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# Study to Determine the Effect of Taking a Timed Writing When it Has to Be Handed in as Compared to Taking One That Does Not Have to Be Handed in

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A STUDY TO DETERMINE THE EFFECT OF TAKING A TIMED WRITING  
WHEN IT HAS TO BE HANDED IN AS COMPARED TO TAKING ONE  
THAT DOES NOT HAVE TO BE HANDED IN

by

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Bachelor of Science, 1969  
Northern Michigan University

An Independent Study

Submitted to

Dr. Robert N. Hanson, Professor

Business Education Department

of

Northern Michigan University

in partial fulfillment of the requirements

for the degree of

Master of Arts in Education

Marquette, Michigan

May  
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This independent study submitted by Clyde J. Archambeau 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 has been done.

Robert W. Hanson  
Advisor

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## ABSTRACT

A STUDY TO DETERMINE THE EFFECT OF TAKING A TIMED WRITING  
WHEN IT HAS TO BE HANDED IN AS COMPARED TO TAKING ONE  
THAT DOES NOT HAVE TO BE HANDED IN

Clyde Archambeau, Master of Arts in Education

Northern Michigan University, 1971

### Purpose

The purpose of this study was to determine if there were differences in speed and accuracy in typewriting when a student had to hand a timing in as compared to when he did not.

### Method and Sources

First, a review of related literature was made to determine current attitudes about this matter. It was found that there was a wide range of opinions with respect to how timed writings should be given. Some people felt that timings should not be given at all and some felt that some timed work should be done every day.

On January 19, 1971, two five-minute timed writings were given to the eighteen students enrolled in first-year typing at the Dollar Bay High School, Dollar Bay, Michigan. The students were told that they would have to hand in the timings. They could cross out the one they did not like.



On January 20, two more five-minute timed writings were given to the students. This time they were told they only had to hand in a timing if it was a good one. A good timing was one that compared with the speed and errors that they had been getting or one that had more words per minute and less errors than they usually received. At the end of the timings the students were told that they must hand in the best timing of the two. This was done so that a comparison could be made with what the students did when they were not under pressure of having to hand in their timing as compared to what they did when they knew they had to hand it in.

#### Summary of Findings

In comparing the words per minute typed on the timings given under the two different circumstances, it was found that when students had to hand in their timings the mean speed of the group was .3 words a minute higher,-- gross words a minute as compared to--gross words a minute. When this slight difference was compared statistically, it was found that there were no significant differences at the .05 level.

In comparing the group's mean errors made on the two timings, it was found that there was a difference of .4 errors,--errors as compared to--errors. The timing with the slightly higher rate of errors was the one that was

taken with the students knowing they had to hand in a timing that day on which they would be graded. This slight difference in the means was compared statistically, and it was found that there were no significant differences at the .05 level.

The conclusion was made that students could type with the same level of speed and accuracy when they were under pressure of having to turn in their timings as when this pressure did not exist.

## CHAPTER I

### Introduction

The first question that is asked of a typist is usually to determine how many words per minute that he or she can type.

As typing teachers, we have to concern ourselves with the question of how to go about measuring the speed at which a student types. Should the student be under constant pressure to increase his speed or should he increase at his own rate without too much pressure.

There are a variety of ways teachers administer and grade timed writings to students. Some collect and grade the timed writings every day; others only collect the ones that the student feels he did well on. Still others may collect them one day and not on another day, depending on the teacher's wishes.

### Statement of the Problem

This is a study to determine the effect on a student's typing speed and accuracy if he is told to hand in his timed writing only if it is a good one. If he is not pressured by the fact that he has to hand in his timing and be graded on it, will he increase, decrease, or stay the same with respect to his typing speed and errors.

### Purpose of the Study

The purpose of the study is to determine if there is an increase in speed when a student is not pressured by the fact that he has to hand the timing in and is going to be graded on it.

Should the typing teacher set up some general speed goals for the students but let the student reach them at his own rate? If it can be shown that students do better when they know they have to hand the timing in only if it is a good one, then we as teachers should consider if this is a better way of accomplishing our goal of getting students to type faster.

### Need for the Study

There is one question most typing teachers keep asking themselves. How can I get my students to type faster and more accurately? If it can be shown by making the student less nervous about being graded on his timing to the point where he will do better in his typing, then this may be one answer to the question.

### Definitions

Five minute timed writing.--Five minutes of typing time on straight copy work without erasing errors.

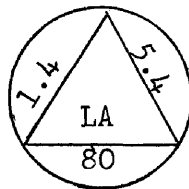
Straight copy.--Copy double spaced and arranged in paragraph form.

Word count.--Total number of words typed in five minutes.

- Error.--(1) Any dictionary work containing an incorrect stroke or strokes.
- (2) Any error in spacing in the timing.
- (3) Any word left out or added that is not in the original copy of the timed writing.

Copy difficulty.--The ease with which a paragraph can be typed is influenced greatly by three factors:

- (1) Syllable intensity (SI) or average number of syllables per word.
- (2) Stroke intensity of average word length (AWL).
- (3) Incidence of high-frequency words (HFW) or the percent of words used from among the thousand most-used words in business communication.



A timing with this symbol next to it means the following:

1.4 is the syllable intensity (SI) or average number of syllables per word.

The 5.4 means the stroke intensity of average word length (AWL).

The 80 means the incidence of high-frequency words (HFW) which is the percent

of words used from the thousand most-used words in business communication.

LA means the timing is of a low average in difficulty. This is found by using the three factors SI, AWL, and HFW explained above.

All timings used in the textbook had a difficulty as follows:

- (E) easy
- (LA) low average
- (A) average
- (HA) high average
- (D) difficult

In this experiment the timings used had a syllable intensity of 1.4, a stroke intensity of 5.4, and an incidence of high-frequency words of 80. This then made the timing of a low average in difficulty.

Good timing.--A good timing was one that compared with the speed and errors that the student had been getting or one that had more words per minute and less errors than he usually received.

Warm-up material.--Four or five lines of typing for the students to practice on before the timing was given. See Appendix B, page 44 for warm-up material.

Words per minute.--Number of words typed per minute in a five-minute timed writing.

