			
33	70	14.56			
34	97	10.31			
Mean No. of Intervals: 93.37931			Mean No. of Intervals: 91.65217		
Mean GWPM:		11.36758	Mean GWPM:		12.07608

TABLE 26

FINAL EXPERIMENTAL AND CONTROL GROUP
STRAIGHT-COPY ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	4	3	3
3	4	4	5
4	2	5	2
5	4	6	13
7	4	7	3
8	5	8	3
10	6	9	5
11	12	10	11
12	5	11	2
13	7	12	12
14	4	13	2
16	2	14	6
17	2	15	6
18	3	16	3
19	4	17	12
20	5	18	11
21	6	20	7
22	4	21	7
23	1	22	7
24	1	23	6
25	5	24	6
26	6	25	1
27	5	26	1
28	14		
29	5		
31	2		
32	3		
33	4		
34	1		
Mean Errors	4.48275	Mean Errors	5.82608

TABLE 27

FINAL EXPERIMENTAL AND CONTROL GROUP
PRODUCTION ACCURACY SCORES

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Student Number</u>	<u>Errors</u>	<u>Student Number</u>	<u>Errors</u>
1	2	3	0
3	2	4	1
4	0	5	2
5	0	6	0
7	0	7	1
8	6	8	1
10	12	9	4
11	2	10	4
12	1	11	4
13	49	12	2
14	0	13	2
15	2	14	0
17	5	15	16
18	0	16	0
19	1	17	1
20	3	18	4
21	12	20	3
22	3	21	5
23	0	22	8
24	2	23	0
25	6	24	8
26	0	25	3
27	0	26	0
28	23		
29	0		
31	0		
32	2		
33	0		
34	3		
Mean Errors	4.68965	Mean Errors	3.00000

APPENDIX B

October 29, 1971

Full Sheet
 60 Space Line
 Double Space
 5-Space Indentions

Have a set time and place for studying. Place the books and papers within easy reach. It will help you to understand and remember what you read if you will outline it or underline each key statement. Most of all, read for meaning and not just to cover so many pages in the book.

Many students have real learning difficulties and don't know why. The trouble may be that they do not use the best study habits. When they realize this, they should ask for help at once, and they may be led to acquire the exact study habits that can lead to good work while still in school and fine success on the job.¹

4	44
8	48
12	52
16	56
19	59
22	62
26	66
30	70
34	74
38	78
40	80

1 | 2 | 3 | 4

¹D. D. Lessenberry, T. James Crawford, and Lawrence W. Erickson, 20th Century Typewriting (Cincinnati: South-Western Publishing Company, 1967), p. 81.

December 10, 1971

70 Space Line
 Double Space
 5-Space Indention

Quiet people are not the only ones who don't say much. Most of what is called conversation is just a lot of idle chatter. While no one expects us to talk of world problems or discuss the books of the most popular authors all the time, these should have our attention now and then, to say the least.

There are dozens of problems that need to be thought through to a solution, yet we just idly chatter away. "Silence is golden," it is said; but we are off the gold standard too much of the time. If we keep quiet except when we have something very important to say, there will be a great many quiet people in the world!²

4	46
9	50
13	55
18	59
20	61
24	66
29	70
33	75
38	79
41	83

1 | 2 | 3 | 4 | 5

²Ibid., p. 94.

February 18, 1972

70 Space Line
 Double Space
 5-Space Indentions

Practicing good manners whether you are at home or in school, with	4	55
your family or your friends, will help you acquire poise and assurance.	9	60
Being well-mannered means following the recognized rules of behavior which	14	65
help to make your relationships with others more pleasant. The basis for	19	70
good manners is kindness, thoughtfulness, and a deep concern for others.	24	75

Courtesy and consideration are very important in making friends	28	79
and in keeping them. Good manners are really a reflection of your own	33	84
attitude toward others. You must like people, respect them, be inter-	38	88
ested in them, and make the effort to get along with them. In school,	42	93
do you make the effort to be pleasant by being considerate of your	47	97
classmates, your teachers, and every school administrator? ³	51	101

1 | 2 | 3 | 4 | 5

³Ibid., p. 134.

APPENDIX C

October 29, 1971

Personal Note and Postal Card

(Line: 40; SS; date on Line 13)

Insert a half sheet with the long edge at the left. Return with the bell.

Date: November 10, 1971

Salutation: Dear Knox

Complimentary Close: Sincerely yours

The French Club of St. Catherine Academy will have a Dinner Dance for the benefit of the Scholarship Fund on December 6.

You will dance to the music of M. Jonois and his Orchestra and dine to the melody of Mlle. d'Aquin's magic voice.

You can dine and dance with French "joy of life" on December 6 for \$10 a couple. What a bargain! Don't miss it.

Use a card, $5\frac{1}{2}$ " by $3\frac{1}{4}$ "; Center the problem vertically, double-spaced.
Center each line horizontally.

THE FRENCH CLUB OF ST. CATHERINE ACADEMY / Scholarship Fund Dinner Dance /
December 6 / Music by M. Jonois and Orchestra / Mlle. d'Aquin and Her Magic
Voice / Ten Dollars a Couple /

Return Address: 3026 Napoleon Avenue / New Orleans, La. 70115

Address: Mr. Randolph Budreaux / 10 Audubon Place / New Orleans, La. 70118 /¹

(132 total words)

¹D. D. Lessenberry, T. James Crawford, and Lawrence W. Erickson,
20th Century Typewriting (Cincinnati: South-Western Publishing Company,
1967), p. 81

December 10, 1971

Letter

Line: 50; SS

Modified block style; Mixed punctuation

October 28, 1971 / Mr. Wallace L. Aki / 448 North Wakea Avenue / Kahului,
Maui, Hawaii 96732 / Dear Mr. Aki: / (P-1) You must take a physical
examination and complete / Form F 9401 to obtain our Major Medical coverage. /
The form was sent to you on October 10. Fill in / the white copy of the
form yourself and have your / doctor fill in the yellow copy. / (P-2) Your
insurance will become effective on the first / day of the month following
the date of acceptance / of your application by the insurance company. /
(P - 3) Write me if you have questions about Form F 9401. / Sincerely
yours, / (Return: 4) H. C. Muehlenberger / Secretary-Treasurer / (Your
initials)²

(118 total words)

²Ibid., p. 95.

February 18, 1972

Outline in Semiarranged Form

(Full sheet; Line: 60; Correct errors)

Heading: WRITING A REPORT

- I. Selecting a Topic
 - A. Limit the topic
 - B. Select a justified thesis or theme
 - C. Decide what information is needed
 1. Check appropriate library sources
 2. Make notes of research
 - D. Review and edit notes
 - E. Prepare an outline from notes
 1. Organize and refine notes
 2. Decide if more information is needed
 3. Determine main ideas or divisions
 4. Decide upon supporting subtopics
- II. Writing the Report
 - A. Let outline be guide
 - B. Type First Draft from Notes
 - C. Edit and Revise first draft
 1. Give special attention to grammar
 2. Eliminate unnecessary details
 3. Check for readability and interest
 - D. Type final draft in required Form
 - E. Proofread final draft for copying or typing errors
 - F. Prepare title page, table of contents (if needed), and bibliography
 - G. Assemble report for submission to Instructor³

(166 total words)

³Ibid., p. 141.

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SELECTED BIBLIOGRAPHY

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