INCIDENTAL LEARNING OF ECONOMIC CONCEPTS IN BEGINNING TYPEWRITING CLASSES

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1952

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1954

Submitted to the Faculty of the Graduate School of
the Oklahoma State University
in partial fulfillment of the requirements
for the degree of
DOCTOR OF EDUCATION

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PREFACE

The problem of this study was to determine whether certain economic concepts could be learned in beginning high school typewriting classes through the use of timed writings with economic content. Without the cooperation of several individuals, the conducting of this investigation would not have been possible.

Special indebtedness is acknowledged to Dr. Robert A. Lowry, thesis adviser, for his continued guidance and encouragement from the very beginning of the study to its completion. His suggestions and comments were always of a constructive nature. Dr. J. E. Silverthorn, Dr. Richard Collier, and Dr. W. Ware Marsden also gave valuable assistance as members of the advisory committee.

Dr. Robert D. Morrison and members of the staff at the Oklahoma State University Statistical Laboratory were of great assistance in making possible the statistical treatment of the data. In addition, Dr. Harry K. Brobst and his staff at the Oklahoma State University Bureau of Tests and Measurements were especially helpful in providing facilities and personnel in machine scoring the tests administered during the investigation.

Without the cooperation and participation of several other individuals, whose names must remain anonymous, this investigation could not have been conducted. These individuals include the administrators and business teachers in the pilot school and the other selected high schools participating in the study. Also, the five panel members suggested by the Joint Council on Economic Education were especially helpful in evaluating the

specially prepared timed writings. Officers of the Joint Council on Economic Education and the Illinois Council on Economic Education provided invaluable assistance by granting permission to use the Alft Test of Economic Understandings in the study.

Miss Frances Hudlin rendered expert clerical service during all stages of the study. Continually patient and understanding were my wife, Virginia, and our two children, Sherrie Lynn and Rebecca Ann.

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CHAPTER I

INTRODUCTION

"There has been a long history of experimentation on 'incidental learning' in human subjects . . . ."[1] During the day-to-day routine of living a child develops in an incidental way certain concepts. A display of such concept development may be observed through oral or other modes of expression. If concepts of such a nature can be learned by students in a classroom situation, certain ways and means should be developed so that incidental learning may be purposely channeled.

Typewriting is one area in the business education field in which incidental learning might be achieved without added effort on the part of the typewriting teacher or student. This would be possible if incidental learning could be accomplished through the use of timed writings. The content of timed writings could be changed to contain more meaningful information than is usually found in typewriting textbooks.

Statement of the Problem

The problem of this investigation is to test the following hypothesis: When students type from timed writings which present economic concepts, there will be a significant increase in economic understandings and a normal increase in typing skill. Specifically, the investigation

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[1] Ernest R. Hilgard, Theories of Learning (New York, 1956), p. 214.

seeks answers to the following questions: (1) To what extent can students increase their economic understandings while using timed writings in which certain concepts are obvious? (2) Will students who type specially prepared timed writings presenting economic concepts show growth in typewriting skill comparable to that achieved by students who do not type these writings? (3) What is the correlation of gains in economic understandings to gains in typewriting skill, to reading comprehension, to intelligence quotient, and to initial economic understandings?

Analysis of the Problem

The problem can be analyzed through seeking answers to the following specific questions:

1. Will students increase their economic understandings by typing and proofreading specially prepared timed writings presenting concepts which are frequently missed on an economic test?

2. Will students who type specially prepared timed writings presenting economic concepts show an increase in gross words comparable to that attained by students who type timed writings from an adopted typewriting textbook?

3. Will students who type specially prepared timed writings presenting economic concepts show a decrease in errors comparable to that of students who type timed writings from an adopted typewriting textbook?

4. What is the relationship of gains, if any, in economic understandings to gains, if any, in gross words?

5. What is the relationship of gains, if any, in economic understandings to decreases, if any, in errors?

6. What is the relationship of gains, if any, in economic understandings to reading comprehension grade level?

7. What is the relationship of gains, if any, in economic understandings to intelligence quotient?

8. What is the relationship of gains, if any, in economic understandings to initial economic understandings?

Need for the Study

The incorporation of economic concepts in timed writings is undertaken for the purpose of increasing opportunities for economic education in the secondary schools. A widespread emphasis is now being placed upon economic education. For instance, over three hundred private business organizations were listed in May, 1957, by the Joint Council on Economic Education as having publications programs interesting to students of economics and social studies.[2] Furthermore, economic education is a major topic for discussion at certain business education conventions such as the National Association of Business Teacher-Training Institutions' annual meeting held in Chicago during February, 1956, in which the theme was "Business Teacher Education and Economic Competency."[3]

Articles and editorials published in business education periodicals have indicated a need for integrating certain subjects in the business education curriculum. For instance, one complete issue of the Business

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[2]Bibliography of Free and Inexpensive Materials for Economic Education, Joint Council on Economic Education (New York, 1957), p. 3.

