AN EXPERIMENTAL STUDY ANALYZING INTENTIONAL AND INCIDENTAL LEARNING OF TECHNICAL BUSINESS VOCABULARY IN SECOND - YEAR TYPEWRITING CLASSES

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This is to certify that the

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AN EXPERIMENTAL STUDY ANALYZING INTENTIONAL AND INCIDENTAL LEARNING OF TECHNICAL BUSINESS VOCABULARY BY SECOND - YEAR TYPEWRITING CLASSES

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ABSTRACT

AN EXPERIMENTAL STUDY ANALYZING INTENTIONAL AND INCIDENTAL LEARNING OF TECHNICAL BUSINESS VOCABULARY IN SECOND-YEAR TYPEWRITING CLASSES

by Rosetta Cornelia Fews

Statement of the Problem

The problem of this study was to determine whether or not second-year typewriting students could learn the meanings of technical business terms intentionally and incidentally through the typing of specially written paragraphs in which the meanings of the terms were defined within the context. In addition, the study sought to ascertain whether the meanings of the business terms, once learned intentionally or incidentally, could be retained after a five-week period.

Procedures

Five classes were taught by the intentional method in which the students were instructed to learn business word meanings as they typed special paragraphs for five minutes. Five other classes were taught by the incidental method in which the students typed the special paragraphs but did not receive instructions to learn the word meanings as they typed. One class was used as a control class and was not exposed to the special paragraphs but typed regular drills from the textbook.

A pretest and posttest using the Hicks Business Vocabulary Test and the Typewriting Achievement Test were given to students in the experiment. Thirty business terms missed by 55 per cent or more students on the pretest business vocabulary test were randomly selected and paragraphs were written defining the meanings of the terms.

A retention test using the Hicks Business Vocabulary Test was given five weeks after the posttest to determine the retention of the number of business word meanings learned.

Analysis of variance and simple correlations were used to analyze the data.

Findings

1. Students who were instructed to learn business word meanings as they typed added a mean score of 4.43 words to their business vocabulary.

2. Students who were not instructed to learn business word meanings as they typed but were instructed to type for speed with control added a mean score of 3.18 business word meanings to their business vocabulary.

3. Students who did not type the word-defined-in-context paragraphs but typed textbook drills instead lost a mean of 1.04 word meanings. When the Intentional and Incidental groups were combined and compared with the Control group on mean gain scores on the business vocabulary test, there was a significant difference at the .0005 level in favor of the two experimental groups.

4. There was no significant difference at the .05 level in retention after five weeks of the number of business word meanings learned by the two experimental groups.

5. There were significant mean gains in production scores on the Typewriting Achievement Test at the .05 level for the three groups.

Conclusions

1. A significant mean gain score in business vocabulary was achieved when typing students spent a portion of the class period typing paragraphs in which the meanings of business words were obvious from context.

2. Students who had been instructed to learn business word meanings as they typed did as well as those who were not instructed to learn as they typed in the number of word meanings retained over a five-week period.

3. Typing word-defined-in-context paragraphs did not hinder the normal progress of students in increasing production scores.

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Rosetta Cornelia Fews

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STATEMENT AND DISCUSSION OF THE PROBLEM

Introduction

Some things are learned without a conscious effort to learn while other things are learned because there is a commitment to learn. A small child when beginning to talk learns words incidentally from the conversation of those around him, not by deliberately setting out to increase his vocabulary. When the child reaches school age, his vocabulary is increased due to the efforts of the teacher through spelling and vocabulary drills and the writing of compositions. As the child advances in school subjects, he is exposed to vocabulary peculiar to a particular subject. His mastery of special vocabularies is essential if he is to grasp the principles and concepts of that subject. At the same time, the child continues to increase his vocabulary incidentally by reading newspapers and books, watching television, and listening to the radio.

If learning of vocabulary takes place incidentally and intentionally, teaching methods and techniques in typewriting might be used in developing technical business vocabulary by both methods.

The Problem

Statement of the Problem. The problem of this study was to determine whether or not second-year typewriting students could learn the meanings of technical business terms intentionally and incidentally through the typing of specially written paragraphs in which the meanings of the terms were defined within the context. In addition, the study sought to ascertain whether the meanings of the business terms, once learned intentionally or incidentally, could be retained after a five-week period.

Answers to the following questions were sought:

1. Do second-year typewriting students significantly increase their business vocabulary intentionally while typing paragraphs in which the meanings of business terms are apparent from context?

2. Do second-year typewriting students significantly increase their business vocabulary incidentally while typing paragraphs in which the meanings of business terms are apparent from context?

3. What is the effect of the number of repetitions on the number of business word meanings learned?

4. What is the correlation of initial business vocabulary knowledge to intelligence quotient, socio-economic level, and the number of business courses taken?

5. What is the correlation of mean gains in business vocabulary to age, sex, and mean gains in production scores?

6. What is the correlation between the intentional learning of meanings of business terms and retention of these meanings?

7. What is the correlation between the incidental learning of meanings of business terms and retention of these meanings?

Definition of Terms

Intentional learning in this study is learning that takes place because students are instructed to learn.

Incidental learning for the purpose of this study, is learning that takes place without explicit instructions to learn.

Technical business terms in this study are words and groups of words which have specialized meaning within business and which sometimes take on another meaning when used outside of business. For example, "consideration" in a contract is something of value exchanged for a promise. Outside of the business context, "consideration" is in the sense of regard for another person's feelings. Such terms as "technical business vocabulary," "business vocabulary," "business words," "business terms," and "business word meanings" are synonymous in this study.

A student who was able to comprehend the meaning of what he was typing was presumed to have learned from the content or context of the material typed.

Second-year typewriting students in this study had successfully completed one year (two semesters) of typewriting. The students in the experiment were in their third semester of typewriting where the emphasis was on typewriting for vocational (job) use.

Production scores in this study were obtained from a standardized production test that involved the typing of business letters, manuscripts, and tables under a time limit. Total number of errors was subtracted from the gross words typed to arrive at a production score.

The gain (loss) in the number of business word meanings within the context of this study is taken to mean an increase (decrease) in the mean scores from an administered pretest and an administered posttest using the Hicks Business Vocabulary Test.

A gain (loss) in production scores is taken to mean an increase (decrease) in the mean scores from an administered pretest and an administered posttest using the Typewriting Achievement Test.

Retention in this study is a correct response to an item on the retention test (Hicks Business Vocabulary Test) that was correctly answered on the posttest after being learned during the experiment.

Need for the Study

The vocabulary of business is of particular importance to those who plan some degree of specialization in the business area. Very often the communication in the field of business is carried on through written correspondence. Therefore, the words in written communication should be included in the vocabulary of persons who will prepare correspondence.

Because business words could constitute an integral part of the subject matter in teaching typewriting, it seems logical that the business words used in this subject area be used as a means of developing business vocabulary.

The study has practical implications for students, teachers, and textbook writers.

A student's success in getting and holding a job is very often influenced by his ability to comprehend business terminology. Many employment tests include special vocabulary sections to determine the suitability of the applicant for a position in a particular type of business. By learning the language of business, students may establish a direct relationship

between what is learned in the classroom and what takes place on the job.

A study of the intentional and the incidental methods of building business vocabulary may be a valuable contribution in the teaching practices of many business teachers.

With the upsurge of technology in business, there will be an increasing need to develop a technical vocabulary. Teachers of business subjects such as typewriting need to be sure that students entering business understand such technical terms as input, output, feedback, and the like. Because one of the teaching objectives of business teachers is to develop students' business vocabulary, meanings of technical business terms might be developed through typewriting materials defining these terms.

If students are taught to comprehend the content of material that is being typed, typewriting textbooks might be written in such a manner as to include more meaningful copy from which students can learn.

Null Hypotheses

The following null hypotheses were tested using the analysis of variance:

Ho_1: There is no significant difference between the mean gains in business vocabulary of students who type the meanings of business terms and students who type regular textbook drills.

Ho_2: There is no significant difference at the end of six weeks in the typewriting production mean scores of students who practice typing special paragraphs in which business words are defined in context and students who type from typewritten textbook drills.

Ho_3: There is no significant difference between the number of technical business word meanings learned intentionally while typing word-defined-in-context paragraphs and the number of technical business word meanings learned incidentally while typing word-defined-in-context paragraphs.

Ho_4: There is no significant difference in the number of business word meanings learned and the number of repetitions.

Ho_5: There is no significant difference between the number of business word meanings retained by students who learn the meanings intentionally and students who learn the meanings incidentally while typing.

Assumption

The following assumption was made concerning the students in the experiment:

The second-year typewriting students in the experiment should have automatized the skill to the point where they could type while something else was in their consciousness such as learning from the material being typed. Normally, students who have successfully completed two semesters of typewriting do not have to think about the reaches to the keys or the location of the carriage return or the shift key to use. The students in the experiment had had two semesters and six weeks of typewriting when the study began.

Scope, Delimitations, and Limitations

Scope of the Study. Two hundred and twenty-seven students in eleven different typewriting classes were involved in the experiment. The students, 204 girls and 23 boys, were enrolled in second-year typewriting classes. Their ages ranged from fifteen to eighteen years. Seven teachers were used, two men and five women. There were six participating high schools, three located in Lansing, Michigan, and three located in Detroit, Michigan. Each of the six schools had an enrollment of 1,800 or more students and was in a school district of 20,000 or more students.

Two experimental groups and one control group were used and are described in Table I. One of the experimental groups was called the Intentional Group. The Intentional Group typed from paragraphs in which the meaning of a business term was obvious from the content. The written instructions for the Intentional Group indicated that the purpose for typing the paragraphs was to learn the meaning of the underlined business term as they typed. Two paragraphs, each containing a different business word, were typed each class period.

The other experimental group was called the Incidental Group. The Incidental Group typed the same paragraphs as the Intentional Group but written instructions to the Incidental Group indicated that the purpose for typing the paragraphs

TABLE I

GROUPS, TREATMENTS, MATERIALS, AND INSTRUCTIONS USED IN THE EXPERIMENT

Group	Treatment	Materials	Instructions
Experimental	Intentional	Specially written paragraphs	Instructions to learn business word meanings while typing
Experimental	Incidental	Specially written paragraphs	Instructions to type for speed with control
Control	Textbook drills	Drills--isolated words and unrelated	Instructions to type each line three times

was to develop speed with control. No instructions were given to learn the meanings of the business words to the Incidental Group. In the paragraphs typed by the Incidental Group, the business words were not underlined.

The Control Group was not exposed to the word-defined-in-context material but instead typed from typewriting textbook drills. These drills consisted of isolated words and unrelated sentences. This group was included in the experiment to obtain a criterion of the normal growth in business vocabulary and production skills during the six-week experimental period.

Of practical interest to educators is the domonstration of a level of retention over a period of time of what has been learned. Therefore, this study investigated the retention of business word meanings learned during the experiment five weeks after the posttest.

Delimitations of the Study. The study was concerned with the measurement of significant mean gain or mean loss in thirty of the one hundred business word meanings in the Hicks Business Vocabulary Test;[1] the mean gain or mean loss in production scores; and the number of business word meanings retained five weeks after the posttest.

Limitations of the Study. Uncontrollable factors such as the learning of technical business terms in other classes

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[1]Charles B. Hicks, "Technical Business Vocabulary of General Business Education" (unpublished Ph.D. dissertation, University of Michigan, 1948), pp. 199-203.

taken concurrently with the experiment, the time of day the typewriting classes were held, and possible outside-of-the-school study of the word meanings may have had an effect on the results of the study. However, it is not likely that these factors had a significant effect on the results because the students were not told the purpose or design of the experiment. Each test given was a surprise test.

Outcome of the Study

If it is found that business vocabulary can be significantly increased intentionally and incidentally without interfering with the normal development of production skills, then these two methods of building vocabulary might become a part of the teaching methodology of typewriting teachers.

If students do learn from the special material being typed, they might be more desirable in a business office due to their ability to use business terminology properly in written and oral communication.

Typewriting textbooks generally contain drill material that contributes very little to the general education of the student. If it is found in this study that significant mean gains in business word meanings result from typing specially written material that does not impede normal progress in production skills, great consideration should be given to including worth while learning material for drill purposes in typewriting textbooks.

CHAPTER II

REVIEW OF RELATED RESEARCH

This chapter will review research in typewriting and psychology that is related to the present study.

Related Research in Typewriting

Blavat[2] used thirty-six students in a beginning summer session typewriting class. The class was split into two groups of eighteen students each. For four days each week, the teacher presented two word-defined-in-context paragraphs to eighteen students in the Experimental group and two word-not-defined-in-context paragraphs each day to the eighteen students in the Control group. One day each week, the teacher presented again all paragraphs typed during the week. After the three-week experimental period, vocabulary growth was measured. The Experimental group learned words incidentally from the context of the paragraphs as they gained in vocabulary significantly at the .01 level over the Control group.

There are three cautions in interpreting the results of the Blavat experiment. First, the study was done with a small

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[2]Herbert Blavat, "An Experimental Study to Determine if Typewriting Can Be Used As a Means of Increasing Vocabulary and Comprehension" (unpublished Master's thesis, University of Southern California, Los Angeles, 1957), 56 pp.

number of students and the findings might not be applicable to a larger group of students. Secondly, the splitting of the class into two groups more than likely resulted in the Hawthorne effect. (The Hawthorne effect is a phenomenon characterized by an awareness on the part of the students in an experiment of special treatment. This awareness tends to cause the students to perform differently than under normal situations and often leads to ambiguous results.) Thirdly, the three-week experimental period was not long enough to test the relatively permanent growth in vocabulary.

Baty[3] tested the hypothesis that students who type from materials in which meanings of unusual words were obvious from context would experience a significant increase in vocabulary and a normal increase in typing skill.

In the Baty study, Experimental Group A typed for ten minutes each day on two paragraphs containing unusual words. The meanings of the unusual words were apparent from context. Two minutes were allowed for proofreading. Experimental Group B typed for ten minutes each day from paragraphs containing the same unusual words. However, the meanings were not obvious from context. Two minutes were devoted to proofreading. The Control Group was not

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[3]Wayne Murlin Baty, "Incidental Learning of Vocabulary in Beginning Typewriting Classes" (unpublished Ph.D. dissertation, University of Southern California, Los Angeles, 1958), 162 pp.

exposed to the specially written material. Of the thirty unusual-word-in-context paragraphs, ten were presented to the experimental groups once; ten were presented three times each; and ten paragraphs were presented six times each.

Baty found that students in Experimental Group A gained 8.37 word meanings, students in Experimental Group B gained 1.12 word meanings, and the Control Group gained .76 word meanings. Baty concluded that the gain in vocabulary was a function of the number of repetitions. Three repetitions of a paragraph produced more gain than one presentation; six repetitions produced more gain than three repetitions.

Baty also found that Experimental Group A gained 13.02 words per minute in typing on straight copy, and Experimental Group B gained 12.43 words per minute in typing on straight copy. The Control Group made 8.98 words per minute on straight copy. Baty concluded that students could learn the meanings of unusual words incidentally from contextual material.

The Baty study, however, lacked two important controls. First, no distinction was made between incidental learning from actual typing of the paragraphs and from that of proofreading. The learning could have occurred either during the typing or while proofreading. Therefore, Baty could not necessarily attribute incidental learning to the actual typing in all cases. Secondly, the number of times a student typed a paragraph was not rigidly controlled. A student who typed sixty words per minute obviously would have had twice as many

exposures to a word meaning as did a student who typed only thirty words per minute. Although Baty stated that ten words were presented six times, actually for some students the words were presented more than six times and in some cases less than six times. Had there been more control over the number of exposures for each paragraph, the results might have been different from those indicated in the study.

Fitch[4] conducted a study involving 621 students divided about equally into three groups: (1) An experimental group consisting of typewriting students who typed from specially constructed copy and who did not take the formal English class; (2) A control group of typewriting students who did not type special copy; and (3) A control group of English students not taking typewriting. Ten teachers each taught two typing classes--one experimental and one control. Each day for sixty days, the Experimental group was presented with the specially constructed material built around points of formal grammar. No instructions were given to learn the content as the students typed.

Fitch found no significant difference at the .05 level among mean gains in knowledge of formal grammar for the three groups. There was, however, a significant difference at the .01 level

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[4]Stanley K, Fitch, "Incidental Learning of Formal Grammar in Advanced Typewriting Classes" (unpublished Ph.D. dissertation, University of Southern California, Los Angeles, 1962), 134 pp.

between typing gains for the two typing groups in favor of the Experimental group of typing students.

The specially prepared grammar material in the Fitch study consisted of sentences which illustrated the correct use of the part of speech to be learned. Perhaps because the material was isolated sentences, students did not find the sentences interesting and therefore did not learn from them. Contextual material relating to the experiences of the students might have resulted in significant learning of formal grammar.

Attempts have been made to integrate economic understandings into typewriting classes. Keller states:

> It is our responsibility to make provisions within the school plant for the proper integration of the skills or knowledges of one area to those of other learning areas--and certainly typewriting and bookkeeping come within this concept.[5]

Clark[6] attempted to determine if it is possible to teach economic facts, knowledges, and understandings concurrently and incidentally with the normal teaching of typewriting skills. Four hundred sixty-seven students prepresenting seventeen classes from nine Minneapolis, Minnesota, junior high schools took part

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[5] Robert E. Keller, "Building Better Bookkeepers Through Integration with Typewriting," Business Education Forum, Volume 13, 1958, p. 13.