The following statistical terms are used in this paper. They will be defined according to how they are computed.

Mean.--The sum of all the scores received on a test divided by the number of people taking the test.

$$M = \frac{\sum X}{N}$$

M is the Mean.

$\sum$  sum of a group.

N number of scores or people who took the test.

Standard deviation.--Measure of the scatter of the cases in a frequency distribution about their mean. In this experiment a common standard deviation for two groups was found. This was found by finding the square root of the sum of  $X_1$  minus  $M_1$  squared plus the sum of  $X_2$  minus  $M_2$  squared and divided by  $N_1$  minus 1 plus  $N_2$  minus 1.

$$SD = \sqrt{\frac{\sum(X_1 - M_1)^2 + \sum(X_2 - M_2)^2}{(N_1 - 1) + (N_2 - 1)}}$$

$\sum$  means sum of a group.

$X_1$  is the raw score of each student for timing one or the timing that had to be handed in for this study.

$M_1$  is the Mean for timing one.

$X_2$  is the raw score of each student for timing two or the one that was handed in only if it was a good one.

$M_2$  is the Mean for timing two.

$N_1$  is the total number of students that took timing one.

$N_2$  is the total number of students that took timing two.

Standard error of the difference.--This is computed by dividing the number of scores in group 1 plus the number of scores in group 2 by the product of the number of scores in group 1 multiplied by the number of scores in group 2. The square root of this answer is then found and it is multiplied by the standard deviation.

$$SE_D = SD \sqrt{\frac{N_1 + N_2}{N_1 N_2}}$$

$SE_D$  stands for standard error of the difference.

SD is standard deviation of the two groups.

$N_1$  is the number of scores in the first timing.

$N_2$  is the number of scores in the second timing.

Critical ratio or "t".--This was determined by dividing the difference between the means of the two groups by the standard error of the difference.

$$CR = \frac{\text{Difference between means of the two groups}}{SE_D}$$



### Limitations of the Study

1. There was only one typing class of eighteen students to which the timings were administered. The class had seven girls and eleven boys.
2. Some of the students had typewriters at home on which to practice.
3. There was no control over students being absent on days when tests were given.
4. Not all typewriters in the room were of the same make and model.
5. The five-minute timings were given the last week of the semester, which might have placed the students under more pressure than usual. The fact that this would be their last chance to increase their typing rate to get a higher grade for the semester may have caused undue pressure.
6. The timings were not out of the students' regular typing books. Each timing was on a single sheet of paper that was given to them just before the timing began.
7. The timings were administered after five minutes of typing on warm-up material by the students.
8. This was the first time students had been given the opportunity to hand in a timing only if it was a good one. All timings had to be handed in before whether or not they were good or bad.

### Delimitations of the Study

1. This study was limited to only five-minute timed writings.

2. The data were gathered from only two timings. One timing was given each day.

3. The timings used in gathering the data had a syllable intensity of 1.4, a stroke intensity of 5.4, and high-frequency words of 80. The timings were of a difficulty of low average (LA).

4. The typewriters used were as follows:

2 - electric Underwoods

3 - electric Olympias

3 - manual Olympias

10 - manual Royals with three different models being used.

5. The students were first-year typing students in their first semester.

6. Students were from grades eleven and twelve.

7. The experiment was conducted on the same group on two consecutive days.

8. There was no preview of the timings by the students.

9. The grading scale at the time of the timings was as follows:

36 & up	A
31 - 35	B
24 - 30	C
18 - 23	D

## CHAPTER II

### Related Literature

Whether or not a student does better on a timed writing which he knows is going to be handed in or on one that he knows he does not have to hand in unless it is a good one has been subject to debate.

In reviewing the related literature the researcher found a wide range of attitudes toward timed writings by instructors. Some representative ones will be summarized in the following paragraphs.

Dwayne Schramm has this to say about timed writings in the typing class.

What is it that timed writings do for the student? Do they make him feel relaxed as we say students should feel when they type? Do timed writings make the adrenalin shoot through the bodies of the victims that are being timed? "I get so nervous when you time us," is a frequent comment made to the typewriting teacher. You may have also heard it said, "I could type it all right; but when you set the time clock, something just happens." Some teachers administer timed writings in such a manner that it does not set the stage for relaxed typing. A certain amount of tenseness is said to be conducive to learning--but can't that be more free in its introduction into the classroom than through the medium of a time clock?<sup>1</sup>

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<sup>1</sup>Dwayne Schramm, "This Business of Timed Writings," The Balance Sheet, L (March, 1969), 305-06, 333.

In another article entitled "Building Control in Typewriting Classes"<sup>1</sup> the point is stressed that very few typists can typewrite accurately unless they are relaxed.

Tenseness causes incorrect responses to be transmitted to the fingers. The authors go on to explain how it is difficult for students to find a suitable typewriting rate when arms and shoulders are tense. Concentration is difficult when a person is tense. Tenseness also destroys rhythm.

The teacher can help his students keep their minds free for concentration by helping students recognize the importance of relaxation.

When a student knows he has to hand in a timing for a grade no matter if it is good or bad, would he not lose this relaxed feeling that Doris Crank and Floyd Crank are talking about in the above paragraph? Would the typist become tense in trying to type at a certain rate to get the grade he wants?

Relaxation is stressed in another article by Harry Jasinski<sup>2</sup>. He mentions that typewriting is best taught when the classroom attitude is one of relaxation and friendliness which inspires confidence and control in the students.

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<sup>1</sup>Doris H. Crank and Floyd L. Crank, "Building Control in Typewriting Classes," Business Education Forum, XIV (December, 1959), 21-22.

<sup>2</sup>Harry Jasinski, "Psychology of Teaching Typewriting," The Journal of Business Education, XXXIII (April, 1958), 287-88.

Katherine Humphrey<sup>1</sup> mentions that focus on constantly improving speed records makes students often try to increase speed beyond reasonable levels, and tensions build up to such a point that technique actually goes down. The student should be taught correct techniques without regard to results in terms of either speed or accuracy.

She also mentions that tension is the arch enemy of typewriting skill. Tension causes jerky motions in typewriting and therefore typing becomes slower, more inaccurate, and less fluent. When tension is present, technique can never be right. The student should be encouraged to find out how far he can push for speed without tensions damaging his technique.