[3]William Selden, ed., "Chicago Convention," Business Education Forum, December, 1955, p. 32.

Education Forum was devoted to this subject in December, 1958.[4] Forkner made the following statement almost twenty years ago:

> Training an individual to perform an occupational skill without at the same time providing experiences, through which he can learn about the economic and social world in which he is to move and participate, is to fail to perform one of the essential functions of education.[5]

Assuming that economic education should receive greater emphasis in the school curriculum, educators need to determine where and how this economic education can properly be incorporated. Integration in a skill building subject such as typewriting is one possibility. As timed writings often deal with trivial topics that have little educational value, a logical place to begin considering integration of economic content in beginning typewriting seems to be in the area of these writings.

If incidental learning of certain economic understandings can be accomplished concurrently with the building of typewriting skill without hampering the skill building process, it seems desirable to use timed writings as one means of providing the opportunity for increasing economic understandings. It is therefore the problem of this study to determine whether certain economic concepts can be learned in beginning high school typewriting classes through the use of timed writings with economic content.

Scope and Limitations of the Study

The study involved beginning typewriting students in five selected high schools in Northeast Oklahoma. The high schools were selected at

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[4]John Binnion, ed., Business Education Forum, December, 1958.

[5]Hamden L. Forkner, Education of Youth, Report of the Inquiry of the Public Schools of Newark, N. J., Book E (New York, 1942), p. 1905.

random within a fifty-mile radius of Tahlequah, Oklahoma. Each of the five participating high schools was offering at least two class sections of beginning typewriting for two consecutive semesters during the school year.

The scope of the study was limited in the following aspects:

1. It was not administratively possible to randomly transfer beginning typewriting students from one section to another in order to select individual members for either the experimental group or the control group in each school. As students were already well established members of class sections of beginning typewriting in each school at the beginning of the experiment, these class sections were designated either experimental or control as they were found organized. The teacher in each school determined which would be the control group and which would be the experimental group by a flip of a coin.

2. No attempt was made to allow for the number of times a student typed a specially prepared paragraph during five-minute intervals. A student who was able to type twice as fast as another student was able to have twice as many exposures to the material. The timed writings were written in such a manner that a student who could type at least twenty-four words per minute would be able to type the entire writing at least once during a five-minute period. A student unable to complete a timed writing during the five minutes allowed was exposed to the concept at least once, for it was stated near the beginning of the specially prepared writing.

3. As the study involved mainly the difference in mean gains for groups and not the net gain of individual students, it was decided to let the hypothesis be accepted or rejected without considering absences.

The timed writings were repeated three times during the experimental period of forty-five days. Thus, a student could have been absent at the time a particular writing was given and still have had other opportunities to typewrite the same writing.

4. No attempt was made to distinguish between incidental learning resulting from the actual typing of a specially prepared timed writing and that resulting from proofreading or incidental reading of the timed writing during the testing situation. Thus, any incidental learning of economic concepts may be attributed to comprehension while typing and/or reading. The purpose of typing the writings was to reproduce the copy while the purpose of proofreading was to find errors. As students are generally required to proofread their timed writings, the economic concepts learned while proofreading could still be said to have been learned incidentally through the use of timed writings in a beginning typewriting class.

5. As the study was limited to incidental learning, no attempt was made to determine whether other means of learning economic concepts through the use of timed writings would be feasible. The study was concerned with the extent, if any, to which there could be incidental learning of economic concepts through the use of timed writings while attempting to improve typewriting skill.

Definition of Terms

Definitions are given below for certain terms as used for the purpose of this study.

Economic concepts are the generalized ideas or understandings that are suggested by the questions asked and the appropriate alternative answers given on the Alft Test of Economic Understandings.

Incidental learning is learning which accrues to a student without his having been instructed or motivated to learn what is being presented.

Timed writings are paragraphs containing straight-copy material.