[6] Marvin A. Clark, "Incidental Learning of Economics in Beginning Typewriting," (unpublished Ph.D. dissertation, University of Minnesota, December, 1967), 101 pp.

in the study. Two treatment groups were designed in each of the seventeen classes: (1) Experimental Group 1 in which students typed timed writings from copy of economic content taken from a programmed economics textbook, and (2) Experimental Group 2 in which students typed timed writings using traditional typewriting copy taken from textbooks commonly used in the ninth grade typewriting course.

In the Clark study, the timed writings were administered to both groups at the rate of two or three per day for a nine-week period until a total of 86 timed writings were completed. Each timed writing was three minutes in length.

Clark found that the two experimental groups did not differ significantly in typewriting speed gain over the experimental period at the .01 level of significance. The two experimental groups did not differ significantly in typewriting accuracy scores on pretest, posttest, and gain scores at the .01 level of significance.

Clark also found that the group using economic copy materials scored significantly higher on the economics posttest and made a significantly higher gain from the pretest to the posttest at the .01 level than the group using typewriting textbook copy materials. He concluded that the use of typewriting copy containing economic information contributed to an increase in economic achievement as measured by the economics test used without affecting typewriting speed and accuracy.

The number of exposures to the economic material was not sufficiently controlled in the Clark study. Therefore, the results could not be wholly based on learning while developing typewriting skills.

A study by Clayton[7] attempted to learn if incidental learning could be accomplished by the inclusion of economic concepts in typewriting timed writings. Students in both the Experimental group and the Control group typed two five-minute timed writings during each of forty-five class periods during the second semester of beginning typewriting. Specially prepared timed writings presenting economic concepts were administered during each class period to the Experimental group. The Control group typed two five-minute writings each period from the textbook used in the particular school. Students in the Experimental group showed a mean gain of 4.15 understandings as compared with .54 understandings in the Control group.

Clayton concluded that students can increase their economic understandings by typing specially prepared timed writings presenting economic concepts.

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[7]Gerald Dean Clayton, "Incidental Learning of Economic Concepts in Beginning Typewriting Classes" (unpublished Ph.D. dissertation, Oklahoma State University, 1962), 158 pp.

Storm[8] wanted to determine the extent to which economic understanding could be learned incidentally while typing. At the beginning of the first semester, students in the Experimental group and the Control group were tested by means of a unit test over the programmed economic text material that was later to be used for drill purposes by the Experimental group. Neither of the two groups was advised as to the purpose of the test other than the test was part of a testing program. Also, they were not advised that at a later date the same test was to be administered to them.

During the first six-week period of the Storm study, both the Experimental group and the Control group typed identical typewriting textbook drill material for the first ten minutes of the period. Following the first six-week period and for the next six-week period, the Control group continued to type ten minutes of typing textbook drill. The Experimental group then began typing ten minutes of mimeographed or dittoed programmed economic text drill material. At the end of the second six-week period, both the Experimental group and the Control group were given the same unit test that was initially administered to both groups.

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[8] Joe R. Storm, "An Experimental Study to Determine the Gains in Economic Understanding As a Result of Typing Programmed Economic Text Material for Warm-up Typing Drill" (unpublished independent study for the Master's degree, Michigan State University, 1966), 21 pp.

The findings of the research done by Storm did not support the premise that economic understanding could be achieved incidentally by virtue of typing text material.

The programmed text material typed by the Experimental group consisted of statements requiring students to fill in the blank to make the statement complete. The exercises might not have been interesting and meaningful to the students and therefore no significant learning occurred.

Studies were inconclusive in their findings about the amount of incidental learning from typing material. The experimenters recommended that a prerequisite to the incidental learning of the content of the typing copy is meaningful contextual copy.

Dobson[9] attempted to determine whether or not the use of interesting or noninteresting timed writings would make possible increased typing skill. The timed writings used in her experiment were rated by 52 boys and 77 girls on a rating scale ranging from very interesting to very uninteresting. These students did not participate in the performance part of the study.

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[9]Glenna A. Dobson, "The Effect of Interesting and Noninteresting Copy Material on Speed and Accuracy in Typewriting" (unpublished Ed.D. dissertation, University of Florida, 1959), 110 pp.

In the Dobson study, timed writings were administered to 301 girls and 217 boys in 25 first-year typewriting classes in two high schools. Half of the girls and boys in each group were randomly selected to take the interesting timed writings. The other half took noninteresting timed writings.

Dobson concluded that students typing from interesting timed writings were able to recall the content of a greater number of the timed writings than were those students typing from non-interesting timed writings. The group using interesting material decreased less than one gross word per minute (.83), and the group using noninteresting material increased 1.29 gross words per minute. The change in accuracy differed between the two groups by amounts which were not significant statistically.

Meaningful copy resulted in increased typing skills in a study conducted by West.[10] West wanted to evaluate the effectiveness of four types of practice materials for early keyboard training. The materials were placed in four categories: (1) nonsense, (2) sentences, (3) short words--three to five letters, and (4) long words--two to seven letters in length. The experiment was conducted using 345 airmen who were divided into four experimental groups. West found that the "word" and "sentence" typists were superior to the "nonsense" typists.

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[10] Leonard J. West, "Experimental Comparison of Nonsense Word and Sentence Material in Early Typing Training," Journal of Educational Psychology, Volume 47, 1956, pp. 481-489.

Related Research in Psychology

If a typist were not instructed to learn word meanings from the content of the material he is typing, his learning would be called "incidental" learning. McGeoch defines incidental learning as:

> . . . learning which apparently takes place without a specific motive or a specific formal instruction and set to learn the activity or material in question.[11]

If a typist were instructed to learn word meanings from the content of his typing material, his learning would be called "intentional" learning. The learner is motivated and set to learn the activity being undertaken.

Literature in psychology provides evidence of the existence of incidental learning. However, the literature in psychology provides contradictory evidence about the superiority of incidental learning when compared to intentional learning. In some studies, incidental learning has been superior to intentional learning. In other studies the reverse has been true. Still other studies reveal that incidental learning is equal to intentional learning.

Incidental Learning. Evidence shows that people learn when they are committed to learn. Then, is there such a thing as

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[11] John McGeoch and Arthur Irion, The Psychology of Human Learning (2d ed.; New York: Longmans, Green, 1952), p. 210.

"incidental" learning? Research has shown that incidental learning can be operationally observed in different experimental situations. McGeoch states:

> Experimentally, incidental learning is usually studied by exposing subjects to stimulation under conditions which seem to exclude motivation to learn and then by testing to see if learning has occurred.[12]

Some incidental learning did occur while Lepley[13] called the roll in his psychology classes. Lepley read the roll each day to 106 students without telling them to remember the other name in the list. Later, he checked to see whether students could recall five names before and after their own position in the alphabetical list. Lepley called a name and asked the students to write the name that came after it in the list. After allowing time for them to write that name, he pronounced it, after which the students wrote the following name.

While 90 per cent of the students in the Lepley study could tell when their own name was next on the roll, only 20 per cent had learned the names of the students in the fifth position before and after their own name. Evidently, the students had no specific motivation to learn the names in the serial. However, the learning

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[12] Ibid., p. 211.

[13] William M. Lepley, "A Gradient in Incidental Learning," Journal of Experimental Psychology, Volume 18, 1935, pp. 195-201.

that did take place was described as "learning without obvious specific motivation." Therefore, if students have a need to know the meanings of certain business terms, they might learn these meanings even if they are not instructed to learn the meanings.

Haefner[14] conducted an experiment with a control group and an experimental group to determine whether word meanings could be learned through what he called "casual learning." Before each class meeting, a word which had appeared on a pretest was written on the chalkboard with a simple definition. The information was left on the chalkboard during a five-minute interval while the class was assembling. The information was erased before the class period ended. The control group was not exposed to the words but was given the same test and retest taken by the experimental group. The results were significantly in favor of the experimental group in improvement of word meanings.

Shellow[15] also discovered evidence of incidental learning. Her subjects were instructed to learn the names of magazines by looking at their covers. Later, Shellow asked the subjects not only the names of the magazines but a number of questions about

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[14]Ralph Haefner, "Casual Learning of Word Meanings," Journal of Educational Research, Volume 25, 1932, pp. 267-277.

[15]Sadie M. Shellow, "Individual Differences in Incidental Memory," Archives of Psychology, Volume 64, 1923, pp. 5-77.

the pictures and other features of the covers. The subjects had not only learned the names of the magazines but considerable information about the pictures and other features of the magazines.

Thorndike and Rock[16] also found that there was some learning without awareness of what was being learned. Subjects were given a word and asked to speak the next word that came into their minds. If the words spoken were given in the same sequence as they would appear in English, they were told the word was right; if the words given were opposite in meaning, such as girl in response to boy, the subjects were told it was wrong. Because some of the students in the experiment improved their scores gradually, it was believed that they were "catching on" even though they were not fully aware of what was going on. If the students were beginning to catch on in the Thorndike and Rock study, such learning changed from incidental learning to intentional learning. All learning that occurred in the study was called incidental learning though at a point the learning was intentional.

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[16]Edward L. Thorndike and Robert T. Rock, Jr., "Learning Without Awareness of What is Being Learned or Intent to Learn It," Journal of Experimental Psychology, Volume 17, pp. 1-19.

Kilpatrick[17] conducted an experiment in which learning occurred where there was no intent to learn. Kilpatrick attempted to ascertain whether the multiplication tables could be learned better through practice, incidentally, or by deliberate memorization followed by practice. The material consisted of numbers from seventeen to fifty-three multiplied by seven.

In the Kilpatrick study, one group of children, the Memorizers, committed the numbers to memory for five or six days with the knowledge that they were arriving at mathematical products. Then they wrote the tables. Another group of children, the Writers, wrote the operations throughout the experiment without specific knowledge of their meaning. Although the Writers appeared to be less motivated to learn the multiplication tables than the Memorizers, they made the larger number of correct responses on a test.

In the Kilpatrick study, the larger gain made by the Writers may have resulted from their attaining more meaning from the learning process than did the Memorizers. Also, perhaps the physical activity of writing aided the learning process. Just as the physical activity of writing might have aided learning in the Kilpatrick study, the muscle tension of typing may facilitate the learning of word meaning.

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[17] E. A. Kilpatrick, "An Experiment on Memorizing Versus Incidental Learning," Journal of Educational Psychology, Volume 5, 1914, pp. 405-412.

All of these studies support the premise that learning does take place incidentally. However, other questions exist in relation to the premise. Is incidental learning as effective as intentional learning? Is incidental learning inferior to intentional learning or is incidental learning superior to intentional learning? Does incidental learning result in a greater amount of retention than intentional learning or is the reverse true?

Incidental and Intentional Learning: Same Effect. Postman and Adams[18] conducted a study involving the difference in the amount of learning in intentional and incidental learning situations as a function of the nature of an orienting task with different stimulus materials. One orienting task was the giving of meaningful associations to the stimulus items which were composed of a list of thirty nonsense syllables and a list of thirty adjectives. The other task involved the matching of stimulus items with geometric figures. With nonsense materials, the difference in the amount of learning between intentional and incidental learners varied as a function of the nature of the orienting task. With meaningful materials, the difference in the amount of learning between intentional and incidental learners

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[18] Leo Postman and Virginia Pauline Austin Adams, "Studies in Incidental Learning: The Interaction of Orienting Tasks and Stimulus Materials," Journal of Experimental Psychology, Volume 60, 1956, pp. 329-333.

remained relatively independent of the nature of the orienting task. Postman and Adams concluded:

> When the task is relatively favorable to learning (associations) there is a large difference in favor of intentional learners; with the relatively unfavorable task (figure-matching) there is no difference between the two groups of learners.[19]

Incidental Learning Superior to Intentional Learning. The Saltzman[20] experiment involved the sorting of cards by students making up two equal groups of twenty each. Each student was given stacks of forty cards on which appeared ten even numbers below fifty, ten odd numbers below fifty, ten even numbers above fifty, and ten odd numbers above fifty. The cards were shuffled and the orienting task was to sort them. At the end of the third performance, Group A was tested on the knowledge of the numbers with which the students were dealing and was told that there would be another test after the sixth trial. Group B had only one test which was a surprise test after the sixth trial.

During the fourth, fifth, and sixth performances in the Saltzman study, the subjects in Group A were aware of the purpose of the experiment; hence, they concentrated on learning the numbers

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[19] Ibid., p. 332.

[20] Irving J. Saltzman, "The Orienting Task in Incidental and Intentional Learning," American Journal of Psychology, Volume 66, 1953, pp. 593-597.

as they sorted them. Group B thought throughout the experiment that the purpose was to see how rapidly the cards could be sorted.

The test after the sixth trial in the Saltzman experiment showed that subjects in Group B (those who learned incidentally) could recall slightly more numbers than those who had been trying to learn them intentionally. The group with intentions to learn during the last three trials took more time for sorting because of the additional mental burden of trying to remember the numbers.

In another study, Neimark and Saltzman found that the efficiency of incidental learning is related to the rate of stimulus presentation. They state:

> . . . an important parameter in studies comparing incidental and intentional learning is the rate of presentation of the learning material. It is felt that the magnitude of the difference between the intentional and incidental learning scores depends upon the rate of presentation of the learning materials, being greater with slow rates than with fast rates.[21]

Incidental Learning Inferior to Intentional Learning. Postman and Senders[22] gave equated groups of students interesting material to read. One group was told that it would be tested for general

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[21] Edith D. Neimark and Irving H. Saltzman, "Intentional and Incidental Learning with Different Rates of Stimulus-Presentation," American Journal of Psychology, Volume 66, p. 621.

[22] Leo Postman and Virginia L. Senders, "Incidental Learning and Generality of Set," Journal of Experimental Psychology, Volume 36, 1946, pp. 153-165.

comprehension of the material. The other group was told that it would be tested for specific sequence of individual events. Students made a significantly better test score in the area in which they had been told to learn. However, some students who were told to learn the sequence of events did better on the comprehension test than did those who were told to comprehend the material in general.

The results of the Postman and Senders study may be explained by the fact that learning the sequence entails comprehension. Nonetheless, there was learning without explicit instructions, even though not to the same degree as if there had been instructions.

Researchers in psychology seem to be in general agreement that incidental learning does exist. In most of the studies cited, incidental learning occurred but was either equal to or inferior to intentional learning when the two types of learning were compared.

Retention. Peterson[23] compared two groups on the percentage of material immediately recalled with the percentage obtained in later recall. On immediate recall, the group with the intent to learn was from 15 to 30 per cent better than the group without intent and about 50 per cent better on delayed (48 hours) recall.

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[23] Joseph Peterson, "Effect of Attitude on Immediate and Delayed Responses; a Class Experiment," Journal of Educational Psychology, Volume 7, 1916, pp. 523-532.

Jenkins[24] requested that an "experimenter" drill a "learner" on a list of twenty one-syllable words until the "learner" could repeat the words in order with no errors. After twenty-four hours, both the experimenter (who had not been trying to learn) and the learner were given a retention test. Twenty-four such "learners" and "experimenters" were tested. The mean recall of the "learners" was 15.9 plus or minus 2.4. The mean recall of the "experimenters" was 10.8 plus or minue 3.6.

Ausubel[25] attempted to learn whether or not intention to remember facilitated retention of materials learned in school. One group studied historical material for twenty-five minues and was tested immediately. After the test, an explicit intention to remember was introduced by telling them another test would be given two weeks later. The control group followed the same procedure as the experimental group except that the test two weeks later came as a surprise.

Ausubel found that there was no significant difference in the percentage of material retained by the two groups between

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[24] John G. Jenkins, "Instruction As a Factor in Incidental Learning," American Journal of Psychology, Volume 45, 1933, pp. 471-477.

[25] A. P. Ausubel, et al, "Influence of Intention and Retention of School Materials," Journal of Educational Psychology, Volume 48 1957, pp. 87-92.

test and retest. The conclusion was that "intention to remember facilitates retention by enhancing original learning rather than by increasing the stability of existing memory traces.[26]

All of the retention studies cited have measured the amount of retention immediately after the stimulus or after a short delay of twenty-four hours or two weeks. In order to measure relatively permanent retention, longer delay periods are necessary.

Biel and Force[27] used a tachistoscope in presenting a series of nonsense syllables to a group of subjects. The "intent" group was told to copy each syllable as it was flashed on the screen for .03 of a second. The group was also told that it would be asked during the hour to reproduce as many of the syllables as possible. The "non-intent" group was told only to copy the syllable as it was flashed on the screen for .03 of a second. Although the "intent" group was found to be slightly better in immediate recall, the difference was not significant. A retest after nineteen days showed the "intent" group was slightly better in recall, although not significantly so.

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[26] Ibid., p. 91.

[27] William C. Biel and Ronald C. Force, "Retention of Nonsense Syllables in Intentional and Incidental Learning," Journal of Experimental Psychology, Volume 32, 1943, pp. 52-63.

The present study attempts to compare the extent of retention of business word meanings learned intentionally with the extent of retention of business word meanings learned incidentally. The implication from the Biel and Force study is that retention under either condition of learning may be possible. In the present investigation, there will be a five-week period between the learning of the word meanings and the retention test.

Summary

Research in typewriting indicates that students tend to become better typists when practice is done on meaningful material. However, the research was contradictory in regard to learning incidentally from the material being typed. Furthermore, research in typewriting does not indicate whether incidental learning is more or less effective than intentional learning while typing. In addition, the research in typewriting does not show whether or not the material once learned is retained over a period of time.