Another article by Phyllis A. Monkman<sup>2</sup> also mentions that the more confident and relaxed the learner is the easier it becomes to increase speed consistently each day of each week without encountering plateaus of skill learning.

In an article by Kennedy and Wiper<sup>3</sup> it is said that a typist's physical control consists of correct methods of

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<sup>1</sup>Katherine Humphrey, "The Risk of 'Speed First' in Typing," Business Education World, XXXIII (September, 1952), 29-30.

<sup>2</sup>Phyllis A. Monkman, "Developing Skill in Typewriting," Business Education Forum, XIV (November, 1959), 15-16.

<sup>3</sup>Rita L. Kennedy and Robert E. Wiper, "How Can We Build Accuracy in Typing," Business Education World, XXXV (October, 1964), 20-22.

typing combined with control of the machine, technique of operation, use of the eyes in copy reading, and nerves while typing under stress.

An article by Rowe<sup>1</sup> also indicates that in striving for rapid typing a student should feel secure and confident in the classroom. He mentions that if a student does not feel rushed into things and has a chance to achieve something he will work harder for higher speed. Something that is very important that is pointed out in this article is the fact that it is sometimes surprising that without the pressure of having to turn in each timing a student takes in one day; but given the chance to hand in only the best out of, say, three he will achieve startling results in improved speed and accuracy. He then recommends administering a timed writing in a way that students remain calm and are not working under excessive pressure.

Raymond Morgan's Ph. D. study<sup>2</sup> further supports that there is stress on students when timed writings are administered. The study revealed that emotional stress appeared to be greatest just before a timed writing was given. A student with very little previous typing experience in the typing class showed the greatest amount of stress.

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<sup>1</sup>John L. Rowe, "How to Meet Changing Needs in Typewriting," Business Education World, XXXIV (February, 1964), 29-33.

<sup>2</sup>Raymond W. Morgan, "The Measure of Stress and Strain on Timed Writings and Production Typing as Reflected in Changes in Pulse Rates," The Journal of Business Education, XXX (February, 1955), 226.

Reigel<sup>1</sup> has an opposite approach to timed writings. He mentions that timings provide one excellent situation for typing under pressure. Mr. Reigel has also heard students say "I can type very well but when you time me, I can't do a thing." He says that the solution to that situation is not to avoid timed writings. By avoiding them, nothing is overcome. One solution is to make the student face up to the situation by repeated use of timed writings. This should be accompanied by the development of an understanding of the purpose of timed writings.

Working under pressure in the office is not an unusual occurrence. One technique which does prepare the typist for those pressure periods is the timed writing. Reigel says that, in effect, a typist on the job is being timed. A certain amount of work for the wages received is expected of the employee.

In an article by Croft<sup>2</sup> he explains how his students achieve higher speed through the use of short, snappy, and intensive class drills, working against time. He explains how with drive and drill, repetition, and forced speed, any typist with a keen desire to excel and good work habits can develop a high degree of speed and accuracy in typewriting.

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<sup>1</sup>Charles E. Reigel, "The Timed Writing--'Either Or'," The Balance Sheet, XXXXI (December, 1959), 160-61.

<sup>2</sup>Evan M. Croft, "Teaching Speed and Accuracy in Typewriting," The Balance Sheet, XXXX (December, 1958), 159-61.

Erickson<sup>1</sup> explains how speed and accuracy should be--in fact must be--one of the desirable "ends" goals of typewriting instruction. He goes on to explain how a certain amount of tension or anxiety is essential to skill learning. A student doesn't learn much in a contented state.

Nanassy hopes that the time is past when "speed tests" are given in the typewriting class for no better reason than that it is Friday, and on Friday the class always engages in timed writings.<sup>2</sup> He mentions that there is no substitute for using the stop watch to accelerate the responses of students at the typewriter.

No typist is ever hired to type straight copy under a time limit, observes Cambier,<sup>3</sup> so the use of timed writings for grading purposes should never be considered an accurate measurement. A grade for the student should be the result of accomplishments of practical exercises under conditions comparable to what is found in a business office, not under the strict supervision of a stop watch.

An interesting technique the researcher found was in an article by Miranti.

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<sup>1</sup>Lawrence W. Erickson, "Modes of Instruction and Their Meaning," The Balance Sheet, XXXVIII (March, 1967), 292-98.

<sup>2</sup>Louis C. Nanassy, "Improving Your Teaching of Typewriting," Business Education Forum, XVI (May, 1962), 26-27.

<sup>3</sup>Dennis W. Cambier, "Building Self-Confidence--A Typewriting Teacher's Responsibility," The Balance Sheet, XXXIX (March, 1958), 292-93, 336.



Each day after the usual practice, warm-up or speed starts, a timed writing is given. The student then spends a minimum of time checking, proofreading and grading their papers from the chart on the chalkboard.

The students keep their timed writing folders until the next day when another timed writing is taken, and the papers are proofread and graded.

This procedure is repeated each day until Friday. On Friday, the student then circles the best of his timed writings for the week, which allows for off days.<sup>1</sup>

The author of this article finds that this technique tends to make the student enjoy timed writings because he is competing with himself. It helps students to increase their speed, to type with control and keep their errors to a minimum. In this procedure the pressure of handing in the timings every day was taken off the student. He only handed the best one in for the week.

In a Master's thesis conducted by Rachel Shepherdson<sup>2</sup> at Illinois State University, Normal, Illinois, to determine the effect of timed daily practice on the development of production rates it was found that working under timed conditions on all class work produced better results than using untimed conditions. These results were statistically significant.

The group working under timed conditions had higher means than the group working under untimed conditions on all but two of the tests administered.

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<sup>1</sup>Elvira Miranti, "Timed Writings--Standards and Grading," The Balance Sheet, XLVI (October, 1964), 64-65, 95.

<sup>2</sup>Rachel Shepherdson, "Time! Time! Time!" The Balance Sheet, XXXXVII (December, 1965), 154-57, 192.