Timed writings presenting economic concepts are paragraphs of straight-copy material developed from questions and answers given in the Alft Test of Economic Understandings.

Readability refers to the grade placement of the specially prepared timed writings presenting economic concepts as determined by the Dale-Chall Formula for Predicting Readability.[6]

Actual words refers to the number of separate words found in each timed writing.

A standard word is five typewriting strokes.

Gross words per minute refers to the number of standard words typed during a one-minute interval.

Errors are irregularities in typewritten straight-copy as given in the International Contest Rules listed in the inside back cover of 20th Century Typewriting.[7]

Syllabic intensity refers to the average number of syllables per word in each of the specially prepared timed writings presenting economic concepts. Syllabic intensity is determined by dividing the total number of syllables by the total number of actual words in a timed writing.

Experimental groups are the organized classes of beginning typewriting students who took specially prepared timed writings presenting

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[6]Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability: Instructions," Educational Research Bulletin, XXVII (1948), 37-54.

[7]D. D. Lessenberry and T. James Crawford, 20th Century Typewriting (6th Edition, Cincinnati, 1952).

economic concepts along with regular class instruction in each of the participating schools.

Control groups are the organized classes of beginning typewriting students who took regular textbook timed writings along with regular class instruction in each of the participating schools.

Alft Test of Economic Understandings is a standard achievement test in economic understandings developed by E. C. Alft in cooperation with the Illinois Council on Economic Education.

CHAPTER II

REVIEW OF RELATED LITERATURE AND INVESTIGATIONS

In a review of literature, no similar study was found that was concerned with developing economic concepts in a beginning typewriting class through the use of specially prepared timed writings. One study which was reviewed did provide for the organization and use of a Student Economic Handbook for typewriting students.[1] Most of the other literature which was available was only indirectly related to the study. Those studies which were related involved mostly incidental learning, typewriting, and economics. A background for the present investigation was obtained through a review of this related literature.

Related Literature in Incidental Learning

Introduction to Related Investigations. If a typing student were to develop economic understandings from the content of timed writings with no intent to do so, such learning could be termed "incidental." Saltzman concludes:

> The early experiments on incidental learning were designed to determine whether that form of learning did occur and, if so, to what extent. Their results indicate quite conclusively that it does occur

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[1]Carol E. Orpin, "An Experimental Study for Improving Economic Literacy Through Typewriting" (unpub. M. A. thesis, San Francisco State College, 1960).

and, furthermore, that it is much less efficient than intentional learning.[2]

Incidental learning has been defined by McGeoch 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."[3] Although specific formal instruction and set to develop typing skill are commonly present in a typewriting class, no instruction or set to learn content from timed writings has generally been incorporated in beginning typewriting classes. "The goals of achievement in typewriting are invariably given for straight-copy materials."[4] Therefore, in a beginning typewriting class a specific motive for typing timed writings is the development of speed and accuracy.

Studies have generally shown that incidental learning can be operationally observed in different experimental situations. "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."[5] The stimulation in certain of the experiments reviewed has involved rote learning as contrasted with concept learning. Oseas and Underwood in a study involving distributed practice found that the results produced by distributed practice in concept learning were demonstrated to be consistent

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[2]Irving J. Saltzman, "The Orienting Task in Incidental and Intentional Learning," American Journal of Psychology, LXVI (1953), 593-97.

[3]John McGeoch and Arthur Irion, The Psychology of Human Learning (New York, 1955), p. 210.

[4]Allien R. Russon and S. J. Wanous, Philosophy and Psychology of Teaching Typewriting (Cincinnati, 1960), p. 36.

[5]McGeoch and Irion, p. 211.

with the results of distributed practice on rote learning.[6] The present study involving economic concept learning through timed writings will provide for distributed practice of timed writings from day to day with two practice intervals of five minutes each during each daily period.

Leslie states that "most of the teaching of shorthand penmanship is accomplished as a matter of incidental learning, the most economical and effective form of learning."[7] In speaking of the type of dictation for speed development in shorthand, Leslie says:

> The only steady supply of the extemporaneous spoken word is the Congressional Record. The thought content is seldom fascinating or thrilling, but it is definitely better than the business letter. The vocabulary is wider, without dredging too deeply into the dictionary. Even when the thought content is least interesting, there is a genuine social value in the material, as it is the only direct contact that many learners will ever have with the legislative machinery that governs their life and work.[8]

Similarly, meaningful materials presenting economic concepts might be incorporated in timed writings.