Research in pyschology indicates that incidental learning does occur but more learning results from intentional learning.

Chapter III explains the design and procedures of the study under investigation.

CHAPTER III

RESEARCH DESIGN AND EXPERIMENTAL PROCEDURES

This chapter describes the organization of the experiment, the preparation of the materials, and the procedures followed in conducting the study.

Selection of Groups. Two experimental groups (one called the Intentional Group and the other called the Incidental Group) and one control group were selected. The control group was included in the investigation to provide a non-experimental group with which to compare the two experimental methods in business vocabulary building and production improvement. The three groups involved 227 second-year typewriting students, of which 4 were in the tenth grade, 118 were in the eleventh grade, and 105 were in the twelfth grade. For the experimental groups, each of four teachers taught two classes one with the intentional method and one with the incidental method randomly assigned. A fifth teacher taught an intentional class and a sixth teacher taught an incidental class. A seventh teacher taught the control group. Table II describes the teachers and treatment groups. The assumption was made that chance determined the particular class in which the individual student was enrolled.

TABLE II

TEACHERS AND TREATMENT GROUPS

Teacher	Class	Class
A	Intentional	Incidental
B	Intentional	Incidental
C	Intentional	Incidental
D	Intentional	Incidental
E	Intentional	
F		Incidental
G	Control	

Daily Procedures. For five minutes at the beginning of each class period both the intentional and incidental groups typed two paragraphs, each containing a business word defined in context. The Intentional Group received written instructions to learn the meanings of the underlined business words as they typed the paragraphs. The Incidental Group received written instructions to type the paragraphs as a warm-up drill and the business word was not underlined. The same paragraphs were typed by the Intentional Group and the Incidental Group.

The Control Group typed from drills in the textbook for five minutes at the beginning of each class period.

Pretest and Posttest. The Hicks Business Vocabulary Test and the Typewriting Achievement Test (Appendix A) were given at the beginning of the experiment and again at the conclusion of the typing sessions on special materials to the two experimental groups and the one control group.

The Hicks Business Vocabulary Test[28] was selected because it was developed as a measuring instrument to determine how well essential technical business terms are understood by high school students in grades nine through twelve. In constructing the test, Hicks devised a master list of 208 essential business terms which were selected from studies of frequency counts of

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[28] Hicks, op. cit.

words used in business correspondence, glossaries and content of widely used general business textbooks, and from research studies on business vocabulary.

The business terms were submitted by Hicks to experts to be evaluated as "essential," "desirable," or "unimportant" for high school students to know. A vocabulary test was constructed using only those terms that were rated by the experts as essential for high school students to understand. The one hundred-question test with items of the test arranged in order of increasing difficulty meets the requirements of reliability, objectivity, facility of administration and scoring, validity and length. The reliability coefficient of the test was .92 + .008.

The Typewriting Achievement Test[29] was specially prepared to test production skills after the completion of one year (two semesters) of typewriting. All items and performance tasks (which include letters, manuscripts, and tables) prepared for the test were reviewed by subject-matter specialists for their adequacy, fairness, format, and general suitability for the measurement of achievement at the end of the first year of typewriting. The performance units of the test were typical

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[29] Typewriting Achievement Test, Psychological Corporation, (New York: McGraw-Hill Book Company, Inc.), 1967.

of the typewriting production skills emphasized by popular typewriting textbooks.

The Typewriting Achievement Test was standardized using public secondary school students who were completing their first year of typewriting instruction in the spring of 1965. Fifty-three schools in 18 states were included in the norm group.

Retention Test. The Hicks Business Vocabulary Test was given a third time to the Intentional Group and the Incidental Group five weeks after the posttest as a retention test.

Pilot Study. Before actually conducting the major experiment, a pilot study was made using the Hicks Business Vocabulary Test. The test was given in the spring of 1967 to sixty-six students in four second-year typewriting classes in Lansing, Michigan to obtain a list of business terms that might be missed by a majority of the students that would participate in the major experiment the following fall. Business terms missed by a majority of the students in the pilot study enabled the investigator to begin writing the paragraphs in preparation of the major experiment. (See Appendix B). However, not all terms missed by the majority of the students in the pilot study were missed by the majority of the students in the major study. The major study included the terms missed by the majority of students who participated in the major study.

Criteria for Construction of Paragraphs. Each paragraph was constructed with a syllabic intensity ranging from 1.45 to 1.55 and a reading level between ninth and tenth grades using the Dale-Chall Readability Formula.[30]

Clark[31] found that the readability level of commonly used typewriting textbooks had a high of 7.63 (10th grade reading level) and a low of 6.96 (9th grade reading level). Therefore, it might be assumed that the readability level of the material typed by the experimental groups was comparable to the material in the regular typewriting textbook typed by the control group.

After the paragraphs had been checked for readability level and syllabic intensity, two university professors--one in economics and the other in business law--read the paragraphs for correctness in defining the technical business terms. Upon receiving comments from the professors, revisions were made to make the paragraphs convey the correct meaning of the business terms. (See Appendix C for paragraphs used in major study.)

Each experimental word appeared twice in the paragraph in order to make it easier to convey meaning and to equal the

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[30] Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability: Instructions," Educational Research Bulletin, Volume 27, 1948, pp. 37-54.

[31] Marshall Clark, "A Study of the Readability Level of Typewriting Textbooks" (unpublished Master's thesis, University of Southern California, 1958), p. 31.

amount of exposure of that word. Each experimental word was defined within the context of the paragraph according to the correct meaning (response) on the Hicks Business Vocabulary Test. Direct dictionary definitions were avoided. Meanings were inferred from the statements made in the paragraphs.

Paragraphs varied in length (number of words) because some of the specialized business terms were easier to define than others. However, the length of the paragraphs had no effect on the reading grade level or the level of the syllable intensity. Some of the paragraphs contain stories about well-known persons, places, and businesses in the State of Michigan and the United States. Familiar persons, places, and businesses were included in the paragraphs to make the material meaningful to the students.

The following are examples of the manner in which paragraphs were written:

EXAMPLES OF PARAGRAPHS TYPED BY STUDENTS

Example A

When a client of Mr. Dunnings, a lawyer in Lansing, could not meet a court date, Mr. Dunnings was then given a power of attorney to act for the client in his absence. The document was proof that the

lawyer was authorized to proceed in his client's behalf. A power of attorney makes it legal for one person to act for another.

*Grade Level :	9-10	Number of Syllables:	90
Number of Words:	62	Syllable Intensity :	1.45

Example B

Mr. Johnston needed two million dollars for capital to start his trailer business. A company usually require a substantial sum of money and property to use to get a business started and to keep it going. Usually, money has to be solicited from many individuals to get started. When Clark Equipment Company wanted to expand, it sold more stock to raise the capital needed in the business.

*Grade Level :	9-10	Number of Syllables:	104
Number of Words:	67	Syllable Intensity :	1.55

Directions to Students. To control the teacher variable as much as possible in the typing of the specially prepared paragraphs, written directions were provided. Each student read the

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*This information beneath the paragraphs is for the convenience of the reader and did not appear when presented to the students.

directions without the aid of the teacher. The written directions for the Intentional Group were as follows:

LEARN AS YOU TYPE

DIRECTIONS: The following paragraph contains the meaning of a business word you will need to know. While you type, try to learn the meaning of the underlined business term. Type the paragraph just once and double space. Do not erase if you make an error and do not proofread. Type your name and the date at the top of your paper. Remember, you are to learn the meaning of the underlined word as you type.

The written directions for the Incidental Group were as follows:

WARM-UP DRILL

DIRECTIONS: Type the following paragraph as a warm-up drill. The purpose of this drill is to achieve accuracy with speed. This drill should help you get ready for today's lesson. Type the paragraph just once and double space. Do not erase if you make an error, and there is no need to proofread. Type your name and the date at the top of your paper.

In order to control the number of exposures to the words and their meanings, students were told to type each paragraph just once so that any learning that occurred could be directly attributed to learning while typing.

Length of the Experiment. Students typed the specially constructed paragraphs for six weeks. The experiment took place during the second marking period of the first semester.

Selection the Specific Technical Business Terms. In order to measure increase in business vocabulary, business terms that were not already in students' vocabulary were used in the specially constructed paragraphs. Business terms missed by 55 per cent or more of the students on the vocabulary pretest were placed on slips of paper and placed in a hat. Thirty slips of paper, each slip containing a business term, were randomly pulled from the hat. Table III shows the thirty business terms around which paragraphs were developed and the percentage of students who missed each of the thirty terms on the vocabulary pretest. (Appendix D shows the percentage of students who missed each of the one hundred business terms on the vocabulary pretest during the major experiment.

Presenting the Paragraphs to the Students. The thirty business terms were randomly placed in three groups of ten words each (see Table IV). Using these three groups of words, three tables were made for the presentation of the words. (See Appendix E for the three tables.) Table V presents a repetition plan for presenting the three groups of terms to the different classes.

TABLE III

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE THIRTY BUSINESS TERMS ON THE VOCABULARY PRETEST

Business Term	Percentage of Students Who Missed the Term
Abstract of title	68
Capital	60
Carrying charges	60
Cash surrender value	58
Coach	60
Common stock	68
Commuter	56
Consideration	88
Corporation	68
Deductible clause	64
Diversify	56
First mortgage	88
First-class mail	68
Itinerary	80
Liquid	80
Maturity	64
Night letter	68
Option	60
Parcel post	60
Postdate	72
Power of attorney	88
Principal	72
Quitclaim deed	84
Rate	76
Solvent	58
Speculation	60
Statute	80
Toll call	55
Waybill	92
Yield	64

TABLE IV

RANDOM ASSIGNMENT OF BUSINESS WORDS TO GROUPS

Group A	Group B	Group C
First mortgage	Diversify	Toll call
Rate	Power of attorney	Yield
Commuter	Principal	Solvent
Waybill	Night letter	Deductible clause
Consideration	Common stock	Maturity
Carrying charges	Parcel post	Coach
Liquid	Abstract of title	Quitclaim deed
Capital	Corporation	Option
Postdate	Cash surrender value	Itinerary
Statute	First-class mail	Speculation

TABLE V

ASSIGNMENT OF WORD GROUPS A, B, AND C FOR REPETITION

Teacher	Number of Repetitions		
	1	2	3
A and E	Group A	Group B	Group C
B	Group B	Group C	Group A
C, D, and F	Group C	Group A	Group B

Scheduling Each Step of the Experiment. A schedule was devised giving the dates on which each step of the experiment was to take place (see Appendix F). Two days were devoted to administering the pretests by the classroom teacher using the Hicks Business Vocabulary Test and the Typewriting Achievement Test, and the collecting of personal data for each student.

Thirty school days or six weeks were used to type the specially constructed paragraphs. Two days were used to give the posttests using the Hicks Business Vocabulary Test and the Typewriting Achievement Test. Five weeks after the end of the typing of the paragraphs, the retention test (Hicks Business Vocabulary Test) was given. The administering of this test took one class period.

After the five-minute practice period used for the experimental and control treatments, the schedule of activities in each class was arranged by the teacher. It was assumed that students were generally typing the same lessons during the experiment as the same typewriting textbook--20th Century Typewriting, Eighth Edition[32]--was used in each school.

Securing Information from Students. Information such as name, sex, age, grade, school, time of typewriting class, number of semesters of typewriting, and the number of business

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[32] D. D. Lessenberry, T. James Crawford, and Lawrence W. Erickson, 20th Century Typewriting (Cincinnati: South-Western Publishing Company, 1962, 373 pp.

courses taken prior to and during the experiment was obtained from the Personal Data Sheet (see Appendix G). In addition, students were asked to write the title of their father's (if no father, then mother's or guardian's) occupation on the personal data sheet. Students were also asked to describe what their father (or mother, or guardian) did on the job. Occupations indicated by the students were assigned a socio-economic index rating from the Duncan Socio-Economic Index for All Occupations.[33]

On the Duncan Index, occupational index numbers range from 1 to 10. The higher the index number, the more prestigious the occupation. In this study, a high occupational index number (8 to 10) indicated a high prestigious occupation (e.g., lawyer, physician, minister, teacher, business executive, accountant). A middle occupational index number (4 to 7) indicated a middle prestigious occupation (e.g., welder, brick mason, butcher, milwright, postal clerk). A low occupational index number (1 to 3) indicated a low prestigious occupation (e.g., maintenance positions, construction work, factory work, porter work).

Permission was given to obtain from school files the students' intelligence quotient from the California Test of

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[33] O. D. Duncan, A Socio-Economic Index for All Occupations (in Occupations and Social Status, ed. A. J. Reiss. Glencoe, Illinois: The Free Press, 1961), pp. 109-161.

Mental Maturity which was administered as part of the local school district's program.

Chapter IV presents the findings from the experiment described in this chapter.

CHAPTER IV

ANALYSIS OF DATA

The data was analyzed to answer the following questions:

1. Do second-year typewriting students significantly increase their business vocabulary intentionally while typing paragraphs in which the meanings of business terms are apparent from context?

2. Do second-year typewriting students significantly increase their business vocabulary incidentally while typing paragraphs in which the meanings of business terms are apparent from context?

3. What is the effect of the number of repetitions on the number of business word meanings learned?

4. What is the correlation of initial business vocabulary knowledge to intelligence quotient, socio-economic level, and the number of business courses taken?

5. What is the correlation of mean gains in business vocabulary to age, sex, and mean gains in production scores?

6. What is the correlation between the intentional learning of meanings of business words and retention of these meanings?

7. What is the correlation between the incidental learning of meanings of business words and retention of these meanings?

Analysis of variance was used to test the null hypothesis of no difference among the means of the various groups as the interaction between groups and within groups was measured.

Simple correlations were used to determine relationship between mean gain scores in business vocabulary and mean gain scores in production.

Analysis of Group Data and Pretest Scores

Using the analysis of variance, Table VI shows that the difference between the Intentional group and the Incidental group was not significant at the .05 level on the one hundred-word mean pretest scores. However, when the Intentional and Incidental groups were combined and compared with the Control group, there was a significant difference at the .0005 level in mean pretest scores on the one hundred-word test in favor of the Control group.

TABLE VI

ANALYSIS OF VARIANCE OF MEAN PRETEST SCORES BY GROUP ON HICKS' ONE HUNDRED-WORD BUSINESS VOCABULARY TEST

Group	Number of Students	Mean Words Correct	Standard Deviation
Intentional	103	46.42	13.86
Incidental	100	43.53	12.41
Control	24	58.67	14.37
Total, all groups	227	46.44	13.96

Groups Compared	Obtained F	Significance	
Intentional and Incidental	2.44	Not Sig.	.05
Intentional and Incidental combined compared with Control	22.54	Sig.	.0005

Table VII shows that the mean pretest scores on the thirty business terms used in the experiment ranged from 6.38 correct words to 9.83 correct words with a mean pretest score for all three groups of 6.80 correct words. Using the analysis of variance, the difference in mean pretest scores on the thirty business terms between the Intentional group and the Incidental group was not significant at the .05 level. However, when the Intentional and Incidental groups were combined and compared with the Control group, there was a significant difference in mean pretest scores on the thirty business terms at the .0005 level in favor of the Control group.

TABLE VII

ANALYSIS OF VARIANCE OF MEAN PRETEST SCORES BY GROUP ON THIRTY BUSINESS TERMS

Group	Number of Students	Mean Words Correct	Standard Deviation
Intentional	103	6.50	4.36
Incidental	100	6.38	3.44
Control	24	9.83	5.00
Total, all groups	227	6.80	4.17

Groups Compared	Obtained F	Significance
Intentional and Incidental	.05	Not. Sig. .05
Intentional and Incidental combined compared with Control	15.05	Sig. .0005

Table VIII shows that according to analysis of variance the difference in intelligence quotients as measured by the California Test of Mental Maturity between the Intentional group and the Incidental group was not significant at the .05 level. However, when the Intentional and Incidental groups were combined and compared with the Control group the difference in intelligence quotients was significant at the .05 level in favor of the Control group.

TABLE VIII

ANALYSIS OF VARIANCE OF MEAN I.Q. SCORES BY GROUP ON THE CALIFORNIA TEST OF MENTAL MATURITY

Group	Number of Students	Mean I.Q.	Standard Deviation
Intentional	102	98.0	37.68
Incidental	83	97.7	18.90
Control	24	106.5	11.31

Groups Compared	Obtained F	Significance	
Intentional and Incidental	.85	Not Sig.	.05
Intentional and Incidental combined compared with Control	5.15	Sig.	.05

Table IX shows that according to analysis of variance the difference between the Intentional group and the Incidental group was not significant at the .05 level on mean pretest production scores. However, there was a significant difference at the .0005 level on mean pretest production scores when the Intentional and Incidental groups were combined and compared with the Control group in favor of the Control group.

TABLE IX

ANALYSIS OF VARIANCE OF MEAN PRETEST SCORES BY GROUP ON PRODUCTION TEST

Group	Number of Students	Mean Production Score	Standard Deviation
Intentional	103	35.86	22.49
Incidental	100	36.61	24.40
Control	24	58.05	24.93
Total, all groups	227	38.00	24.45

Groups Compared	Obtained F	Significance	
Intentional and Incidental	.05	Not Sig.	.05
Intentional and Incidental combined compared with Control	18.54	Sig.	.0005

Using the analysis of variance, Table X shows that the difference in mean age between the Intentional group and the Incidental group was not significant at the .05 level. There was a significant difference in mean age at the .05 level when the Intentional and Incidental groups were combined and compared with the Control group. On the average, the students in the Control group were older than the students in the two experimental groups.