From this, Mrs. Shepherdson concluded that constant timed practice will produce higher net production rates in typewriting than untimed practice. Students recognized the value of working under timed conditions for building production typewriting skill from the results of an opinion-naire they answered.

From this study, she recommends that timed daily practice of problem work should receive the major emphasis in Typewriting II. This timed daily practice should begin early in the course. The final outcome was that timed daily practice of problem material produced the better results in terms of speed and accuracy for production rates than untimed practice.

A study conducted by Rochford<sup>1</sup> resulted in opposite findings. In this study there was a control group in which there was no timings of production. There was also an experimental group in which all production work was timed. The control group in which there was no timing was superior to the experimental group which had all production typewriting practice timed on eight out of ten production typewriting measurements. Two of the production measurements were statistically significant in superiority over the experimental group. However, when the groups were matched into seven pairs using the following variables: sex, instructor, previous formal typewriting experience, student

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<sup>1</sup>Pamela Rochford, "A Study to Determine if Timed Production Practice is More Effective in Building Production Typewriting Proficiency Than Untimed Practice," National Business Education Quarterly, XXXVIII (Fall, 1969), 34-35.

classification, net production rate a minute within .5 of a word per minute on the pretest given, and straight-copy rate per minute within 5 words per minute on the straight-copy pretest, the results were a little different. In this case, the matched experimental group was superior to the matched control group on 5 of the 10 production measurements. The matched control group was superior to the matched experimental group in only the remaining 5 production measurements. In this situation in none of the 10 tests was the difference significant statistically.

In another article written by Rochford, it is mentioned that growth in straight-copy proficiency is not significantly affected by the type of production practice used, whether timed or untimed.<sup>1</sup>

For production typing she suggests that typing teachers should assess the general typewriting abilities of each class individually and make use of that particular method, either timed or untimed, which would most benefit the students as a whole.

Her conclusion was that growth in straight-copy proficiency is not significantly affected by the type of production practice used, whether timed or untimed.

A study was conducted by George Nelson, Jr. to determine what effect the elimination of timed writings

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<sup>1</sup>Pamela Rochford, "Should Production Typewriting Be Timed?" Typewriting News, Spring, 1969, pp. 1-2, 6.

had upon the achievement of students enrolled in first-semester typewriting. In this study there was an experimental (nontimed) group and a control (timed) group.

The following conclusions were drawn:

Evidence in this study showed that no significant difference existed between the mean speed, accuracy, and production achievements of the group of students taught beginning typewriting with timed writings and the group taught without timed writings. It was concluded that the nontimed group of beginning typewriting students achieved a total typewriting skill which was equal to the total achievement of the timed group.

Typewriting teachers may apparently exclude timed writings from their approach to teaching beginning typewriting without fear of minimizing their students' typewriting achievements.<sup>1</sup>

In the nontimed group students did not become concerned with how fast they could type in terms of words per minute. These students wanted to type fast but to them fast was how many lines of practice typing they completed, how many letters they typed during the class period, and whether their typewriter sounded like it was typing fast.

He mentions that the elimination of timed writings may be what is needed to promote creativity and innovation in the beginning typewriting classroom.

King<sup>2</sup> has tried an interesting experiment on the college level. In the first semester he set no minimum speed rate for students to acquire. Instead he pointed out the importance of speed and stated that each student

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<sup>1</sup>George E. Nelson, Jr., "Do Timed Writings Contribute to Typewriting Skill Development," Business Education Forum, XXIV (November, 1969), 18-19.

<sup>2</sup>Jimmie King, Jr., "Too Much Emphasis on Speed," The Journal of Business Education, XXIX (December, 1953), 138.

should diligently work toward building and maintaining a rate that could be considered "employable" and one that would be most satisfactory to him.

The class hour was not used for speed drills, but practice hours were set up at which time the student could voluntarily come to the typing room and work on the development of speed. Students were taught how to use a timer and how to take a speed test. In class only once a week were speed tests given.

Mr. King was quite pleased with the speed obtained. Also after one semester of typing the students could type material and place it on the paper in an attractive manner, they could judge and set margins, divide words, tabulate data, and do many of the other things which will help them to be more efficient workers.

So the technique of letting students take timings on their own and not handing them in, with only one formal classroom timing taken each week, worked very well. It resulted in the development of production typing skill as well as straight-copy speed in a limited amount of time.

A quotation from an article by Patchen sums up the importance of timed writings in the business world and how as teachers we should try our best to get a timed writing that actually shows what the student can do. He states, "Any businessman, with even the slightest knowledge of typewriting, can interpret the results of a timed writing."<sup>1</sup>

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<sup>1</sup>E. A. Patchen, "In Defense of Timed Writings," The Balance Sheet, XXXIV (December, 1962), 159-79.

## CHAPTER III

### PROCEDURES

1. The problem was identified and the proposal for this study was prepared and submitted during the summer session of 1970, in a class called "Implications of Research, BE 598" at Northern Michigan University, Marquette, Michigan. At that time, procedures for administering the study were discussed with the researcher's adviser.

2. The Northern Michigan University Library was used in locating material for the related literature section of this paper.

3. Another meeting was held with the adviser before the timings were given to review the procedures for the administration of the study.

4. Materials for the two timed writings were selected from 20th Century Typewriting, Ninth Edition, Complete Course by Lessenberry, Crawford, and Erickson.<sup>1</sup>

5. The timings used for this experiment were duplicated on a one-page, printed sheet. The copy had a syllabic intensity (SI) of 1.4, a stroke intensity (AWL)

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<sup>1</sup>D. D. Lessenberry, James T. Crawford, and Lawrence W. Erickson, 20th Century Typewriting, Complete Course, Ninth Edition (Cincinnati: South-Western Publishing Company, 1967) pp. 183, 209.

of 5.4, and an incidence of high-frequency words (HFW) of 80 which made a composite of LA or low average in difficulty.

6. The first paragraphs in the timings were matched for total number of words. Both timings had gross words of 130 in the first paragraph. No one finished the whole timing so the number of words in the second paragraph had no effect on speed or errors in the timings.

7. First, a Xerox copy of each timing was taken from the textbook. Then a photo stencil was made from the Xerox copy, and twenty copies were run off on a Gestetner stencil duplicator for use by the students.