Learning Without Awareness. Evidence of an experimental nature involving human learning without an awareness of what is being learned has been presented by Thorndike and Rock.[9] These experimenters found that improvement in the learning of a class of verbal responses was gradual rather than sudden. This led Thorndike and Rock to hypothesize

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[6]Leonard Oseas and Benton J. Underwood, "Studies of Distributed Practice: V. Learning and Retention of Concepts," Journal of Experimental Psychology, XLIII (1952), 143-48.

[7]Louis A. Leslie, Methods of Teaching Gregg Shorthand (New York, 1953), p. 151.

[8]Ibid., pp. 187-88.

[9]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, XVII (1934), 1-19.

that such gradual learning meant the subjects were not aware of what they were learning.

Such an assumption was later refuted experimentally by Irwin et al.[10] They demonstrated that the shape of the learning curve held no valid inference about the awareness in the learning of an individual. Furthermore, Irwin et al. found the improvement rate to be gradual both before and after an individual has been taught the principle of learning a class of verbal responses.

The experimental procedure used by Thorndike and Rock and Irwin et al. was duplicated with some modification by Postman and Jarrett.[11] Their study involved two experimental groups of sixty members each which were designated as the informed group and the uninformed group.

In each case a correct response represented a response which could be accounted for by the sequential connections used in speaking and writing. For instance, if the subject responded yours--truly, achieve--success, etc., he was considered to have given a correct response.

The principle of correct response was explained to the informed group at the end of a block of twenty words. The principle was not explained to the uninformed group, although each member of the group was required to attempt a statement of the principle at the end of each block of trials. Based on the findings of the experiment there was little reliable evidence shown for learning without awareness. The individuals

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[10]F. W. Irwin et al., "Learning Without Awareness of What Is Being Learned," Journal of Experimental Psychology, XVII (1934), 823-27.

[11]Leo Postman and Rheem F. Jarrett, "An Experimental Analysis of Learning Without Awareness," American Journal of Psychology, LXV (1952), 244-55.

who could not verbalize the principle of correct response did not show learning of a significant amount.

As no element of instructing by the teacher or statement making by the student concerning the principle of correct response is expected to be introduced, the experimental group which is typing the timed writings presenting economic concepts in the present study is considered to be uninformed. The principle of correct response in this case would seem to be a knowledge by the student that the material being typewritten during timed writing drills will be inquired about at a later date. Therefore, a measure of incidental learning by the uninformed group which was supposed to be unaware of the principle of correct response was attempted in this study.

Casual Learning. Haefner conducted an experiment to determine whether word meanings could be learned through what he called "casual learning."[12] A control and experimental group situation was established on the collegiate level including a total of 93 pairs of adults in attendance during a summer session. Before each class meeting a word which had occurred on a pre-test was written on the chalkboard with a simple definition. This information was left on the chalkboard during a five minute interval while the class was assembling. The information was erased before the class period formally commenced. The control group was not given an opportunity to be exposed to these 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 understandings of word meanings.

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[12] Ralph Haefner, "Casual Learning of Word Meanings," Journal of Educational Research, XXV (1932), 267-77.

Orienting Task. An experiment conducted by Postman and Adams involved the difference between learners in intentional and incidental learning situations as a function of the nature of an orienting task with different stimulus materials.[13] 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. The study of 320 undergraduate students at the University of California provided the conclusion:

> With nonsense materials, the difference between intentional and incidental learners varies as a function of the nature of the orienting task. 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. With meaningful materials, the difference between intentional and incidental learners remains relatively independent of the nature of the orienting task.[14]

In view of the findings of this study, it would seem that the task of learning concepts through the typing of specially prepared timed writings would be more favorable to intentional learners. Although, the difference between intentional learning and incidental learning should vary less as the materials are made more meaningful. This conclusion has been supported by Postman and Adams who state:

> . . . we would expect the learning of meaningful materials to vary less as a function of the orienting task than the learning of nonsense materials. By the same token, the more meaningful the materials the less difference between intentional and incidental learners should be influenced by the nature of the orienting task.[15]

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[13]Leo Postman and Pauline Austin Adams, "Studies in Incidental Learning: The Interaction of Orienting Tasks and Stimulus Materials," Journal of Experimental Psychology, LI (1956), 329-33.

[14]Ibid., p. 332.

[15]Ibid., p. 329.