TABLE X

ANALYSIS OF VARIANCE OF MEAN AGES BY GROUP

Group	Number of Students	Mean Age	Standard Deviation
Intentional	103	16.53	.78
Incidental	100	16.19	1.80
Control	24	16.83	.48
Total, all groups	227	16.41	1.33

Groups Compared	Obtained F	Significance	
Intentional and Incidental	3.17	Not Sig.	.05
Intentional and Incidental combined compared with Control	2.70	Sig.	.05

In summary, the Intentional group and the Incidental group did not differ significantly from each other on (1) one hundred-word mean pretest scores, (2) thirty-word mean pretest scores, (3) intelligence, (4) production mean pretest scores, and (5) mean age. Because the Intentional group and the Incidental group were on the average relatively equal on mean pretest scores on business vocabulary, intelligence, mean pretest scores on production, and mean age, it might mean that any unequal mean gain in business vocabulary and production scores by the two groups at the end of the experiment will not be due to one group being superior to the other in business vocabulary, intelligence, production, and age at the beginning of the experiment.

When the Intentional and Incidental groups were combined and compared with the Control group, there were significant differences in favor of the Control group on (1) one hundred-word mean pretest scores (approximately 13 more correct words), (2) thirty-word mean pretest scores (approximately 4 more correct words, (3) intelligence (approximately 8 points higher), and (4) production mean pretest scores (approximately 22 points higher). These differences must be viewed with caution, however, due to the relatively large difference between sizes of the two groups.

All three groups had a mean age of approximately sixteen years.

Analysis of Mean Gain Scores

Mean Gain Scores on Business Vocabulary Test By the Intentional Method and the Incidental Method. As shown in Table XI, the highest mean gain (4.43 word meanings) from pretest to posttest in business vocabulary was made by the Intentional group. This mean gain by the Intentional group was significantly different at the .05 level from the Incidental group's mean gain of 3.18 word meanings. The Intentional group with a mean gain of 4.43 word meanings gained almost one word meaning (.89) for each half hour of practice. The Incidental group with a mean gain of 3.18 word meanings gained .64 word meaning for each half hour of practice.

The Control group had a loss of slightly more than one word meaning (1.04) from pretest to posttest in business vocabulary. The loss in word meanings is not explainable but may be attributed to guessing correctly on the thirty-word pretest and chance working against the group on the thirty-word posttest. The Control group was included in the study to provide a non-experimental group with which to compare the two experimental methods in building business vocabulary. Table XI shows that the students in the Control group who were not exposed to the experimental treatments did not increase their knowledge of thirty business word meanings as did the Intentional group and the Incidental group.

The results from the analysis of variance in Table XI indicate that the students in the Control group did not learn the business meanings of the thirty terms in other classes taken concurrently with the experiment nor did they learn them outside of class. Therefore, the differences in the mean gain scores on the thirty words between the two experimental groups and the Control group were probably due to the experimental method--typing paragraphs in which business words were defined in context. Differences in the mean gains between the two experimental groups were probably due to the method under which the word meanings were learned.

TABLE XI

ANALYSIS OF VARIANCE BY METHOD OF MEAN GAIN SCORES FROM PRETEST TO POSTTEST ON THIRTY BUSINESS TERMS

Group	Number of Students	Mean Pretest Score	Mean Posttest Score	Mean Gain	Standard Deviation
Intentional	103	6.50	10.93	4.43	3.88
Incidental	100	6.38	9.56	3.18	3.84
Control	24	9.83	8.79	-1.04	1.88

Group Gains Compared	Obtained F	Significance
Intentional and Incidental	5.30	Sig. .05
Intentional and Incidental combined compared with Control	36.08	Sig. .0005

The hypothesis of no difference in mean gains in business vocabulary of students who typed meanings of business words and students who typed regular textbook drills was rejected at the .0005 level of significance.

Mean Gain Scores on Business Vocabulary Test by Class. The mean gain for each Intentional class, as shown in Table XII, indicates that students' gains from class to class in business vocabulary were relatively uniform. The average of the mean gains for the five intentional classes was 4.43 word meanings. There were no significant differences in mean gain in business vocabulary among the intentional classes at the .05 level. However, the mean gain in business vocabulary among the incidental classes was 3.18, but the differences among the classes were significant at the .0005 level.

TABLE XII

ANALYSIS OF VARIANCE OF MEAN GAIN SCORES ON THIRTY BUSINESS TERMS MADE BY INTENTIONAL AND INCIDENTAL CLASSES

	Intentional Class Gains	Incidental Class Gains
	3.71	.08
	4.43	4.00
	4.13	3.15
	4.67	5.38
	5.11	4.25
Average	4.43	3.18

Classes Compared	Obtained F	Significance	
Intentional Classes	.45	Not Sig.	.05
Incidental Classes	7.72	Sig.	.0005

When the average of the mean gains in business vocabulary for each teacher's two groups were combined as illustrated in Table XIII, there were very significant differences in the mean gains at the .0001 level among the combined classes.

TABLE XIII

ANALYSIS OF VARIANCE OF AVERAGE MEAN GAINS MADE UNDER INDIVIDUAL TEACHER

Teacher	Vocabulary Gains of Intentional and Incidental Groups Combined	Obtained F	Significance
A	1.86		
B	4.19		
C	3.68		
D	5.03		
E	4.74		
Average	3.81	4.99	Sig. .0001

As a further measure of the mean gains in business vocabulary among the classes, the ranks of mean gains achieved by each intentional class and each incidental class and the total of both classes were compared. Table XIV shows that Teacher D achieved the most gains in business vocabulary for the two groups combined, and Teacher A achieved the least gains for the two groups combined.

TABLE XIV

RANKS OF MEAN GAINS UNDER INDIVIDUAL TEACHER

Teacher	Intentional	Incidental	Total
A	5	5	5
B	3	3	3
C	4	4	4
D	2	1	1
E	1	2	2

Number 1 is the top rank.

Effect of Repetition on Number of Business Terms Learned. Thirty different paragraphs, each of which contained a business term defined in context, were typed by the Intentional and Incidental groups. Ten of the thirty paragraphs were typed one time each. Another ten paragraphs were typed two times each. Still another ten paragraphs were typed three times each.

In order to eliminate bias in assigning groups of paragraphs to classes, the three groups of ten paragraphs were randomly assigned to classes by the number of presentations. For example, the first set of ten paragraphs (See page 45) was presented one time to one class. The same set of ten paragraphs was presented two times to another class. Again the

same set of ten paragraphs was presented three times to still another class. If repetition were the cause of increased number of business word meanings learned, the class that was exposed three times to the set of ten paragraphs would presumably experience a greater gain from those paragraphs than the classes that were exposed two times or one time.

Table XV shows that three presentations resulted in more learning of business word meanings than two presentations, and two presentations resulted in more learning than one presentation for the Intentional group and the Incidental group. However, the table suggests that a point of diminishing returns was reached between the second presentation and the third presentation for the Intentional method and the Incidental method of learning business word meanings. Learning began to level off and the number of business word meanings learned began to decrease in significance.

The hypothesis of no significant difference in the number of business word meanings learned due to repetition was rejected at the .05 level.

Analysis of Mean Scores by Retention

The Hicks Business Vocabulary Test was given five weeks after the typing of the word-defined-in-context paragraphs had ended in order to test retention of the business word meanings.

TABLE XV

ANALYSIS OF VARIANCE OF MEAN GAINS BY GROUP BY REPETITION

Group	Mean Gains on Thirty Words Presented to Intentional and Incidental Groups		
	Ten Words Presented 1 time	Ten Words Presented 2 times	Ten Words Presented 3 times
Intentional	1.04	1.63	1.73
Incidental	.66	1.04	1.48
Intentional and Incidental Combined	.85	1.39	1.56

Difference Between the Means of Intentional and Incidental Groups Combined By Repetition	Obtained F	Significance
1 Presentation and 2 Presentations	4.10	Sig. .05
2 Presentations and 3 Presentations	2.21	Not Sig. .05
1 Presentation and 3 Presentations	6.14	Sig. .05

Table XVI shows that the hypothesis of no difference between the Intentional group and the Incidental group in retention of word meanings over a five-week period was not rejected at the .05 level of significance.

TABLE XVI

ANALYSIS OF VARIANCE OF MEAN RETENTION SCORES BY GROUP ON THE THIRTY BUSINESS TERMS

Group	Number of Students	Mean Words Correct on Posttest	Mean Words Retained	Standard Deviation
Intentional	103	10.93	10.62	4.84
Incidental	100	9.56	9.54	4.02
Total, both groups	203	10.25	10.09	4.48

Groups Compared on Retention and Posttest	Obtained F	Significance	
Intentional	2.99	Not Sig.	.05
Incidental	3.01	Not Sig.	.05
Intentional and Incidental Combined	2.89	Not Sig.	.05

An explanation for no significant difference between the Intentional group and the Incidental group in the number of business word meanings retained for five weeks might be that the material typed was meaningful and therefore was not forgotten.

Analysis of Relationship of Initial Business Vocabulary Scores to I.Q., Socio-economic Level, and the Number of Business Courses Taken

The scores on the pretest one hundred-word business vocabulary test were used to measure initial business vocabulary knowledge.

Relationship of Mean Scores on Initial Business Vocabulary Test to I.Q. Table XVII shows that the students in the experiment were divided into three groups according to their intelligence quotient on the California Test of Mental Maturity. There were 71 students whose intelligence quotient was below 94 in the "below average" group; 94 students whose intelligence quotient was from 95 to 105 in the "average" group; and 44 students whose intelligence quotient was above 105 in the "above average" group.

The "average" group was superior in initial business vocabulary to the "below average" group by approximately 3.96 words; however, this difference was not significant at the .05 level. The "above average" group was superior to the "average" and "below average" groups by approximately 9 words and 13 words respectively; this difference was significant at the .0005 level. The data indicate that there is a significant relationship between intelligence and initial business vocabulary. Students with above average intelligence (above 105 in this

study on the California Test of Mental Maturity) did significantly better on the pretest Hicks Business Vocabulary Test than those students with 105-and-below intelligence quotient.

TABLE XVII

ANALYSIS OF VARIANCE OF INITIAL BUSINESS VOCABULARY BY INTELLIGENCE QUOTIENT ON CALIFORNIA TEST OF MENTAL MATURITY (CTMM)

Group	Number of Students	Mean Words Correct	Standard Deviation
Below average I.Q.[a]	71	42.12	13.36
Average I.Q.	94	46.08	13.78
Above average I.Q.	44	55.23	11.48
Total, all groups	209	46.44	13.96

Groups Compared	Obtained F	Significance	
Below average and Average	2.91	Not. Sig.	.05
Below average and Average combined compared with Above average	23.80	Sig.	.0005

[a]Below average I.Q. was 94 and below
Average I.Q. ranged from 95 to 105
Above average I.Q. was above 105 (The highest I.Q. was 127)

Relationship of Mean Scores on Initial Business Vocabulary Test to Socio-economic Level. The Duncan Index was used to determine the socio-economic level of each student. Table XVIII shows that there were no significant relationships at the .05 level among the three socio-economic levels according to the Duncan Index and initial business vocabulary knowledge according to the Hicks Business Vocabulary Test.

TABLE XVIII

ANALYSIS OF VARIANCE OF INITIAL BUSINESS VOCABULARY TO SOCIO-ECONOMIC LEVEL ON DUNCAN INDEX[a]

Group	Number of Students	Mean Words Correct	Standard Deviation
Low socio-economic index[b]	52	43.75	13.25
Middle socio-economic index	108	47.59	13.99
High socio-economic index	37	49.41	15.05

Groups Compared	Obtained F	Significance	
Low socio-economic index and Middle socio-economic index	2.74	Not Sig.	.05
Low socio-economic index and Middle socio-economic index combined compared with High socio-economic index	1.42	Not Sig.	.05

[a]Thirty students were not included in this table because there is no index for housewife on the Duncan Index.

[b]Low socio-economic index ranged from 1 to 3.
Middle socio-economic index ranged from 4 to 7.
High socio-economic index ranged from 8 to 10.

Relationship of Mean Scores on Initial Business Vocabulary Test to the Number of Business Courses Taken. Table XIX shows that students who had had four to seven business courses prior to the time of the experiment did not have a significantly better initial business vocabulary than students who had from one to three courses. When the two groups were compared, there was no significant difference at the .05 level. Students in the experiment had taken Beginning and Advanced Shorthand, Transcription, Beginning Typewriting, Business Arithmetic, Office Practice, Retailing, and Salesmanship.

This study was not concerned with the course content or the combination of courses but rather the number of business courses taken. If the vocabulary of the Hicks Business Vocabulary Test had been analyzed by course content, the mean scores on the vocabulary test might have been directly related to the previous learning of business vocabulary by the individual students.

All students involved in this study had been enrolled in previous business courses so that no comparison could be made with students who had not been enrolled in business courses.

Analysis of Relationship of Mean Gain Scores on Business Vocabulary Test to Age, Sex, and Mean Gain Scores on Production Test

Relationship of Mean Gain Scores on Business Vocabulary Test to Age. The students in the experimental groups ranged in age from fifteen to eighteen. Table XX shows that 17 students were

TABLE XIX

ANALYSIS OF VARIANCE OF INITIAL BUSINESS VOCABULARY TO NUMBER OF BUSINESS COURSES TAKEN

Group	Number of Students	Mean Words Correct	Standard Deviation
1 to 3 courses	98	45.57	15.13
4 to 7 courses	129	47.29	12.93

Groups Compared	Obtained F	Significance	
1 to 3 courses and 4 to 7 courses	.82	Not Sig.	.05

fifteen years old; 95 students were sixteen years old; 73 students were seventeen years old; and 17 students were eighteen years old. It appears that the optimum age for learning the word meanings by the intentional and incidental methods was 16 years.

The 7 fifteen-year-old students in the Intentional group made the highest mean gain score in business vocabulary (6.57) and had the highest intelligence quotient (106.0) whereas the 6 eighteen-year-old students in the Incidental group made the least mean gain score in business vocabulary (2.00) and had the lowest intelligence quotient (88.9). Due to the small number of students in each case, it is difficult to determine whether age or intelligence had the greater bearing on mean gain scores in business vocabulary. Although no valid projection can

be made on these few cases, it probably would be the intelligence quotient that would have the greater bearing on the mean gain in business vocabulary. When all age groups using the intentional method were compared, there was no significant difference in their mean gain scores at the .05 level. When all age groups using the incidental method were compared, there was no significant difference in their mean gain scores at the .05 level.

TABLE XX

ANALYSIS OF VARIANCE OF MEAN GAIN SCORES IN BUSINESS VOCABULARY BY AGE

Group	Number of Students	I.Q.	Mean Gain Score	Standard Deviation
Intentional:				
15 years	7	106.0	6.57	5.38
16 years	45	97.0	5.00	3.90
17 years	40	96.6	3.33	3.38
18 years	11	98.5	4.73	3.90
Incidental:				
15 years	10	96.3	2.90	5.38
16 years	50	99.7	3.36	3.60
17 years	33	96.8	3.18	3.42
18 years	6	88.9	2.00	5.93

Groups Compared	Obtained F	Significance	
Intentional age groups	2.21	Not Sig.	.05
Incidental age groups	.24	Not Sig.	.05

Relationship of Mean Gain Scores on Business Vocabulary Test to Sex of Students. There were 23 males and 179 females in the intentional and Incidental groups combined. Table XXI shows that there was no significant difference at the .05 level between the 13 males and 90 females in the Intentional group on mean gain scores in business vocabulary. However, there was a significant difference at the .01 level between the 10 males and 89 females in the Incidental group on mean gain scores in business vocabulary in favor of the males. This data should be taken with caution, however, as the number of males was significantly smaller than the number of females making it difficult to determine the true relationship of mean gain scores in business vocabulary to sex of the student.

TABLE XXI

ANALYSIS OF MEAN GAIN SCORES IN BUSINESS VOCABULARY BY SEX

Group	Number of Students	Mean Gain Score	Standard Deviation
Intentional:			
Male	13	4.23	3.35
Female	90	4.46	3.97
Incidental:			
Male	10	6.00	4.94
Female	89	2.85	3.61

Groups Compared	Obtained F	Significance	
Intentional	.08	Not Sig.	.05
Incidental	6.30	Sig.	.01

Relationship of Mean Gain Scores on Business Vocabulary Test to Mean Gain Scores on Production Test. The Intentional group and the Incidental group had approximately the same mean production score on the Typewriting Achievement Test at the beginning of the experiment--35.86 and 36.61 points respectively. The difference between the mean production scores of the two groups was not significant at the .05 level.

Table XXII shows that at the end of the experiment, the Intentional group had made a gain of 19.65 points and the Incidental group had made a gain of 17.73 points on the standardized production test. The production scores were based on speed with accuracy. There was no significant difference at the .05 level in mean gains in production scores between the two experimental groups.

At the end of the experiment, the Control group had gained in production score by 15.11 points. When the Intentional and Incidental groups were combined and compared with the Control group in mean production gains, there was a significant difference at the .05 level in favor of the two experimental groups.

The hypothesis that there is no significant difference at the end of six weeks in the typewriting production scores of students who practice typing special paragraphs in which business words are defined in context and students who type

from typewriting textbook drills was rejected at the .05 level in favor of the former group.