8. Two days were used to administer the timings.

9. After the bell rang for class to start the students had five minutes to practice on some warm-up material. See Appendix B, page 44.

10. Students were then given about a minute to put paper in typewriter and adjust if for:

- (a) double spacing
- (b) a 70 space line
- (c) five space paragraph indention

11. The copy was then distributed by the researcher to the students.

12. The students were then given one timing followed by a few minutes to circle their errors and figure their words per minute. See Appendix B, page 45.

13. The students were then given another timing on the same material and told again to circle their errors and figure their words per minute from the scale.

14. Both timings were handed in but the one the student did not like was crossed out.

15. On the second day students again were given five minutes to practice on some warm-up material. See Appendix B, page 44.

16. Students were again given about a minute to put paper in machines and to adjust them for a 70 space line, 5 space paragraph indention, and double spacing.

17. Before the timing on the second day, the students were told they would have to hand in their timing only if it was a good one. See page 4 for definition of a good timing.

18. Copies of the timing were then passed out to the students.

19. The students were then given one timing followed by a few minutes to circle their errors and figure their words per minute. See Appendix B, page 46.

20. Another five-minute timing was then given on the same copy and students were again given a few minutes to circle their errors and figure their words per minute.

21. At the end of the timings, students were told that they actually had to hand in their timings whether they were good or not. The students had taken the second timing thinking it was not going to be handed in unless it was a good one.



22. The timings were then gone over by the researcher to insure that all errors were circled and the correct speed was indicated.

23. A table was then made of the words per minute typed on the timing that had to be handed in. Another table was made on the words per minute typed on the timing that did not have to be handed in. See Appendix A, pages 35 and 36.

24. Two more tables were prepared, one showing the errors made on the timing that had to be handed in and the other showing the number of errors made on the timing that did not have to be handed in unless it was a good one. See Appendix A, pages 38 and 39.

25. The mean was then calculated for each table. See Appendix A, pages 35, 36, 38 and 39.

26. A chart was then drawn up to find the  $x$  and the  $x^2$  for each group. See Appendix A, pages 35, 36, 38 and 39.

27. The standard deviation was then calculated for the speed of the two timings. See Appendix A, page 37.

28. The standard deviation was then calculated for the errors that occurred on the two timings. See Appendix A, page 40.

29. The standard error of the difference was then calculated for both the speed and error factors for the two timings. See Appendix A, pages 37 and 40.

30. The critical ratio or "t" test was then determined for the speed calculations and for the error calculations. See Appendix A, pages 37 and 40.

31. The critical ratio was then applied to a table for use in determining the significance of statistics. The table was used to determine whether or not the differences for speed and accuracy were significant at the .05 level. See Appendix A, pages 41 and 42.

## CHAPTER IV

## FINDINGS

The first section shows a comparison of the words per minute typed on the timing that had to be handed in with the timing that was handed in only if it was a good one.

The second section shows a comparison of the errors made on the timed writing that had to be handed in with the timed writing that was handed in only if it was a good one.

## Comparison of Words Per Minute

The mean speed on the timing that had to be handed in was 30.4 words per minute. On the timing that was taken with the idea that it was to be handed in only if it was a good one the mean speed was 30.1 words per minute. When students had to hand in their timings the mean speed was .3 words a minute higher. See Table 1 on page 26 for individual sample results.

This slight difference of .3 words per minute was compared statistically. The common standard deviation for the two timings was 5.33. The standard error difference was 1.76. The critical ratio, or "t" was then found to be .17 and this figure was applied to the table of "t".

TABLE 1  
WORDS PER MINUTE TYPED

Sample	Timing 1	Timing 2
1	28	29
2	32	33
3	31	30
4	30	28
5	17	18
6	24	25
7	29	28
8	32	32
9	34	31
10	26	25
11	23	23
12	30	30
13	30	30
14	35	35
15	36	34
16	37	41
17	36	33
18	37	36

Mean = 30.4

Mean = 30.1

Timing 1 had to be handed in.

Timing 2 was taken with the idea it was to be handed in only if it was a good one.

From the table it was found that for 34 degrees of freedom the critical ratio or "t" of .17 indicated that there were no significant statistical differences at the .05 level. See Appendix A, pages 41 and 42.

#### Comparison of Errors

The total errors made on the two timings were also compared. The mean for the timing that had to be handed in was 9.1. On the second timed writing, which the students thought they had to hand in only if it was a good one, the mean was 8.7. Thus there was a difference of .4 errors between the groups on the two timings.

The timing with the slightly higher rate of errors was the one that was taken on the first day when the students knew that of the two timings taken that day they had to select one that they would be graded on. They then crossed out the one they did not like and handed in the one that would give them the highest mark when considering both speed and errors. The second timing, with the pressure of handing it in taken off, showed a slight drop in total errors made in five minutes. See the table on page 28 for individual sample results.

This slight difference in the means of .4 was compared statistically. For the two timed writings a common standard deviation of 3.63 was found. The standard error of the difference was 1.20, and the critical ratio or

TABLE 2  
TOTAL ERRORS MADE

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

Mean = 9.1

Mean = 8.7

Timing 1 had to be handed in.

Timing 2 was taken with the idea it was to be handed in only if it was a good one.

"t" was .33. The critical ratio or "t" was then applied to a table of "t".

It was found from the table that a "t" of .33 for 34 degrees of freedom was not large enough to indicate that there was any significant statistical difference at the .05 level. See Appendix A, pages 41 and 42.

For both speed and accuracy there was not a significant difference at the .05 level between a timing that had to be handed in and one that only had to be handed in if it was a good one.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary

The problem of this study was to determine what will happen to a student's typing speed and accuracy if he is told to hand in his timed writing only if it is a good one. By doing this, some of the pressure is taken off the student that would otherwise be there if he knew he had to hand in the timing no matter what his performance was.

On January 19, 1971, the eighteen students enrolled in first-year typing at the Dollar Bay High School were given two five-minute timed writings. Before the timings the students were told, as they were always told, that they would have to hand in the best timing. The two timings were taken and the students crossed out the timing they did not like and handed in the one they liked.