Neimark and Saltzman, who made a study of intentional and incidental learning with different rates of stimulus-presentation, conclude: "In all of the studies comparing intentional and incidental learning, except one recently reported by Saltzman, intentional learning has been found to be more efficient than incidental learning."[16] Saltzman in the study referred to demonstrated experimentally that the usual difference in favor of the intentional learners may be reduced to a large extent.[17]

Saltzman found that incidental learning was as effective as learning for a purpose when the orienting task was controlled in both groups. This was explained operationally through an experiment involving the sorting of cards by individuals making up two equal groups of twenty each. Each individual was given stacks of thirty-two cards on which numbers appeared. There were eight even numbers below 50; another eight even numbers above 50; another eight odd numbers below 50; and another eight odd numbers above 50. The cards were shuffled and each person was instructed to sort them. This was considered the orienting task. After this was done three times, one group labeled Group II was given a test involving the recall of numbers on the cards. Members of this group were told after the test that another test would be forthcoming after the sixth trial.

Another group labeled Group I was given only one test which was considered a surprise test after the sixth trial, although the orienting task had been performed regularly by this group. The finding was that

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[16]Edith Neimark and Irving H. Saltzman, "Intentional and Incidental Learning with Different Rates of Stimulus-Presentation," American Journal of Psychology, LXVI (1953), 618.

[17]Saltzman, "The Orienting Task in Incidental and Intentional Learning," 593-97.

Group I members recalled slightly more numbers than did the Group II members who had been attempting to learn them intentionally.

Rate of Presentation. Saltzman suggests:

> . . . an important parameter in studies comparing incidental and intentional learning is the rate of presentation on 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 material, being greater with slow rates than with fast rates.[18]

Furthermore, Neimark and Saltzman demonstrated operationally:

> When the learning material is presented at relatively fast rates, the scores of incidental and intentional learning do not differ significantly. . . . When the learning material is presented at relatively slow rates, the scores of intentional learning, either with or without the intentional learners performing the orienting task, are significantly higher than the scores of incidental learning.[19]

A study by Saltzman and Atkinson yielded similar results which demonstrated experimentally that the difference between the development of incidental and intentional learning is a function of the rate of presentation.[20] Furthermore, Saltzman and Atkinson conclude:

> The difference between the scores of incidental and intentional learning depend on the number of presentations of the learning materials: no difference between the scores was found after few (2, 6, or 8) presentations of the learning material, but the scores of intentional learning were significantly higher than the scores of incidental learning after many (16) presentations.[21]

These studies by Saltzman and associates demonstrated that the difference in incidental and intentional learning was a function of the duration and number of exposures. The implications for the present

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[18] Ibid., p. 596.

[19] Neimark and Saltzman, 621.

[20] Irving J. Saltzman and Rita L. Atkinson, "Comparisons of Incidental and Intentional Learning after Different Numbers of Stimulus Presentations," American Journal of Psychology, LXVII (1954), 521-24.

[21] Ibid., p. 524.

study involving economic concept learning in beginning typewriting classes seem to be that the extent to which comprehension is affected could be a function of the rate of typing and the number of timed writings administered during the experimental period. Therefore, the learning of economic concepts incidentally through the typing of timed writings at what is considered a rapid rate for each student may be negatively affected by such a rate. The converse could be true of a student typing at a slow rate. In addition, the repetition of the timed writings three times during the experimental period will probably affect the amount of incidental learning.

Extent of Instruction. A study which demonstrates learning without being instructed to learn has been made by Postman and Senders.[22] Three equated groups of college students were provided with interesting material to read. The three groups were told they would be tested separately and differently. One group was instructed to read for details of content; one group was instructed to read for details of wording; and one group was instructed to read for details of physical appearance.

Students generally who were instructed to study for certain details did better on the section of the test stressing these details. The findings further demonstrated that there was comprehension without specific instruction although to a lesser extent than was possible with instruction.

Retention of Materials. Researchers have generally agreed that intentional learning is superior to incidental learning in terms of

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[22]Leo Postman and Virginia L. Senders, "Incidental Learning and Generality of Set," Journal of Experimental Psychology, XXXVI (1946), 153-65.

retention of material. Biel and Force have noted that experiments which provide such a generalization have not taken into consideration the equating in amount of original learning which had taken place in both intentional and incidental learning groups.[23] They concluded that the intentional learning group in such experiments would be provided with more original learning than the incidental learning group, thus resulting in superior retention of material at a later time.