TABLE XXII

ANALYSIS OF VARIANCE OF MEAN GAIN SCORES BY GROUP ON PRODUCTION TEST

Group	Number of Students	Mean Pretest Score	Mean Posttest Score	Mean Gain	Standard Deviation
Intentional	103	35.86	55.51	19.65	20.89
Incidental	100	36.61	54.34	17.73	25.30
Control	24	58.06	73.17	15.11	13.71
All groups	227	38.01	56.42	17.47	22.41

Group Gains Compared	Obtained F	Significance	
Intentional and Incidental	.35	Not Sig.	.05
Intentional and Incidental combined compared with Control	4.03	Sig.	.05

The correlation coefficients between mean gain scores in business vocabulary and mean gain scores in production as indicated in Table XXIII were close to zero (.066; .032; .040 respectively).

It appears from this data that intentional learning and incidental learning from material typed had no adverse effect on improvement in production scores on the Typewriting Achievement Test.

TABLE XXIII

CORRELATION COEFFICIENTS OF MEAN GAIN SCORES IN BUSINESS VOCABULARY WITH MEAN GAIN SCORES IN PRODUCTION

Group	Number of Students	Correlation Coefficient
Intentional		
Mean Gains in Business Vocabulary with Mean Gains in Production	103	.066
Incidental		
Mean Gains in Business Vocabulary with Mean Gains in Production	100	.032
Intentional and Incidental combined		
Mean Gains in Business Vocabulary with Mean Gains in Production	203	.040

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Statement of the Problem. The problem of this study was to determine whether or not second-year typewriting students could learn the meanings of technical business terms intentionally and incidentally through the typing of specially written paragraphs in which the meanings of the terms were defined within the context. In addition, the study sought to ascertain whether the meanings of the business terms, once learned intentionally or incidentally, could be retained over a five-week period.

The six-week experiment was designed to seek answers to the following questions:

1. Do second-year typewriting students significantly increase their business vocabulary intentionally while typing paragraphs in which the meanings of business terms are apparent from context?

2. Do second-year typewriting students significantly increase their business vocabulary incidentally while typing paragraphs in which the meanings of business terms are apparent from context?

3. What is the effect of the number of repetitions on the number of business word meanings learned?

4. What is the correlation of initial business vocabulary knowledge to intelligence quotient, socio-economic level, and the number of business courses taken?

5. What is the correlation of mean gains in business vocabulary to age, sex, and mean gains in production scores?

6. What is the correlation between the intentional learning of meanings of business words and retention of these meanings?

7. What is the correlation between the incidental learning of meanings of business words and retention of these meanings?

Procedures. Five classes were taught by the intentional method in which the students were instructed to learn business word meanings as they typed special paragraphs. Five other classes were taught by the incidental method in which the students typed the special paragraphs but did not receive instructions to learn the word meanings as they typed. One class was used as a control class and was not exposed to the special paragraphs but typed regular drills from the textbook.

A pretest and posttest using the Hicks Business Vocabulary Test and the Typewriting Achievement Test were given to students in the experiment. In addition, students filled out a data sheet giving such information as age, sex, number and title of business courses taken, and head of household's occupation.

Thirty business terms missed by 55 per cent or more students on the pretest business vocabulary test were randomly selected and paragraphs were written defining the meanings of the terms. The paragraphs mentioned familiar persons, places, and businesses and were written in such a manner that there was uniformity in readability and syllabic intensity.

Each day for thirty days the Intentional group spent five minutes typing two different word-defined-in-context paragraphs for the purpose of learning from the context. For the same number of days and time period, the Incidental group typed two different word-defined-in-context paragraphs for the purpose of building speed with control. In order to determine if more learning resulted from repetition, some word meanings were presented once, twice, and three times. The Control group typed isolated words and unrelated sentences in the regular typewriting book.

A retention test using the Hicks Business Vocabulary Test was given five weeks after the posttest to determine the retention of the number of business word meanings learned.

Analysis of variance and simple correlations were the statistical techniques used in analyzing the data.

Summary of the Data

1. Students who were instructed to learn business word meanings as they typed added a mean score of 4.43 words to their business vocabulary.

2. Students who were not instructed to learn business word meanings as they typed but were instructed to type for speed with control nevertheless added a mean score of 3.18 business word meanings to their vocabulary.

3. Students who did not type the word-defined-in-context paragraphs but typed textbook drills instead lost 1.04 word meanings. The difference between the Intentional group and the Incidental group in mean gain scores on the thirty business word meanings was significant at the .05 level in favor of the Intentional group. When the Intentional and Incidental groups were combined and compared with the Control group on mean gain scores on the business vocbulary test, there was a significant difference at the .0005 level in favor of the two experimental groups.

4. The mean gain scores in business vocabulary were relatively uniform for the five intentional classes but varied significantly among the five incidental classes. The difference in the mean gains in business vocabulary among the intentional classes were not significant at the .05 level. The difference in mean gains in business vocabulary among the incidental classes were significant at the .0005 level.

5. Three presentations of a paragraph produced more gain in vocabulary than two presentations; two presentations produced more gain than one presentation. The Intentional and Incidental

groups combined gained a mean score of .85 words on one presentation; 1.39 word meanings on two presentations; and 1.56 word meanings on three presentations.

6. There was no significant difference at the .05 level in the retention after five weeks of the number of business word meanings learned by the Intentional group and the Incidental group.

7. There was a significant relationship at the .0005 level between scores on initial business vocabulary test and intelligence (I.Q. above 105 as measured by the California Test of Mental Maturity) were superior to students of average and below average intelligence on initial business vocabulary knowledge.

8. There was no significant relationship at the .05 level between scores on initial business vocabulary test and socio-economic level as measured by the Duncan Index.

9. There was no significant relationship at the .05 level between scores on initial business vocabulary test and the number of business courses taken ranging from one to seven courses.

10. There was no significant relationship at the .05 level between mean gain scores on business vocabulary test and age within the Intentional group and the Incidental group.

11. Males did significantly better at the .01 level than females in mean gain score in business vocabulary in the Incidental group but this finding must be taken with caution

as there was a small number of males as compared to females. Males and females did not differ significantly from each other at the .05 level in mean gain scores in business vocabulary in the Intentional group. However, caution should be taken in interpreting this finding due to the small number of males as compared to females.

12. There were significant mean gains in production scores on the Typewriting Achievement Test at the .05 level for the Intentional, Incidental, and Control groups. However, there was almost zero correlation (.04) between mean gain scores in business vocabulary and mean gain scores in production for the Intentional and Incidental groups.

Conclusions

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

1. A significant mean gain score in business vocabulary was achieved when typing students spent a portion of the class period typing paragraphs in which the meanings of business words were obvious from context.

2. Students who were instructed to learn as they type gained significantly more business word meanings than students who were not instructed to learn as they type.

3. Repetition of paragraphs containing business word meanings increased the likelihood that a word meaning would be learned from context.

4. Students who had been instructed to learn business word meanings as they typed did as well as those who were not instructed to learn as they typed in the number of word meanings retained over a five-week period.

5. Typing word-defined-in-context paragraphs did not hinder the normal progress of students in increasing production scores. In fact, there was significant differences at the .05 level in favor of the Intentional and Incidental groups over the Control group in mean gains in production scores on the Typewriting Achievement Test. Therefore, it appears that the mean gain scores in business vocabulary did not have an adverse effect on production scores. However, mean gains in production scores had very little significant relationship to mean gains in business vocabulary scores with a near zero (.04) correlation coefficient between the two variables.

Recommendations

Because students in this study learned intentionally as well as incidentally from typewriting copy, textbook writers should use business vocabulary in drill material and for explaining problem-solving activities when possible.

A research worker should replicate this study using large groups of students with above-average intelligence and below-average intelligence to determine which method--intentional or incidental--is most effective for each group.

Future studies should analze the business vocabulary level of students who have not had previous business training in comparison to those students who have had previous business training.

A similiar study should be undertaken using first-semester typewriting classes during the skill building period to determine whether or not business vocabulary can be significantly increased while mastering the keyboard.

An investigation should be done in which shorthand vocabulary drills are used for the purpose of building vocabulary while improving shorthand and transcription skills.

Educational Implications

As indicated by the data in this study, students who had taken four to seven business courses did not score significantly better as a group on the initial administration of the Hicks Business Vocabulary Test than students who had taken one to three business courses. Perhaps this finding indicates that there

is need for more effective methods and more opportunities for building business vocabulary in business courses. In this study, students in the experimental groups learned a significant number of business word meanings without sacrificing normal progress in production skills. The learning of business word meanings was a bonus since it did not hinder the main objective of building production skills. Therefore, great consideration should be given to providing opportunities for effectively increasing business vocabulary through typing material in second-year typewriting classes.

Of all the variables used in this study to determine influence on initial business vocabulary as measured by the Hicks Business Vocabulary Test, the variable with the most pronounced effect was the intelligence quotient as measured by the California Test of Mental Maturity. Perhaps the premise that socio-economic conditions have a greater influence on initial business vocabulary than intelligence quotient should be re-examined in the future.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Duncan, O. D. A Socio-Economic Index for All Occupations (in Occupations and Social Status, ed. A. J. Reiss. Glencoe, Illinois: The Free Press, 1961. 346 pp.

Dvorak, August, Nellie L. Merrick, William L. Dealey, and Gertrude C. Ford. Typewriting Behavior. New York: American Book Company, 1936, 521 pp.

Edwards, Allen L. Experimental Design in Psychological Research. New York: Rinehart and Company, Inc., 1950. 446 pp.

Fisher, R. A. The Design of Experiments. Fourth Edition. Edinburgh and London: Oliver and Boyd, Ltd., 1945. 354 pp.

Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Company, Inc., 1950. 633 pp.

Hilgard, Ernest R. Theories of Learning. New York: Appleton-Century-Crofts, 1948. 409 pp.

Lamb, Marion M. Your First Year of Teaching Typewriting. San Francisco: South-Western Publishing Company, 1947. 213 pp.

Lindquist, E. F. Statistical Analysis in Educational Research. Cambridge: Houghton Mifflin Company, 1940. 266 pp.

McGeoch, John and Arthur Irion. The Psychology of Human Learning. New York: Longmans, Green, 1952. 596 pp.

McNemar, Quinn. Psychological Statistics. Third Edition. New York: John Wiley and Sons, Inc., 387 pp.

Meumann, E. Psychology of Learning. New York: D. Appleton and Company, 1913. 393 pp.

Russon, Allien R. and Sam J. Wanous. Philosophy and Psychology of Teaching Typewriting. San Francisco: South-Western Publishing Company, 1960. 401 pp.

Thorndike, Edward L. Educational Psychology. Volume II. New York: Teachers College, Columbia University, 1913-1914. 442 pp.

Tonne, Herbert A. Principles of Business Education. New York: Gregg Publishing Company, 1954. 538 pp.

Walker, Helen M., and Joseph Lev. Statistical Inference. New York: Henry Holt and Company, 1953. 510 pp.

B. PERIODICALS

Ausubel, D. P., and others. "Influence of Intention on Retention of School Materials," Journal of Educational Psychology, XLVIII (February, 1957), pp. 87-92.

Biel, William and Ronald Force. "Retention of Nonsense Syllables in Intentional and Incidental Learning," Journal of Experimental Psychology, XXXII (January, 1943), pp. 52-63.

Dale, Edgar and Jean S. Chall. "A Formula for Predicting Readability: Instructions," Educational Research Bulletin, XXVII (February, 1948), pp. 37-54.

Haefner, Ralph. "Casual Learning of Word Meanings," Journal of Educational Research, XXV (April, 1932), pp. 267-277.

Jenkins, John G. "Instruction as a Factor in Incidental Learning," American Journal of Psychology, XLV (July, 1933), pp. 471-477.

Keller, Robert E. "Building Better Bookkeepers Through Integration with Typewriting," Business Education Forum, XIII, p. 13.

Kilpatrick, E. A. "An Experiment on Memorizing Versus Incidental Learning," Journal of Educational Psychology, 1914.

Klare, George R. "A Table for Rapid Determination of Dale-Chall Readability Score," Educational Research Bulletin, (February 13, 1952), pp. 43-47.

Lepley, William M. "A Gradient in Incidental Learning," Journal of Experimental Psychology, XVIII (February, 1935), pp. 195-201.

Neimark, Edith D. and Irving H. Saltzman. "Intentional and Incidental Learning with Different Rates of Stimulus-Presentation," American Journal of Psychology, LXVI (October, 1953), p. 621.

Peterson, Joseph. "Effect of Attitude on Immediate and Delayed Responses; a Class Experiment," Journal of Educational Psychology, VII (November, 1916), pp. 523-532.

Postman, Leo and Virginia Pauline Austin Adams. "Studies in Incidental Learning: The Interaction of Orienting Tasks and Stimulus Materials," Journal of Experimental Psychology, (1956), pp. 329-333.

Postman, Leo and Virginia L. Senders. "Incidental Learning and Generality of Set," Journal of Experimental Psychology, XXXVI (April, 1946), pp. 153-165.

Saltzman, Irving J. "The Orienting Task in Incidental and Intentional Learning," American Journal of Psychology, LXVI (October, 1953), pp. 593-597.

Shallow, Sadie. "Individual Differences in Incidental Memory," Archives of Psychology, LXIV (January, 1932), pp. 5-77.

Thorndike, Edward L. and Robert T. Roch, Jr., "Learning Without Awareness of What Is Being Learned or Intent to Learn It," Journal of Experimental Psychology, XVII (February, 1934), pp. 1-19.

West, Leonard J. "Experimental Comparison of Nonsense, Words, and Sentence Materials in Early Typing Training," Journal of Educational Psychology, XLVII (December, 1956), pp. 481-489.

C. UNPUBLISHED MATERIALS

Baty, Wayne Murlin. "Incidental Learning of Vocabulary in Beginning Typewriting Classes." Unpublished Doctoral dissertation, University of Southern California, Los Angeles, 1958.

Blavat, Herbert. "An Experimental Study to Determine if Typewriting Can Be Used As a Means of Increasing Vocabulary and Comprehension. Unpublished Master's Project, University of Southern California, Los Angeles, 1957.

Clark, Marshall. "A Study of the Readability Level of Typewriting Textbooks." Unpublished Master's thesis, University of Southern California, Los Angeles, 1958.

Clark, Marvin A. "Incidental Learning of Economics in Beginning Typewriting." Unpublished Doctoral dissertation, University of Minnesota, 1967.

Clayton, Gerald Dean. "Incidental Learning of Economic Concepts in Beginning Typewriting Classes." Unpublished Doctoral dissertation, Oklahoma State University, 1962.

Dobson, Glenna A. "The Effect of Interesting and Non-interesing Copy Material on Speed and Accuracy in Typewriting." Unpublished Doctoral dissertation, University of Florida, 1959.

Fitch, Stanley K. "Incidental Learning of Formal Grammar in Advanced Typewriting Classes." Unpublished Doctoral dissertation, University of Southern California, Los Angeles, 1962.

Hicks, Charles B. "Technical Business Vocabulary of General Business Education." Unpublished Doctoral dissertation, University of Michigan, 1948.

Storm, Joe R. "An Experimental Study to Determine the Gains in Economic Understanding as a Result of Typing Programmed Economic Text Material for Warm-Up Drill." Unpublished Independent Study for the Master's degree, Michigan State University, 1966.

APPENDIX A

BUSINESS VOCABULARY TEST

This is a test of your understanding of business words. First, write your name only in the space provided on the answer sheet. Make no marks on this test booklet. Then read the following directions:

There are 100 questions in this test. Each question has five choices. Read each question and decide which of the five choices is the best answer. Here are two sample questions:

SAMPLE 1. To advertise is to
1--receive 2--pay 3--inform
4--borrow 5--buy

Answer Sheet
1 2 3 4 5
(1) | | | | ■ | | | |

The best answer, of course, is inform. The word inform is number 3; so a heavy mark is put in the space under the 3 on the answer sheet.

SAMPLE 2. To make a deposit at the bank is to
1--cash a check at the bank
2--take money out of the bank
3--put valuables in a safe-deposit box
4--write a check
5--put money in the bank

Answer Sheet
1 2 3 4 5
(2) | | | | | | | | ■

The best answer is 5--put money in the bank, so you would put a heavy mark in the space under the 5 on the answer sheet for question 2.

This is the way you are to answer all questions. Only one choice should be marked for each question. Attempt to answer every test question, but do not work too long on any one question. Work as rapidly and as carefully as you can.

YOU MAY BEGIN THE TEST IMMEDIATELY.

1. The payment received by labor for its work is called
1--capital 2--interest 3--rent 4--profits 5--wages

2. To endorse a check is to
1--receive it 2--make it out 3--approve it 4--refuse it
5--place it in the bank

3. To trespass is to
1--commit a crime 2--make an agreement to do something 3--steal something from someone 4--unlawfully enter the property of another person 5--travel by automobile or train

4. The insurance plan offered by the government to certain groups, covering such things as old-age benefits and unemployment is called
1--dole 2--public insurance 3--taxation 4--government relief
5--social security.

5. A bill is
1--a statement for services received 2--a check made out to pay for something 3--a means of advertising in magazines 4--a receipt for money paid 5--a payment of money

6. A charge account is a
   1--record of a store's sales made out by each salesperson 2--store's record of a person's purchases for which payment was not made at the time of purchase 3--doctor's record of people who consult him 4--buyer's record of his purchases at a particular store 5--bank's record of expenses met in handling its accounts.