The next day, on January 20, the students were again administered two five-minute timed writings. Before the timings they were told they would hand one in only if it was a good one. A good timing was one that compared with the speed and errors that they had been getting or one that had more words per minute and less errors than they usually



received. At the end of the two timings the students were told they actually had to hand in the best timing of the two no matter if it was a good timing or not. This was done to compare what the students actually did on the timings when the pressure of having to hand them in was removed.

The two timed writings used in the experiment were taken from 20th Century Typewriting, Complete Course, Ninth Edition, by Lessenberry, Crawford, and Erickson.<sup>1</sup> Both were one-page printed straight copy material. They were matched for syllable intensity of 1.4, a stroke intensity of 5.4, and an incidence of high-frequency words of 80. A low average rating for difficulty was assigned by the authors of the textbook. The first paragraphs of the two timings were also matched for gross number of words. Both had 130 gross words in the first paragraph. See Appendix B, pages 45 and 46.

After the timings were administered, they were reviewed by the researcher to insure that all errors were circled by the students and that the correct gross words per minute was indicated.

A chart was then made of the words per minute typed on the timings that had to be handed in as compared to the timing that did not have to be handed in. Another chart was made which compared the errors made on the two different timings. See Appendix A, pages 35, 36, 38 and 39.

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<sup>1</sup>D. D. Lessenberry, James T. Crawford, and Lawrence W. Erickson, 20th Century Typewriting, Complete Course, Ninth Edition (Cincinnati: South-Western Publishing Company, 1967) pp. 183, 209.

The results were then compared and analyzed to determine whether or not there were any statistically significant differences at the .05 level. See Appendix A, pages 37 and 40.

In comparing speed on the two timed writings, the timing that had to be handed in had a .3 word per minute higher mean than the timing that was handed in only if it was a good one. This difference was compared statistically, and it was found that there was no statistically significant difference at the .05 level.

When comparing the total errors made on the two timings there was a difference of .4 errors between the means of the two timings. The timing that had to be handed in only if it was a good one had a lower mean number of errors. This difference was not statistically significant at the .05 level.

All formulas used in the computations of the statistics can be found in Appendix A.

### Conclusions

Based upon this study, the following conclusions were reached.

1. Students could type equally well when they were under pressure of having to hand in the timings as when this pressure was taken off and they only had to hand in the timing if it was a good one.

2. Students could type with the same accuracy level when they were under pressure of having to turn in their timings as when this pressure was taken off and they only had to hand in the timed writing if it was a good one.

#### Recommendations

From the information gathered in this study the following recommendations are made by the researcher:

1. Continued investigations should be conducted to determine whether or not the variable under study is related to improved skill development.

2. The experiment should be conducted for a longer period of time using both a control group and an experimental group. One group would always hand in their timings; the other group would hand one in only when the student thought it was a good one. Then a comparison could be made to see which group progressed faster in increasing speed and reducing errors.

APPENDIX A

TABLE 3  
RESULTS OF SPEED ON TIMING  
THAT HAD TO BE HANDED IN

Sample	wam	x	$x^2$
1	28	- 2.4	5.76
2	32	1.6	2.56
3	31	.6	.36
4	30	- .4	.16
5	17	-13.4	179.56
6	24	- 6.4	40.96
7	29	- 1.4	1.96
8	32	1.6	2.56
9	34	3.6	12.96
10	26	- 4.4	19.36
11	23	- 7.4	54.76
12	30	- .4	.16
13	30	- .4	.16
14	35	4.6	21.16
15	36	5.6	31.36
16	37	6.6	43.56
17	36	5.6	31.36
18	<u>37</u>	6.6	<u>43.56</u>
	18   <u>547</u>		492.28
	M = <u>30.4</u>		

TABLE 4

RESULTS OF SPEED ON TIMING TAKEN WITH THE  
IDEA THAT IT WAS TO BE HANDED IN  
ONLY IF IT WAS A GOOD ONE

Sample	wam	x	$x^2$
1	29	- 1.1	1.21
2	33	2.9	8.41
3	30	- .1	.01
4	28	- 2.1	4.41
5	18	-12.1	146.41
6	25	- 5.1	26.01
7	28	- 2.1	4.41
8	32	1.9	3.61
9	31	.9	.81
10	25	- 5.1	26.01
11	23	- 7.1	50.41
12	30	- .1	.01
13	30	- .1	.01
14	35	4.9	24.01
15	34	3.9	15.21
16	41	10.9	118.81
17	33	2.9	8.41
18	<u>36</u>	5.9	<u>34.81</u>
	18   <u>541</u>		472.98
	M = <u>30.1</u>		

COMPUTATIONS FOR COMPARING RESULTS  
OF SPEED ON THE TWO TIMINGS

$$SD = \sqrt{\frac{\sum(X_1 - M_1)^2 + \sum(X_2 - M_2)^2}{(N_1 - 1) + (N_2 - 1)}}$$

$$SD = \sqrt{\frac{492.28 + 472.98}{(18 - 1) + (18 - 1)}}$$

$$SD = \sqrt{\frac{965.26}{34}}$$

$$SD = \sqrt{28.39}$$

$$SD = 5.33$$

$$SE_D = SD \sqrt{\frac{N_1 + N_2}{N_1 N_2}}$$

$$SE_D = 5.33 \sqrt{\frac{18 + 18}{18(18)}}$$

$$SE_D = 5.33 \sqrt{\frac{36}{324}}$$

$$SE_D = 5.33 \sqrt{.111}$$

$$SE_D = 5.33 (.33)$$

$$SE_D = 1.76$$

$$CR = \frac{\text{Difference between means of the two groups}}{SE_D}$$

$$CR = \frac{.3}{1.76}$$

$$CR = .17$$

TABLE 5  
RESULTS OF ERRORS MADE ON TIMING  
THAT HAD TO BE HANDED IN

Sample	Errors	x	x <sup>2</sup>
1	6	-3.1	9.61
2	16	6.9	47.61
3	4	-5.1	26.01
4	10	.9	.81
5	6	-3.1	9.61
6	9	-.1	.01
7	9	-.1	.01
8	5	-4.1	16.81
9	11	1.9	3.61
10	7	-2.1	4.41
11	5	-4.1	16.81
12	7	-2.1	4.41
13	14	4.9	24.01
14	12	2.9	8.41
15	16	6.9	47.61
16	14	4.9	24.01
17	6	-3.1	9.61
18	<u>6</u>	-3.1	<u>9.61</u>
	18   <u>163</u>		262.98
	M = <u>9.1</u>		