7. A permit which allows a person to go from one country to another is called a
   1--tariff 2--passport 3--travel guide 4--letter of credit 5--citizenship certificate

8. The word legal means
   1--governmental 2--financial 3--justice 4--lawful 5--municipal

9. An agreement between two or more parties to do or not to do something is called a
   1--law 2--forgery 3--contract 4--crime 5--summons

10. All of the things which a person or business owns are called
    1--real estate 2--income 3--receipts 4--assets 5--bonds

11. The tax paid by an individual on his salary and other earnings is called
    1--a sales tax 2--an income tax 3--a profits tax 4--a cash receipts tax 5--an earnings tax

12. The word fare means
    1--that prices must be correct and just 2--the price paid for traveling on a train or bus 3--the profit made by railroad and bus companies 4--an exhibition of farm products 5--that prices may be changed without notice

13. A labor union is
    1--an organization of employers 2--a political party 3--a type of work 4--an organization of employees 5--a division of government

14. Finance is chiefly concerned with
    1--money 2--governments 3--corporations 4--people 5--law

15. A joint account in banks is one
    1--used by two banks 2--used for both checking and savings purposes 3--which one bank has with another bank 4--used by two persons 5--which one person has with two banks

16. The classified section of a telephone book is the section having
    1--telephone numbers of business and professional services 2--information about telephone services 3--telephone numbers of fire, police, and other emergency calls 4--telephone numbers of nearby communities 5--telephone numbers of all persons with telephones, arranged in alphabetical order

17. One who acts for another is called an
    1--organizer 2--acceptor 3--agent 4--official 5--actor

18. An annual tax on real estate is called
    1--an estate tax 2--an excise tax 3--an inheritance tax 4--a property tax 5--an income tax

19. An amount owed to another is called a
    1--debit 2--bill 3--debt 4--credit 5--payment

20. Carrying charges on installment purchases are the
    1--costs to the buyer for the privilege of buying on installments 2--costs to the buyer for delivery 3--profits made by stores on installment sales 4--costs of extra services provided by a store 5--losses to a store because some people will not pay

21. A wholesale business is one which sells most of its products to
    1--retailers 2--large stores rather than small ones 3--manufacturers 4--consumers 5--governments

22. To pledge property as a guarantee that a sum of money will be paid when due is to
    1--lease it 2--insure it 3--mortgage it 4--deed it 5--sell it

23. To make a thing void is to make it
    1--good 2--excellent 3--useless 4--binding 5--poor

24. If an article costs $1.00, is sold for $2.00, and 25¢ is paid for advertising, the amount made is 75¢. This amount (75¢) is called
    1--cash received 2--net profit 3--bonus 4--gross profit 5--salary

25. A signed paper which shows that you owe money and that you promise payment is called
    1--a note 2--a check 3--a receipt 4--a money order 5--an invoice

26. An example of real property is
    1--land and buildings 2--money 3--automobiles 4--household furniture 5--stocks and bonds

27. When a person makes out a check for a greater amount than he has in the bank, it is called
    1--forgery 2--fraud 3--a raised check 4--an overdraft 5--usury

28. A deed is a written instrument by which the owner of property
    1--agrees to sell his property 2--transfers ownership of his property 3--rents his property 4--borrows money on his property 5--agrees to pay for improvements on his property

29. A lapsed insurance policy is one which
    1--covers automobile trips 2--is fully paid up 3--covers losses from death 4--is no longer in force 5--pays a certain amount at the end of a certain period

30. A dealer is a
    1--factory owner 2--manufacturer 3--debtor 4--merchant 5--customer

31. Long term interest-bearing instruments used by governments and corporations to obtain money are
    1--stocks 2--taxes 3--bonds 4--notes 5--letters of credit

32. Complete control of something is called
    1--power 2--competition 3--economics 4--monopoly 5--slavery

33. An assessment is
    1--an organization of people interested in the same thing 2--an official estimate of the value of property for tax purposes 3--an unsupported statement 4--an agreement to pay something owed 5--a transfer of property to another person

34. The maturity of a note is the
    1--full amount of the note 2--date on which the note becomes due 3--length of time a note runs 4--date on which the note is paid 5--date on which the note is made out

35. C.O.D. means
    1--costs of transportation only are paid by the sender of goods 2--costs of transportation only are paid by the receiver 3--costs of transportation only are paid by the transportation company 4--payment for the goods sent as well as transportation costs is made when the goods are received 5--payment for the goods sent as well as the transportation costs is made when the goods are sent

36. The owners of a corporation are the
    1--bondholders 2--directors 3--managers 4--stockholders 5--charter holders

37. The supervision and control of the operations of a corporation are in the hands of the
    1--stockholders 2--bondholders 3--general executives 4--employees 5--Board of Directors

38. An example of information that can <u>NOT</u> be obtained easily from a telephone directory is
    1--addresses of persons 2--telephone numbers of persons and businesses 3--names of people living on a certain street 4--information about telephone services 5--addresses of businesses

39. <u>Standardization</u> means
    1--making something an established size or weight 2--regulation of business by government 3--supervision of workers to be sure they work well 4--control of business by workers 5--specialization for work

40. A broker is one who
    1--owns the goods he sells 2--buys goods to be resold 3--buys and sells for others without owning the goods himself 4--sells in a store on a salary basis 5--works in a bank, receiving and paying out money to people

41. The earnings of a corporation which are distributed to the owners are called
    1--interest 2--salary 3--rent 4--premiums 5--dividends

42. Another word for <u>credit</u> is
    1--trust 2--debit 3--approval 4--rating 5--cash

43. In investments the yield is the
    1--value 2--return 3--cost 4--cash value 5--principal

44. The simplest type of business organization is a
    1--bank 2--sole proprietorship 3--partnership 4--cooperative 5--corporation

45. To consign something is to
1--place something under the care of another person 2--use up something 3--place one's name on something 4--buy something from a store 5--sell something to another person

46. The written agreement between a person and a railroad for transporting goods is called
1--a transportation receipt 2--a draft 3--an injunction 4--a bill of lading 5--a railroad receipt

47. Purchasing power
1--is less important than a person's income 2--is the same as a person's income 3--has little effect on a person's ability to buy 4--is greater when money buys less 5--is greater when prices are low

48. Prepaid interest is the amount paid
1--for the use of money 2--on savings accounts 3--at the time money is borrowed 4--on checking accounts 5--at the time money is paid back

49. Fraud is
1--an unintentional false statement of a fact 2--a dishonest statement of opinion 3--a sincere statement 4--anything unlawful 5--an intentional false statement of a fact

50. An investment is best described as
1--buying and selling for a quick profit 2--purchasing stocks and bonds or property for a steady income 3--buying insurance for protection 4--issuing stocks and bonds to raise money 5--putting money in a bank where it will be safe

51. The word <u>retail</u> means
1--purchases on the installment plan 2--sales made to the final user 3--department stores 4--purchases for cash 5--sales made in large lots

52. A person traveling by coach in a train is entitled to use of
1--parlor cars 2--Pullman services 3--master rooms 4--compartments 5--dining cars

53. The price paid for stock in a business is called its
1--par value 2--net value 3--market value 4--book value 5--face value

54. Capital consists of
1--amounts owned and amounts owed 2--employers and employees 3--money and property used in a business 4--taxes 5--all of the above

55. An example of speculation is buying
1--stocks for a safe income 2--U.S. government bonds 3--stocks to sell at a higher price 4--insurance 5--only the safest stocks and bonds

56. An example of a public utility is
1--a bank 2--a telephone company 3--a paper mill 4--a jail 5--none of the above

57. Stock which has certain privileges such as first claim on earnings is called
1--premium stock 2--common stock 3--preferred stock 4--first stock 5--income stock

58. The rate paid on life insurance is based on the
1--value of the person insured 2--age of the person insured 3--number of children in the family 4--city of the person insured 5--amount which the salesman and person insured agree on by bargaining

59. Collateral is
1--a form of insurance 2--the security for a loan 3--the written promise to pay something 4--a type of investment 5--the loan made on personal property

60. Parcel post includes
1--magazines and books 2--packages weighing over one-half pound 3--freight 4--newspapers weighing over a pound 5--third-class mail

61. Principal as used in banking means
1--interest rate 2--capital sum 3--premium value 4--profit made 5--bank president

62. The person who rents property to another is called the
1--lessor 2--lease 3--lessee 4--tenant 5--shareholder

63. Inflation means that
1--money is more valuable 2--people on fixed salaries will be able to buy more 3--more money is in circulation 4--people can buy more things with their money 5--prices are lower than usual

64. A competent party in a contract is one who
1--is very skillful in making a contract 2--is qualified by law to make a contract 3--has a high school education 4--has much general ability 5--has reached the age of 18

65. If an insurance policy has a $50 deductible clause, it means that the insurance company
1--will pay for losses up to $50 2--will pay only for losses over $50 3--deducts $50 from the cost of insurance in case of accident 4--deducts $50 from the cost of insurance if there are no accidents during the year 5--charges $50 a year for insurance

66. An outstanding check as used in banking is one
1--made out by the bank 2--still held by the person receiving the check 3--cashed by the person receiving the check 4--made out by the cashier of a bank 5--made out for an unusually large amount

67. Stocks and bonds are called
1--speculations 2--securities 3--money 4--deposits 5--interest

68. A permit which allows one person to act for another is called
1--a visa 2--a proxy 3--a pass 4--an invoice 5--a check

69. A commuter is one who
1--travels in Pullman cars 2--transports goods for others 3--takes tickets on a railroad train 4--drives a taxicab or bus 5--travels regularly between home and work

70. Under a land contract a buyer of property
1--makes a large down payment 2--never becomes full owner of the property 3--receives full ownership at the time of purchase 4--receives full ownership when an agreed sum has been paid 5--receives full ownership immediately after the down payment has been made

71. The premium in insurance is the
1--amount to be received in case of loss 2--bonus paid for prompt payment 3--amount paid to the insurance company 4--cash value of the policy 5--amount returned at the end of the year if the insurance company has money left

72. An abstract of title is
1--the names and addresses of the present owners of the property 2--a part of the property 3--an estimate of the value of the property 4--a summary of taxes paid on the property 5--a history of the ownership of real property

73. A form of business organization which is permitted by law to act as an artificial being is a
1--sole proprietorship 2--corporation 3--partnership 4--store 5--personal-service business

74. Demand in an economic sense means
1--the desire to own something 2--the amount of goods available for sale 3--purchasing power 4--the ability to pay for something 5--the desire to own something plus the ability to pay for it

75. The fastest type of telegraph service is
1--a day letter 2--a night letter 3--serial service 4--a full-rate telegram 5--tourate

76. The grace period in insurance policies is the period
1--covered by the insurance policy 2--in which the salesman tries to sell insurance to a person 3--between the application for insurance and receipt of the policy 4--in which the policy is paid up 5--granted people to pay their policies after they are due

77. When traveling by railroad, baggage
1--includes anything that a person wishes to take with him 2--will be carried in the baggage car up to a certain weight 3--may be left with the railroad for a week without extra charge 4--will be fully paid for by the company if lost or damaged 5--will only be carried in the baggage car if an additional payment is made by the traveler

78. A statute is
1--an unwritten law 2--an oral agreement 3--a crime 4--a written law 5--a common law

79. To reconcile a bank statement is to
1--obtain the statement from the bank 2--bring the bank balance into agreement with the checkbook balance 3--correct errors made by the bank 4--return the bank statement to the bank after you are through using it 5--bring the bank balance into agreement with the savings book balance

80. The Balance Sheet of a company tells people
1--how it has made money 2--who the stockholders are 3--the market value of the business 4--where a company may do business 5--what a business owns and owes

81. A person wishes to make a long distance telephone call. To obtain the cheapest rates, he should
1--call station-to-station during the day 2--call person-to-person at night 3--call station-to-station at night 4--call person-to-person during the day 5--call person-to-person on Sundays

82. A business which is solvent is one which
1--owns a lot of stock 2--is easy to understand 3--owes a lot of people 4--can pay what it owes 5--is engaged in water transportation

83. An option to buy something means
1--a wish to buy 2--a reluctance to buy 3--a promise to buy 4--a privilege to buy 5--a refusal to buy

84. A night letter by telegraph
1--is limited to 50 words 2--is delivered as soon as possible 3--costs less per word than a regular telegram 4--refers to one that is delivered at night 5--is usually shorter than a day letter

85. Earnings of an insurance company paid to a policyholder are called
1--dividends 2--premiums 3--profits 4--proceeds 5--endowments

86. To guarantee against risk of loss or harm is to
1--finance 2--tax 3--gamble 4--insure 5--invest

87. To diversify one's investments means to
1--keep a record of them 2--turn them over to an expert 3--buy different kinds of them 4--buy only ones that are very good 5--put them in a bank for safekeeping

88. If a person stops making payments on an insurance policy and the company pays him a certain amount, this amount is called
1--cash surrender value 2--maturity value 3--bonus value 4--settlement value 5--premium value

89. A check written on May 1 is postdated if
1--the date on the check is April 20 2--the date on the check is May 1 3--the date on the check is May 3 4--it is cashed on May 10 5--it is received on May 5

90. An instrument which transfers only the rights and interests that the seller has is a
1--quitclaim deed 2--land contract 3--bill of sale 4--warranty deed 5--chattel mortgage

91. Power of attorney
    1--refers to the legal ability of lawyers 2--means that the judge rather than a jury may decide a case 3--permits one person to act for another 4--is the law which permits lawyers to appear in court 5--includes all of the above

92. An investment which can be readily turned into cash is said to be
    1--payable 2--liquid 3--due 4--profitable 5--convertible

93. The correct term for a mortgage which has preference over other mortgages is
    1--primary mortgage 2--premium mortgage 3--prior mortgage 4--special mortgage 5--first mortgage

94. A thing which is valid is one which is
    1--excellent 2--poor 3--enforceable 4--unsound 5--expensive

95. Another word for itinerary is
    1--purchase 2--investment 3--expense 4--route 5--repair

96. A toll call by telephone means
    1--an emergency call 2--a local call 3--a collect call 4--a call made on a party line 5--a long distance call

97. Common stock is stock which ordinarily
    1--is the safest type of stock 2--has the first claim on earning 3--can only be purchased by the workers in a corporation 4--has the last claim on earnings 5--is preferred by conservative investors

98. An example of first-class mail is
    1--postal cards 2--packages 3--magazines and newspapers 4--freight 5--all of the above

99. A list of goods sent by railroad with shipping instructions is called
    1--a waybill 2--an inventory 3--a shipping list 4--an order 5--a transportation order

100. Consideration in a contract is
    1--regard for another person's feelings 2--an agreement made by two or more people 3--the advice obtained from a lawyer 4--something of value exchanged for a promise 5--something regarded as important

WHEN YOU HAVE FINISHED, GIVE YOUR ANSWER SHEET AND TEST TO YOUR TEACHER.

Prepared by

Dr. Charles B. Hicks, Ohio State University,
Columbus, Ohio

Year 1
Form A
Part 3

Year 1
Form A
Part 3

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION ACHIEVEMENT TEST SERIES

Part 3 - Business Letter Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

Separate this outer leaflet, which contains Part 3 of the test, from the leaflets inside it. Place the inner leaflets, unopened, at the left of your typewriter. Next, carefully, separate the two sheets that make up this leaflet. The fold is perforated at the crease to make it easy for you to separate the sheets.

When you have separated the sheets, insert the other sheet so that you can type on the shaded area marked "Do Your Warmup Practice Here," unless the test administrator tells you that you are not to do a warmup for this part of the test.

Directions for Warmup Practice

Adjust your machine as follows: SET MARGIN STOPS for a 60-space line (for example, if the center of your paper is at 50, set your margins at 20 and 85; if the center is at 43, set your margins at 13 and 78). SET THE SPACING at single TYPE the following three practice lines two or three times, or until you are told to stop. When you finish the warmup practice, remove the paper from your typewriter.

Jane paid for the chair, so I paid for the pen and the box.
Judy gave a quick jump as the lynx and zebra fought wildly.
He called rooms 10, 28, 39, and 47 before I called room 56.

Directions for Part 3

This part of the test calls for the typing of a business letter, the copy for which appears on the reverse side of this page.

Insert in your typewriter the letterhead sheet marked "West Coast Lyceum," which you detached from this sheet. Straighten the paper if necessary. Type your name, last name first, and the section or period on the line provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the letter. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 6 minutes in which to read the instructions, adjust your machine, and type as much of the letter as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 3. BUSINESS LETTER TYPING

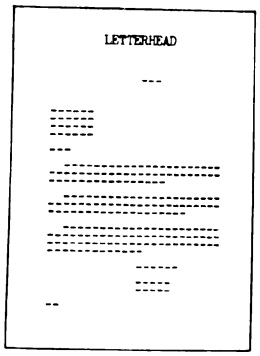
STYLE: You are to type the letter below in the style shown in the illustration at the right.

MARGINS: Set the margin stops for an average-length letter. The body of this one contains about 135 words.

TAB STOPS: Set one tab stop for a 5-space paragraph indention, and set another tab stop at the center for positioning the date and closing lines. See the illustration at the right.

TYPE: Advance to the appropriate line, type today's date, and continue with the letter.

Arrange the letter in this style



Current date | Miss Anne M. Poole | Foreign Relations Club | 27 North Beech Street | Portland, Maine 04100 | Dear Miss Poole:

I am pleased to be able to accept your invitation to speak to the Foreign Relations Club at its June dinner. I have watched with interest the activities of your club, and I commend you for your involvement in world affairs.

Your fee for my talk plus expenses is quite acceptable. I expect to keep travel expenses at a low level, but a lecture scheduled for that morning several hundred miles away will make it necessary for me to arrive on the 5 p.m. jet. However, a group to which I plan to speak on my way home will share my return trip expenses with you.

May I repeat how delighted I am to have the honor to address your club. I shall look forward to hearing from you concerning your choice of topic.

Sincerely yours, | Thomas B. Knowles | Assistant Director | *Your initials*

If you finish before time is up, turn your paper over and retype the letter, beginning with the date.

Year 1
Form A
Part 4

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION ACHIEVEMENT TEST SERIES

Part 4 - Revised Manuscript Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

Separate this outer leaflet, which contains Part 4 of the test, from the leaflet inside it. Place the inner leaflet, unopened, at the left of your typewriter. Next, carefully, separate the two sheets that make up this leaflet. The fold is perforated at the crease to make it easy for you to separate the sheets.

When you have separated them, come back to this page for further instructions.

Directions for Part 4

This part of the test calls for the correct typing of a revised manuscript, the copy for which appears on the reverse side of this page.

Insert in your typewriter the sheet of paper marked "Revised Manuscript Test Paper," which you detached from this sheet. Straighten the paper if necessary. Type your name (last name first) and the section or period on the lines provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the manuscript. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 7 minutes in which to read the instructions, adjust your machine, and type as much of the manuscript as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 4. REVISED MANUSCRIPT TYPING

MARGINS: Set the margin stops for a 50-space line. If the center of your paper is at 50, set your margin stops at 25 and 80; if the center is at 43, set your margin stops at 18 and 75.

TAB STOP: Clear the previous tab stops. Set one stop for a 5-space paragraph indention.

SPACING: *Single-space* the copy, with appropriate spacing between paragraphs and above and below the sideheadings.

TYPE: Starting on the 13th line below the line on which you typed your name, type the rough-draft manuscript below, making the corrections indicated. Do not type the revision marks themselves. Pay attention to the proper display of the heading and sideheadings. If there are any revision marks you do not know, use your judgment in figuring out what they mean. Do not spend too much time on an unfamiliar mark, but go on with your typing.

NOTICE TO ALL EMPLOYEES (Center in all caps)

The owner of the building has asked me to pass ~~on~~ to you the following information for the use of the new elevators. (Insert as a sideheading in all caps: HOURS OF SERVICE)

On week days, the cars will be in service in the south wing of the building through the regular working hours. No An exception will be made on Mondays, when they will run until 9 p.m. for the use of the Mail Order department.

On Saturdays, three cars will be in operation from 8a.m. until 11a.m. On Sundays and holidays, no elevator service will be available.

Use of the Elevators (Type as a sideheading in all caps.)

After boarding, it is best to stand ~~well~~ clear of the door, as there are photo cells on both sides which prevent it from closing while people are still entering or leaving. The door can be held open also by depressing the bumper at its edge.

We thank all of you for your patience during these past few months.

If you finish before time is up, turn your paper over and retype the manuscript; start the heading on line 16.

Year 1
Form A
Part 5

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION ACHIEVEMENT TEST SERIES

Part 5 - Tabulation Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

Carefully separate the two sheets that make up this leaflet. The fold is perforated at the crease to make it easy for you to separate the sheets.

When you have separated them, come back to this page for further instructions.

Directions for Part 5

This part of the test calls for the typing of a set of two tables, the copy for which appears on the other side of this sheet.

Insert in your typewriter the sheet of paper marked "Tabulation Test Paper," which you detached from this sheet. Straighten the paper if necessary. Type your name (last name first) and the section or period on the lines provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the tables. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 8 minutes in which to read the instructions, adjust your machine, and type as much of the tables as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 5. TABULATION TYPING

GENERAL: Type the two tables below on the *same* side of your test paper. You may write on this page if necessary.

FIRST TABLE: Clear the previous tab stops, and set the appropriate margin and tab stops for the first table. Begin typing the first table on the 10th line below the line on which you typed your name. The body of the table is to be singled-spaced.

SECOND TABLE: As soon as you finish the first table, advance the paper *15 blank lines.* Clear the previous tab stops, set the appropriate margin and tab stops for the second table, and start typing it. The body of the table is to be single-spaced.

BUSINESS CLUB MEMBERS

Peter Bellman	Louise Olivier
Walter Graham	Adele Owens
Evelyn Jones	Marilyn Parrish
Frances Kelley	Thomas Quirk
Larry Mizner	Robert Standler
George Newman	Carole Thompson

POPULATIONS OF SELECTED STATES

(Figures to the Nearest Thousand)

State	Population
Pennsylvania	11,319,000
Ohio	9,706,000
Washington	2,853,000
Colorado	1,754,000
Maine	969,000
Vermont	390,000

If you finish before time is up, turn your paper over and retype the tables, beginning the first table on line 13.

Year 1
Form B
Part 3

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION ACHIEVEMENT TEST SERIES

Part 3 - Business Letter Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

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Jane paid for the chair, so I paid for the pen and the box.
Judy gave a quick jump as the lynx and zebra fought wildly.
He called rooms 10, 28, 39, and 47 before I called room 56.

Directions for Part 3

This part of the test calls for the typing of a business letter, the copy for which appears on the reverse side of this page.

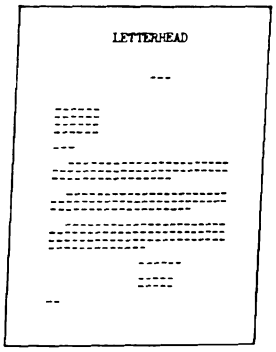
Insert in your typewriter the letterhead sheet marked "West Coast Lyceum," which you detached from this sheet. Straighten the paper if necessary. Type your name, last name first, and the section or period on the line provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the letter. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 6 minutes in which to read the instructions, adjust your machine, and type as much of the letter as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 3. BUSINESS LETTER TYPING

Arrange the letter in this style



STYLE: You are to type the letter below in the style shown in the illustration at the right.

MARGINS: Set the margin stops for an average-length letter. The body of this one contains about 135 words.

TAB STOPS: Set one tab stop for a 5-space paragraph indention, and set another tab stop at the center for positioning the date and closing lines. See the illustration at the right.

TYPE: Advance to the appropriate line, type today's date, and continue with the letter.

Current date | Miss Kay M. West | Fine Arts Association | 48 Pond Road | Troy, New York 27371 | Dear Miss West:

Upon checking my schedule for next month, I find that I can accept your invitation to address the Fine Arts Association at its next meeting. I have looked forward to doing this, and am glad that we were able to find a convenient date.

Thank you for the invitation to dinner prior to the lecture, but my schedule is still too indefinite to permit me to commit myself at this time. In fact, I shall not be able to let you know my travel plans until a week before the lecture. However, I will do my best to arrive before 7 p.m. so that I may accept your kind invitation.

I am looking forward to meeting with your group next month, and will send the materials you requested for the newspaper release as soon as possible.

Sincerely yours, | Ralph A. Stearns | Assistant Director | *Your initials*

If you finish before time is up, turn your paper over and retype the letter, beginning with the date.

Year 1
Form B
Part 4

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION ACHIEVEMENT TEST SERIES

Part 4 - Revised Manuscript Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

Separate this outer leaflet, which contains Part 4 of the test, from the leaflet inside it. Place the inner leaflet, unopened, at the left of your typewriter. Next, carefully, separate the two sheets that make up this leaflet. The fold is perforated at the crease to make it easy for you to separate the sheets.

When you have separated them, come back to this page for further instructions.

Directions for Part 4

This part of the test calls for the correct typing of a revised manuscript, the copy for which appears on the reverse side of this page.

Insert in your typewriter the sheet of paper marked "Revised Manuscript Test Paper," which you detached from this sheet. Straighten the paper if necessary. Type your name (last name first) and the section or period on the lines provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the manuscript. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 7 minutes in which to read the instructions, adjust your machine, and type as much of the manuscript as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 4. REVISED MANUSCRIPT TYPING

MARGINS: Set the margin stops for a 50-space line. If the center of your paper is at 50, set your margin stops at 25 and 80; if the center is at 43, set your margin stops at 18 and 75.

TAB STOP: Clear the previous tab stops. Set one stop for a 5-space paragraph indention.

SPACING: *Single-space* the copy, with appropriate spacing between paragraphs and above and below the sideheadings.

TYPE: Starting on the 13th line below the line on which you typed your name, type the rough-draft manuscript below, making the corrections indicated. Do not type the revision marks themselves. Pay attention to the proper display of the heading and sideheadings. If there are any revision marks you do not know, use your judgment in figuring out what they mean. Do not spend too much time on an unfamiliar mark, but go on with your typing.

NOTICE TO ALL EMPLOYEES (Center in all caps)

The following rules will be placed in effect ~~on~~ the first of next month, since a new telephone system is being installed. (Insert as a sideheading in all caps: HOURS OF OPERATION)

Throughout the week, the switchbard will be open during the regular working hours.

No ¶ An exception will be made to this rule on Thursdays, when some lines will be open until 9 p.m. for the convenience of the workers in the Mail room.

On Saturdays, the switchboard will be in service from 9a.m. to 1p.m. ¶ At other times, a Night Line will be open in the Security Office.

Personal Calls (Type as a sideheading in all caps)

As at present, employees may receive and place a reasonable number of local personal calls. Such calls must only be made to and from each person's ~~own~~ telephone. No one is to receive or place a call at the switchboard itself.

We thank the entire staff for their patience during these past weeks.

If you finish before time is up, turn your paper over and retype the manuscript; start the heading on line 16.

Year 1
Form B
Part 5

Typewriting Achievement Test

DEVELOPED BY THE PSYCHOLOGICAL CORPORATION

BUSINESS EDUCATION
ACHIEVEMENT
TEST SERIES

Part 5 - Tabulation Typing

LAST NAME	FIRST NAME	INITIAL	DATE	RAW SCORE
SCHOOL	GRADE	SECTION/PERIOD		PERCENTILE

Introduction

Carefully separate the two sheets that make up this leaflet. The fold is perforated at the crease to make it easy for you to separate the sheets.

When you have separated them, come back to this page for further instructions.

Directions for Part 5

This part of the test calls for the typing of a set of two tables, the copy for which appears on the other side of this sheet.

Insert in your typewriter the sheet of paper marked "Tabulation Test Paper," which you detached from this sheet. Straighten the paper if necessary. Type your name (last name first) and the section or period on the lines provided at the top of the sheet.

When you are told to begin, but not before, turn this page over. Read the instructions on the other side before starting the tables. Follow these instructions exactly, even if they are different from what you have been taught. Both speed and accuracy are important. If you make an error, however, do not stop to correct it. After the signal to turn the page and begin is given, you will have 8 minutes in which to read the instructions, adjust your machine, and type as much of the tables as you can before time is called.

DO NOT TURN THIS SHEET OVER UNTIL YOU ARE TOLD TO DO SO.

PART 5. TABULATION TYPING

GENERAL: Type the two tables below on the *same* side of your test paper. You may write on this page if necessary.

FIRST TABLE: Clear the previous tab stops, and set the appropriate margin and tab stops for the first table. Begin typing the first table on the 10th line below the line on which you typed your name. The body of the table is to be singled-spaced.

SECOND TABLE: As soon as you finish the first table, advance the paper *15 blank lines.* Clear the previous tab stops, set the appropriate margin and tab stops for the second table, and start typing it. The body of the table is to be single-spaced.

BUSINESS CLUB MEMBERS

Paul Blanding	Eleanor Quill
Alice Cornwell	Marvin Rogers
Charles Ford	Dexter Strong
Myrtle Harris	William Sylvester
Kathleen Hazen	Janice Tate
Nancy Holleran	Harold Webster

POPULATIONS OF SELECTED STATES

(Figures to the Nearest Thousand)

State	Population
California	15,717,000
Texas	9,580,000
Florida	4,951,000
Virginia	3,967,000
Montana	675,000
Alaska	226,000

If you finish before time is up, turn your paper over and retype the tables, beginning the first table on line 13.

APPENDIX B

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE PILOT STUDY

Business Term	Percentage of Students Who Missed the Term
Wages	8
Endorse	35
Trespass	0
Social security	4
Bill	26
Charge account	2
Passport	0
Legal	2
Contract	3
Assets	11
An income tax	15
Fare	9
Labor union	6
Finance	9
Joint account	5
Classified section	24
Agent	17
Property tax	27
Debit	23
Carrying charges	59
Wholesale	30
Mortgage	20
Void	11
Net profit	21
Note	39
Real property	26
Overdraft	36
Deed	36
Lapsed	26
Dealer	21
Bonds	48
Monopoly	24
Assessment	20
Maturity	89
C.O.D.	36

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE PILOT STUDY (Continued)

Business Term	Percentage of Students Who Missed the Term
Stockholders	39
Board of Directors	30
Telephone directory	47
Standardization	29
Broker	37
Dividends	26
Credit	30
Yield	51
Sole proprietorship	30
Consign	29
Bill of lading	39
Purchasing power	42
Prepaid insurance	44
Fraud	37
Investment	44
Retail	56
Coach	55
Market value	47
Capital	55
Speculation	56
Public utility	48
Preferred stock	45
Rate	59
Collateral	34
Parcel post	56
Principal	64
Lessor	50
Inflation	45
Competent party	36
Deductible clause	53
Outstanding check	33
Securities	20
Proxy	23
Commuter	52
Land contract	56

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE PILOT STUDY (Continued)

Business Term	Percentage of Students Who Missed the Term
Premium	51
Abstract of title	56
Corporation	68
Demand	64
Full-rate telegram	27
Grace period	45
Baggage	33
Statute	73
Reconcile	33
Balance sheet	23
Station-to-station call	50
Solvent	55
Option	42
Night letter	67
Dividends	50
Insure	9
Diversify	80
Cash surrender value	51
Postdate	71
Quitclaim deed	83
Power of attorney	68
Liquid	77
First mortgage	86
Enforceable	45
Itinerary	50
Toll call	50
Common stock	54
First-class mail	74
Waybill	88
Consideration	88

APPENDIX C

PARAGRAPHS TYPED BY THE STUDENTS

Abstract of Title*

When you buy real property, always get an abstract of title. A history of the real property being pruchased may protect you from losses in the future. A Lansing man was sued for his house by a realty company. He did not know that the preceding owner did not have a good title to the property. He said he would always get an abstract of title or a record of property ownership in the future.

Grade Level:	9-10	Syllables :	108
Words :	75	Syllable Intensity:	1.45

Capital

Mr. Johnston needed two million dollars for capital to start his trailer business. A company usually require a substantial sum of money and property to use to get a business started and to keep it going. Usually, money has to be solicited from many individuals to get started. When Clark Equipment Company wanted to expand, it sold more stock to raise the capital needed in the business.

Grade Level:	9-10	Syllables :	104
Words :	67	Syllable Intensity:	1.55

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*The paragraphs presented to the students had no titles. The grade level, number of words, number of syllables, and the syllable intensity are presented here for purposes of illustrating equality of paragraphs. The information did not appear on the materials typed by the students.

Carrying Charges

Through carrying charges, business is more able now than at any time before to let people purchase the needs and luxuries of life on installments. When carrying an account for a period of time, the firm incurs expenses that are passed on to the buyer. You may think of carrying charges as cost to the buyer for the privilege of buying on installments.

Grade Level:	9-10	Syllables :	95
Words :	63	Syllable Intensity:	1.53

Cash Surrender Value

Professor McMillan told his class that one of the principal features to consider when shopping for a life insurance policy is the cash surrender value. You should know how much money you will receive if you should stop paying into your policy at any time. When Timothy graduated from Yale University, he purchased a good policy with a high cash surrender value. When his company bought him a much better policy a few years later, he got a large amount of money from his first policy when he stopped paying on it.

Grade Level:	9-10	Syllables :	142
Words :	92	Syllable Intensity:	1.54

Coach

Mr. Brownell requested that his secretary make a coach reservation for him from Grand Rapids to Chicago aboard the Grand Trunk Railroad train. He preferred this type of reservation because he wanted to have dinner on the train. He knew he would not have time to eat dinner once he arrived in Chicago. It is advisable for a passenger to request a coach reservation if he does not plan to sleep overnight on the train but wishes to dine aboard the streamliner.

Grade Level:	9-10	Syllables :	127
Words :	81	Syllable Intensity:	1.54

Common Stock

When American Telephone and Telegraph Company issued new stock last year, Mr. Branson bought 1,000 shares of common stock. By buying common stock in the world's largest corporation, he knew that he would be paid dividends after the people with preferred stock were paid first. By purchasing this kind of stock, Mr. Branson had the last claim on earnings, but he also had a chance at unlimited earnings after preferred stockholders had been paid.

Grade Level:	9-10	Syllables :	109
Words :	74	Syllable Intensity:	1.47

Commuter

Many suburban residents who work in large cities are commuters rather than drivers because traffic is so heavy and congested. It saves much time and effort to take a bus, subway, or elevator train to work. In fact, in New York City driving around Times Square, where many people are employed, is virtually impossible. In the future nearly every one will live on the outskirts of town and commute to work.