TABLE 6

RESULTS OF ERRORS MADE ON TIMING THAT WAS TAKEN  
WITH THE IDEA THAT IT WAS TO BE HANDED IN  
ONLY IF IT WAS A GOOD ONE

Sample	Errors	x	$x^2$
1	6	-2.7	7.29
2	9	.3	.09
3	8	- .7	.49
4	5	-3.7	13.69
5	5	-3.7	13.69
6	15	6.3	39.69
7	13	4.3	18.49
8	14	5.3	28.09
9	5	-3.7	13.69
10	5	-3.7	13.69
11	10	1.3	1.69
12	7	-1.7	2.89
13	9	.3	.09
14	10	1.3	1.69
15	11	2.3	5.29
16	12	3.3	10.89
17	8	- .7	.49
18	<u>5</u>	-3.7	<u>13.69</u>
	18   <u>157</u>		185.62
	M = <u>8.7</u>		

COMPUTATIONS FOR COMPARING RESULTS  
OF ERRORS ON THE TWO TIMINGS

$$SD = \sqrt{\frac{\sum(X_1 - M_1)^2 + \sum(X_2 - M_2)^2}{(N_1 - 1) + (N_2 - 1)}}$$

$$SD = \sqrt{\frac{185.62 + 262.98}{(18 - 1) + (18 - 1)}}$$

$$SD = \sqrt{\frac{448.60}{34}}$$

$$SD = \sqrt{13.19}$$

$$SD = 3.63$$

$$SE_D = SD \sqrt{\frac{N_1 + N_2}{N_1 N_2}}$$

$$SE_D = 3.63 \sqrt{\frac{18 + 18}{18(18)}}$$

$$SE_D = 3.63 \sqrt{\frac{36}{324}}$$

$$SE_D = 3.63 \sqrt{.111}$$

$$SE_D = 3.63 (.33)$$

$$SE_D = 1.20$$

$$CR = \frac{\text{Difference between means of the two groups}}{SE_D}$$

$$CR = \frac{.4}{1.20}$$

$$CR = .33$$

TABLE OF  $t$ , FOR USE IN DETERMINING THE  
SIGNIFICANCE OF STATISTICS

Example: When the  $df$  are 35 and  $t = 2.03$ , the .05 in column 3 means that 5 times in 100 trials a divergence as large as that obtained may be expected in the positive and negative directions under the null hypothesis.

Degrees of Freedom	0.10	0.05	0.02	0.01
1	t=6.34	t=12.71	t=31.82	t=63.66
2	2.92	4.30	6.96	9.92
3	2.35	3.18	4.54	5.84
4	2.13	2.78	3.75	4.60
5	2.02	2.57	3.36	4.03
6	1.94	2.45	3.14	3.71
7	1.90	2.36	3.00	3.50
8	1.86	2.31	2.90	3.36
9	1.83	2.26	2.82	3.25
10	1.81	2.23	2.76	3.17
11	1.80	2.20	2.72	3.11
12	1.78	2.18	2.68	3.06
13	1.77	2.16	2.65	3.01
14	1.76	2.14	2.62	2.98
15	1.75	2.13	2.60	2.95
16	1.75	2.12	2.58	2.92
17	1.74	2.11	2.57	2.90
18	1.73	2.10	2.55	2.88
19	1.73	2.09	2.54	2.86
20	1.72	2.09	2.53	2.84
21	1.72	2.08	2.52	2.83
22	1.72	2.07	2.51	2.82
23	1.71	2.07	2.50	2.81
24	1.71	2.06	2.49	2.80
25	1.71	2.06	2.48	2.79
26	1.71	2.06	2.48	2.78
27	1.70	2.05	2.47	2.77
28	1.70	2.05	2.47	2.76
29	1.70	2.04	2.46	2.76
30	1.70	2.04	2.46	2.75
34	1.69	2.03	2.44	2.72
35	1.69	2.03	2.44	2.72
40	1.68	2.02	2.43	2.71
45	1.68	2.02	2.41	2.69
50	1.68	2.01	2.40	2.68
60	1.67	2.00	2.39	2.66
70	1.67	2.00	2.38	2.65
80	1.66	1.99	2.38	2.64
90	1.66	1.99	2.37	2.63

TABLE OF t,--Continued

Degrees of Freedom	0.10	0.05	0.02	0.01
100	t=1.66	t=1.98	t=2.36	t=2.63
125	1.66	1.98	2.36	2.62
150	1.66	1.98	2.35	2.61
200	1.65	1.97	2.35	2.60
300	1.65	1.97	2.34	2.59
400	1.65	1.97	2.34	2.59
500	1.65	1.96	2.33	2.59
1000	1.65	1.96	2.33	2.58
$\infty$	1.65	1.96	2.33	2.58

APPENDIX B

**LESSON 21**81-A CONDITIONING PRACTICE (*each line three times*)

5 minutes

*Alphabetic* Jack Culep admired the vivid, waxy sheen of a Guatemalan quetzal bird.  
*Figures* Is American Flight 738 scheduled to arrive at 9:25 a.m. or 10:46 p.m.?  
*Long reaches* The unusual aluminum bridge is decorated with many bright nylon flags.  
*Speed* When he paid for the land, he also signed the audit form for the firm.

1 | 11 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 111 | 121 | 131 | 141

**LESSON 22**82-A CONDITIONING PRACTICE (*each line three times*)

5 minutes

*Alphabetic* Fay saw many zebra and quaint pink ducks in the exciting jungle movie.  
*Figures* We received 129 chairs, 30 typewriters, and 75 desks on Order No. 648.  
*Double letters* Three letters will go to Bill and Betty Ott about the Tennessee deeds.  
*Speed* They may use eight or more of the angle forms in order to do the work.