Grade Level:	9-10	Syllables :	107
Words :	71	Syllable Intensity:	1.48

Consideration

In all contract agreements, consideration is a legal necessity. The individuals to a contract will have to agree to give something of value in exchange for a promise of goods or services. Undoubtedly, no one is going to give a promise and have nothing of worth given back to them. This is why consideration is so essential for an agreement to occur.

Grade Level:	9-10	Syllables :	97
Words :	62	Syllable Intensity:	1.53

Corporation

Since corporations were introduced on the American scene, there has been a trend for large and small businesses to incorporate. The sound business thinking in the move is that it protects the owners of the business from personal losses. As an artificial being, a corporation is solely responsible for the actions of its officers and workers. Therefore, when the Underwood firm went broke and could not pay what it owed, the owners' own possessions could not be taken because only the corporation was a legal person.

Grade Level:	9-10	Syllables :	134
Words :	84	Syllable Intensity:	1.55

Deductible Clause

Allstate Insurance Company offers a deductible clause of $50 on car insurance policies. When Mrs. Swem had her unfortunate accident, she had to pay the first $50 of the $1,000 for repairs on her car; the company paid the remaining $950. The company does not wish to be bothered with repairs of minor mishaps where the cost of processing is almost as much as the cost of the repairs. Therefore, the company will pay only for a loss over $50.

Grade Level:	9-10	Syllables :	117
Words :	79	Syllable Intensity:	1.48

Diversify

Jim decided to diversify his interests because he feared putting all of his eggs in one basket. He wanted to purchase various kinds of investments in different firms. Therefore, if one investment failed, he would not lose all he had saved. Most clever people will diversify their investments by purchasing many kinds of stocks to protect themselves from substantial losses.

Grade Level:	9-10	Syllables :	93
Words :	60	Syllable Intensity:	1.55

First Mortgage

Manufacturer's National Bank had first mortgage rights when Mr. Johnson could no longer make the payments on his home. Because the bank's mortgage was a first mortgage, it took preference over all other mortgages on his home. When Mr. Johnson sold his home to pay off his debts, the bank's mortgage was paid before the second and third mortgages on the home. Beneficial Loan Company's second mortgage to repair his home was paid only after the bank was paid.

Grade Level:	9-10	Syllables :	115
Words :	79	Syllable Intensity:	1.45

First-Class Mail

Of the four common classes of United States mail, first-class mail is most frequently used for handwritten letters and postal cards. It is the most expensive way to send mail and receives preferential treatment in processing and delivery. You can usually determine first-class mail if a six-cent stamp is placed on it. The care and delivery of this class of mail gets is why people send letters and postal card this way.

Grade Level:	9-10	Syllables :	106
Words :	72	Syllable Intensity:	1.47

Itinerary

It is advisable to make an itinerary whenever you go on a long journey. By mapping out the route of the upcoming trip, you can save your use of time and money. Travel agencies will plan your itinerary or route for a small additional charge. Worldwide Travel Bureau is one of the most well-known agencies for making a record of long journeys.

Grade Level:	9-10	Syllables :	95
Words :	63	Syllable Intensity:	1.50

Liquid

The government requires all insurance companies to let a healthy amount of company assets remain liquid. You see, if a disaster struck and the company had to pay off a lot of claims at once, it must have a sufficient amount of cash on hand or other assets or securities that can be quickly converted to cash. It can be seen then that the main kind of liquid asset is cash itself.

Grade Level:	9-10	Syllables :	111
Words :	72	Syllable Intensity:	1.54

Maturity

Although the earnings realized on United States Savings Bonds are steady and guaranteed, one of the most attractive features is the flexible maturity date available. You can buy savings bonds that do not become due until five, ten, or even twenty years. A distant date of maturity makes them ideal for long-range planning such as for education and retirement. Since the bonds do not become due until a future date, a person is not likely to cash them before the due date.

Grade Level:	9-10	Syllables :	125
Words :	83	Syllable Intensity:	1.51

Night Letter

When Mr. Cole was explaining the service of Western Union to a communications workshop, he stated that night letters were becoming more popular although they were the slowest mode of communication. The class was curious why they were so popular when the service was so slow. Mr. Cole said it is the cheapest way and cost less per word. Therefore, if you have a long message and early arrival the next day is fine, then a night letter has the advantage of being most economical.

Grade Level:	9-10	Syllables :	124
Words :	84	Syllable Intensity:	1.46

Option

Mr. Williams explained to Mr. Robinson that the Urban Renewal Commission would purchase his property at a reasonable price. After improvements are made on the property, Mr. Robinson could have a six-month option or privilege to buy the property back. In other words, no one else could purchase the property before Mr. Robinson, and if he neglected to exercise his option within six months, his privilege to buy would go to someone else.

Grade Level:	9-10	Syllables :	114
Words :	74	Syllable Intensity:	1.54

Parcel Post

Due to increased public demands for a transportation system to ship packages to all areas of the country. The United States Postal system started the parcel post service. Now, small packages weighing over one-half pound can be shipped anywhere in the United States. When Mr. Tanner wanted to return several books to the publisher, he sent them by parcel post.

Grade Level:	9-10	Syllables :	96
Words :	61	Syllable Intensity:	1.55

Postdate

Brenda often pondered why her father would write checks for monthly installments at the end of the month when he was departing for periodic conventions. Her dad illustrated that he postdated the instruments so they could not be negotiated or cashed until they were due. In other words, a check written on June 25 is postdated if the date on the check is July 1. Then it became very obvious that putting a future date on a check that is written today is postdating the check.

Grade Level:	9-10	Syllables :	127
Words :	86	Syllable Intensity:	1.47

Power of Attorney

When a client of Mr. Dunnings, a lawyer in Lansing, could not meet a court date, Mr. Dunnings was then given a power of attorney to act for the client in his absence. The document was proof that the lawyer was authorized to proceed in his client's behalf. A power of attorney makes it legal for one person to act for another.

Grade Level:	9-10	Syllables :	90
Words :	62	Syllable Intensity:	1.45

Principal

The word "principal" is one of many words in the English language with several meanings. In a banking sense, it is the capital sum or the amount of money the bank or financial institution loans to the borrower. When Mr. Wynn borrowed $1,000 to pay for his car in 1964, he paid the bank $1,300 two years later--$1,000 in principal and $300 in interest. Therefore, the principal is the capital sum or the actual amount of money given to the borrower.

Grade Level:	9-10	Syllables :	119
Words :	82	Syllable Intensity:	1.45

Quitclaim Deed

A deed is utilized for the transfer of ownership rights in real property. A quitclaim deed is used to transfer whatever rights, if any, the vendor possesses. That is, if the seller has a doubtful claim, such a claim might be settled by payment in exchange for the quitclaim deed. The seller does not say that he has any rights to transfer, only that he is disposing of whatever rights he possess, if anything.

Grade Level:	9-10	Syllables :	108
Words :	74	Syllable Intensity:	1.45

Rate

Great Lakes Mutual Life Insurance Company bases the rates paid for insurance on the age of the person being insured. Insurance companies base the rate of premiums on age because age determines how long a client is likely to pay into the policy. For example, Christopher who is a 40-year-old insurance client will pay for the next twenty years, sixty cents for every dollar he will receive in return. Phillip who is a 20-year-old client will pay for the next forty years, thirty cents for every dollar he will receive in return. The amount of premiums is measured in proportion to the age of the person.

Grade Level:	9-10	Syllables :	166
Words :	110	Syllable Intensity:	1.51

Solvent

A company must remain solvent to keep business operations going. When a company can no longer pay what ie owes, it will eventually be forced to cease operations. Therefore, it is only natural that a company must first be concerned with being solvent. By being so, it can pay off its debts and keep the business operating.

Grade Level:	9-10	Syllables :	89
Words :	57	Syllable Intensity:	1.55

Speculation

Some businessmen who usually have large amounts of money to invest will engage in speculation. Mr. Jonathan Auchinloss of the New York Stock Exchange will on behalf of his clients, enter into deals where the profits are based on chance. A good example of speculation is when Mr. Kappel bought Swing Camera stocks at $7 a share and sold them ten years later at $147 per share.

Grade Level:	9-10	Syllables :	97
Words :	66	Syllable Intensity:	1.46

Statute

Governor George Romney signed into law a statute passed by the state legislature that stopped the practice of riding motorcylces without helmets. It has been the trend in recent years to replace unwritten laws with written laws. A statute written into law by the state lawmakers and signed by the state's chief executive officer will always take precedence over unwritten laws.

Grade Level:	9-10	Syllables :	96
Words :	62	Syllable Intensity:	1.55

Toll Calls

Michigan Bell Telephone now uses a computer to record all of its toll calls. They have found it to be less expensive and easier to keep track of long distrance calls this way. They used to employ hundreds of operators to record long distance calls. Since so many long distance calls are made each day, it pays to use a computer to record the toll calls.

Grade Level:	9-10	Syllables :	97
Words :	66	Syllable Intensity:	1.43

Waybill

All railroads are required to forward a waybill along with the merchandise that is sent by railway. A Grand Trunk Railroad official said they always include a list of goods with shipping instructions with all of their orders. A waybill helps the railroad do a better job of keeping tabs on its orders. Even a shipment via railway from Detroit to Flint will have shipping instructions included.

Grade Level:	9-10	Syllables :	99
Words :	67	Syllable Intensity:	1.45

Yield

A real sharp investor will sometimes buy government bonds where the yield is moderate but also more certain. The investor believes that if he is guaranteed a moderate profit, it is better than having little or no return at all. The yield, in other words, the return on an investment, is a significant factor to be aware of when investing your money.

Grade Level:	9-10	Syllables :	93
Words :	62	Syllable Intensity:	1.50

APPENDIX D

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE MAJOR STUDY

Business Term	Percentage of Students Who Missed the Term
Wages	5
Endorse	21
Trespass	2
Social security	4
Bill	1
Charge account	11
Passport	0
Legal	2
Contract	3
Assets	10
An income tax	15
Fare	10
Labor union	5
Finance	61
Joint account	2
Classified section	20
Agent	15
Property tax	27
Debit	23
Carrying charges	60
Wholesale	57
Mortgage	40
Void	40
Net profit	45
Note	38
Real estate	26
Overdraft	35
Deed	36
Lapsed	26
Dealer	21
Bonds	48
Monopoly	23
Assessment	20
Maturity	89
C.O.D.	10

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE MAJOR STUDY (Continued)

Business Term	Percentage of Students Who Missed the Term
Stockholders	17
Board of Directors	25
Telephone directory	10
Standardization	14
Broker	51
Dividends	32
Credit	8
Yield	64
Sole proprietorship	30
Consign	54
Bill of lading	29
Purchasing power	41
Prepaid insurance	52
Fraud	52
Investment	46
Retail	35
Coach	60
Market value	65
Capital	60
Speculation	60
Public utility	13
Preferred stock	58
Rate	76
Collateral	49
Parcel post	60
Principal	72
Lessor	56
Inflation	51
Competent party	55
Deductible clause	64
Outstanding check	21
Securities	11
Proxy	36
Commuter	56
Land contract	55

PERCENTAGE OF STUDENTS WHO MISSED EACH OF THE ONE HUNDRED BUSINESS TERMS ON THE VOCABULARY PRETEST IN THE MAJOR STUDY (Continued)

Business Term	Percentage of Students Who Missed the Term
Premium	72
Abstract of title	68
Corporation	68
Demand	25
Full-rate telegram	21
Grace period	17
Baggage	22
Statute	80
Reconcile	20
Balance sheet	8
Station-to-station call	65
Solvent	58
Option	60
Night letter	68
Dividends	56
Insure	50
Diversify	56
Cash surrender value	58
Postdate	72
Quitclaim deed	84
Power of attorney	88
Liquid	80
First mortgage	88
Enforceable	50
Itinerary	80
Toll call	55
Common stock	68
First-class mail	68
Waybill	92
Consideration	88

APPENDIX E

SCHEDULE OF WORDS TO BE PRESENTED IN
TEACHERS A AND E's CLASSES

First Week

M toll call	- yield
T solvent	- deductible clause
W maturity	- coach
T quitclaim deed	- option
F itinerary	- cash surrender value

Second Week

M diversify	- power of attorney
T principal	- night letter
W common stock	- parcel post
T abstract of title	- corporation
F speculation	- first-class mail

Third Week

M toll call	- option
T solvent	- cash surrender value
W maturity	- yield
T quitclaim deed	- deductible clause
F itinerary	- coach

Fourth Week

M first mortgage	- rate
T commuter	- waybill
W consideration	- carrying charges
T liquid	- capital
F postdate	- statute

Fifth Week

M diversify	- corporation
T principal	- first-class mail
W common stock	- power of attorney
T abstract of title	- night letter
F speculation	- parcel post

Sixth Week

M quitclaim deed	- cash surrender value
T solvent	- option
W toll call	- coach
T maturity	- deductible clause
F itinerary	- yield

SCHEDULE OF WORDS TO BE PRESENTED IN
TEACHER B's CLASSES

First Week		Fourth Week	
M first mortgage	- rate	M diversify	- power of attorney
T commuter	- waybill	T principal	- night letter
W consideration	- carrying charges	W common stock	- parcel post
T liquid	- capital	T abstract of title	- corporation
F postdate	- statute	F speculation	- first-class mail

Second Week		Fifth Week	
M toll call	- yield	M toll call	- option
T solvent	- deductible clause	T solvent	- cash surrender value
W maturity	- coach	W maturity	- yield
T quitclaim deed	- option	T quitclaim deed	- deductible clause
F itinerary	- cash surrender value	F itinerary	- coach

Third Week		Sixth Week	
M first mortgage	- capital	M liquid	- statute
T commuter	- statute	T commuter	- capital
W consideration	- rate	W first-class mail	- carrying charges
T liquid	- waybill	T consideration	- waybill
F postdate	- carrying charges	F postdate	- rate

SCHEDULE OF WORDS TO BE PRESENTED IN
TEACHERS C, D, AND E's CLASSES

First Week

M diversify - power of attorney
T principal - night letter
W common stock - parcel post
T abstract of title - corporation
F speculation - first-class mail

Second Week

M first mortgage - rate
T commuter - waybill
W consideration - carrying charges
T liquid - capital
F postdate - statute

Third Week

M diversify - corporation
T principal - first-class mail
W common stock - power of attorney
T abstract of title - night letter
F speculation - parcel post

Fourth Week

M toll call - yield
T solvent - deductible clause
W maturity - coach
T quitclaim deed - option
F itinerary - cash surrender value

Fifth Week

M first mortgage - capital
T commuter - statute
W consideration - rate
T liquid - waybill
F postdate - carrying charges

Sixth Week

M abstract of title - first-class mail
T principal - corporation
W diversify - parcel post
T common stock - night letter
F speculation - power of attorney

APPENDIX F

SCHEDULE FOR THE EXPERIMENT

Pretesting - 2 days

Oct. 12	Thursday	Hicks Business Vocabulary Test (40-45 minutes)
Oct. 13	Friday	Typewriting Achievement Test, First Year, Form A (34 minutes)
		Personal Data Sheet (6 minutes)

Typing of Paragraphs and Textbook Drills

30 days

1st week	Oct. 23 - Oct. 27	M-F
2nd week	Oct. 30 - Nov. 3	M-F
3rd week	Nov. 6 - Nov. 10	M-F
4th week	Nov. 13 - Nov. 17	M-F
5th week	Nov. 20 - Nov. 22	M-W
	Nov. 27 and 28	M-T
	(Thanksgiving Recess - Nov. 23 and 24)	
6th week	Nov. 29 - Dec. 5	W-T

Posttesting - 2 days

Dec. 6	Wednesday	Hicks Business Vocabulary Test (40-45 minutes)
Dec. 7	Thursday	Typewriting Achievement Test, First Year, Form B (34 minutes)

Retention Test - 1 day

Jan. 18	Thursday	Hicks Business Vocabulary Test (40-45 minutes)

APPENDIX G

PERSONAL DATA SHEET

1. Name _____
(Last Name) (First Name) (Middle Initial)

2. Sex (circle) Girl Boy

3. Age _____ Birth Date _____
(Month) (Day) (Year)

4. Grade (circle) 10 11 12

5. Name of school _____

6. How many days a week does your typing class meet? _____

7. What time does your typing class start? _____

8. How many semesters of typing have you had before this semester? _____

9. What business courses are you taking this semester besides typing? Please check - If not listed, please write the name(s) of the course(s).

_____ General Business or Basic Business or Junior Business Training
_____ Business Law
_____ Shorthand (Beginning)
_____ Shorthand (Advanced)
_____ Transcription
_____ Economics
_____ Business English or Business Communications
_____ Business Arithmetic
_____ Data Processing
_____ Office Practice or Secretarial Practice
_____ Bookkeeping
_____ Other - Please write name(s) or course(s)

_____

_____

10. What business courses have you had before this semester? If not listed, please write the name(s) of the course(s).

_____ General Business or Basic Business or Junior Business Training
_____ Business Law
_____ Shorthand (Beginning)
_____ Shorthand (Advanced)
_____ Transcription
_____ Economics
_____ Business English or Business Communications
_____ Business Arithmetic
_____ Data Processing
_____ Office Practice or Secretarial Practice
_____ Bookkeeping
_____ Other - Please write name(s) of course(s).

11. What is the title of your father's (if no father, then mother's or guardian's) occupation?

Father's occupation _____

Mother's occupation _____

Guardian's occupation _____

12. Describe what he or she does on the job.

_____

_____

_____

_____

_____

_____