1 | 11 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 111 | 121 | 131 | 141

**116B: Growth Index - Straight Copy** (15) *two 5' writings; circle errors; determine gwam*

*All letters are used.*



There is an overwhelming amount of paper work in the modern office. Because of this problem, many firms are using computers for the processing of much of the data which make up the paper work of the firms. Although the speed with which these data can be processed has been dazzling, the use of computers for processing data is limited to work of a repetitive nature. Contrary to the opinion of some people, a computer cannot think; it can only react to the program that has been prepared for it. In this process, the first step is for a person to study all the records of the firm; then the next step is to prepare the program for the computer.



More than ever, the modern office worker must get a good education if he is to find and hold a job. His worth is increased if he knows how to type. The basic tool of the computer is the punched card. This card may be punched indirectly as new records are prepared, or it may be punched directly by the use of a card punch machine. Did you know that this card punch machine has the letter keyboard of a standard typewriter? A good typist can, with a small amount of instruction, operate a card punch machine. Learning to type, then, is another way to enter the exciting field of automation.

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

GWAM		
1'	3'	5'
14	3	53
28	6	55
42	8	58
57	11	61
72	14	64
87	17	67
102	20	70
116	23	73
130	26	76
13	29	78
28	32	81
43	34	84
56	37	87
71	40	90
86	43	93
100	46	96
113	49	98
119	50	99

**135B: Growth Index – Straight Copy** (15) *two 5' writings* Goal: *Not over 1 error a minute*

*All letters are used.*



For most typing tasks, the typist must use paper, carbon sheets, envelopes, and other items. Much time may be lost in using such supplies. For example, supplies may be in utter disarray on or in the typist's desk. The output of a typist can be increased by careful planning of the order and layout of paper, carbon sheets, envelopes, and other supplies. In this way, these items can be reached quickly and easily as they are needed. The same rule or guide also applies to erasers, note pads, pencils, pens, and other tools that may be used in the job to be done. "A place for everything with each thing in its place," is a good rule to follow.



A second guide to effective work habits relates to the assembly, pickup, and insertion of supplies into the typewriter. The typist may use many waste motions in assembling and inserting a carbon pack into the machine. He may not realize that much time may be lost with even such a simple task as the insertion of a sheet of paper into the machine. For example, the typist may fumble the paper, he may use both hands in the pickup of the paper, he may turn the paper a few times, he may grind rather than twirl the paper into the machine, and he may use many other waste motions—each of which results in lost time. This is time that can and should be turned into typing time and increased production rates.

GWAM	
1'	5'
13	3 57
28	6 60
43	9 63
58	12 66
72	14 69
86	17 72
100	20 74
114	23 77
128	26 80
130	26 80
13	29 83
27	31 86
41	34 89
55	37 91
70	40 94
85	43 97
99	46 100
113	49 103
122	51 104
142	54 109

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



SELECTED BIBLIOGRAPHY

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- Cambier, Dennis W. "Building Self-Confidence--A Typewriting Teacher's Responsibility." The Balance Sheet, XXXIX (March, 1958), 292-93, 336.
- Crank, Doris H., and Crank, Floyd L. "Building Control in Typewriting Classes." Business Education Forum, XIV (December, 1959), 21-22.
- Croft, Evan M. "Teaching Speed and Accuracy in Typewriting." The Balance Sheet, XXXX (December, 1958), 159-61.
- Erickson, Lawrence W. "Modes of Instruction and Their Meaning." The Balance Sheet, XXXXVIII (March, 1967), 292-98.
- Humphrey, Katherine. "The Risk of 'Speed First' in Typing." Business Education World, XXXIII (September, 1952), 29-30.
- Jasinski, Harry. "Psychology of Teaching Typewriting." The Journal of Business Education, XXXIII (April, 1958), 287-88.
- Kennedy, Rita L., and Wiper, Robert E. "How Can We Build Accuracy in Typing." Business Education World, XXXV (October, 1964), 20-22.
- King, Jimmie Jr. "Too Much Emphasis on Speed." The Journal of Business Education, XXIX (December, 1953), 138.
- Lessenberry, D. D.; Crawford, T. James; and Erickson, Lawrence W. 20th Century Typewriting, Complete Course, Eighth Edition. Cincinnati: South-Western Publishing Company, 1962.
- Lessenberry, D. D.; Crawford, T. James; and Erickson, Lawrence W. 20th Century Typewriting, Complete Course, Ninth Edition. Cincinnati: South-Western Publishing Company, 1967.
- Miranti, Elvira. "Timed Writings--Standards and Grading." The Balance Sheet, XLVI (October, 1964), 64-65, 95.

- Monkman, Phyllis A. "Developing Skill in Typewriting." Business Education Forum, XVI (November, 1959), 15-16.
- Morgan, Raymond W. "The Measure of Stress and Strain on Timed Writings and Production Typing as Reflected in Changes in Pulse Rates." The Journal of Business Education, XXX (February, 1955), 226.
- Nanassy, Louis C. "Improving Your Teaching of Typewriting." Business Education Forum, XVI (May, 1962), 26-27.
- Nelson, George E. Jr. "Do Timed Writings Contribute to Typewriting Skill Development." Business Education Forum, XXIV (November, 1969), 18-19.
- Patchen, E. A. "In Defense of Timed Writings." The Balance Sheet, XXXXIV (December, 1962), 159-79.
- Reigel, Charles E. "The Timed Writing--'Either-Or'." The Balance Sheet, XXXXI (December, 1959), 160-61.
- Rochford, Pamela. "Should Production Typewriting Be Timed?" Typewriting News, Spring, 1969, pp. 1-2, 6.
- Rochford, Pamela. "A Study to Determine if Timed Production Practice is More Effective in Building Production Typewriting Proficiency Than Untimed Practice." National Business Education Quarterly, XXXVIII (Fall, 1969), 34-35.
- Rowe, John L. "How to Meet Changing Needs in Typewriting." Business Education World, XXXXIV (February, 1964), 29-33.
- Schramm, Dwayne. "This Business of Timed Writings." The Balance Sheet, L (March, 1969), 305-06, 333.
- Shepherdson, Rachel. "Time! Time! Time!" The Balance Sheet, XXXXVII (December, 1965), 154-57, 192.