Biel and Force used a tachistoscope in presenting a series of nonsense syllables to certain subjects in a classroom situation. Nonsense syllables were flashed on a screen for .03 of a second. One hundred and one college students in an "intent" group were told to copy each syllable as it was flashed on the screen. The students were further told they would be asked during the hour to reproduce as many of the syllables as possible. One hundred twenty-six college students in the "non-intent" group were told only to copy the syllable as it was flashed on the screen. They were then instructed to mark the most legible syllable in each list of twelve.

Although the "non-intent" group was found to be slightly better in immediate recall, the difference was not significant. A retest after nineteen days showed the "non-intent" group was also slightly better than the "intent" group in recall, although not significantly. The experiment demonstrated that nonsense syllables which had previously been learned to the same level of mastery were retained equally well when developed under incidental or intentional learning conditions.

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

Although the present study does not attempt to compare the extent of retention of economic concepts learned incidentally with the extent of retention that might be possible if the concepts were learned intentionally, the study by Biel and Force provides the implication that retention under either condition of learning may be possible. In the present investigation, an economic test will not be administered immediately after the typing of each specially prepared timed writing. The test will be administered after all of the specially prepared timed writings have been typed at least three times during a nine-week period. Therefore, retention of economic concepts will be necessary in order to determine the extent, if any, to which incidental learning has occurred.

Related Literature in Typewriting

Introduction to Related Investigations. Although only one study was found that was concerned with presenting economic concepts through the use of timed writings in typewriting classes, certain related investigations that involved reading while typewriting, content in typewriting materials, and vocabulary development while typewriting were found to exist. From such studies, it was generally found that students were able to comprehend certain information as they were typewriting. Such findings could have widespread implications for typewriting instruction.

Typewriting is not limited to the high school level. Research has shown that typewriting on the elementary school level can make a significant contribution to pupil achievement. In an investigation involving some 900 pupils in 36 classrooms of 14 elementary schools in seven cities, it was concluded that:

The typewriter can be used effectively and has educational value in (a) improving work habits, (b) developing skill in English mechanics, (c) improving composition skills, (d) improving the speed and quality of handwriting, and (e) decreasing the time needed for writing reports in various subject areas and in increasing the quantity of written work produced in these areas.[24]

Similar conclusions have been drawn from earlier studies by Wood and Freeman,[25] and Haefner.[26]

Some of the goals stated for typewriting have involved thinking while one is typing. Tonne, Popham, and Freeman suggest that one of the secondary goals of typewriting is the development of ability by a student to "type 'while something else is focal in his consciousness.'"[27] A student might be able to develop adequate typing skill through the use of timed writings presenting economic concepts while these concepts are focal in his consciousness. The possibility should not be overlooked for "if a student learns to type what he is thinking, his range of typing activities is greatly increased."[28]

As may be observed in a number of typewriting textbooks, certain drill and copy selections present very little meaningful factual information. Certain companies have incorporated propaganda concerning their own products or services in timed writings that are distributed for use

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[24]The Manual Portable Typewriter as an Instructional Tool in the Elementary School Classroom, Royal McBee Corporation, 1960.

[25]Ben D. Wood and Frank N. Freeman, An Experimental Study of the Educational Influences of the Typewriter in the Elementary School Classroom (New York: The Macmillan Company, 1932).

[26]Ralph Haefner, The Typewriter in the Primary and Intermediate Grades (New York: The Macmillan Company, 1932).

[27]Herbert A. Tonne, Estelle L. Popham, and M. Herbert Freeman, Methods of Teaching Business Subjects (New York, 1957), p. 79.

[28]Ray Budde, "Add a Realistic Touch to Your High School Typing Class," The Balance Sheet, XXXVI (1955), 244-46.

by teachers of typewriting. A list of materials of this kind has been compiled by Russon and Wanous.[29] Discussing the inclusion of meaningful selections in typewriting materials, Webb states that "the materials may be selected so that they appeal to the interest of the learners while they center definitely and in natural ways upon subdivisions of the whole problem of typewriter manipulation."[30]

"The material typed should be educative" according to Baty.[31] Furthermore, he concludes that "observation and experience indicate that students are aware of what they type."[32] Hale supports such a statement by recommending the use of timed writings with meaningful content as a means of teaching students more than typewriting.[33] In presenting information concerning health and certain diseases, she states:

> A timed writing taken from a pamphlet available at the local department of health might easily give the student enough knowledge to alleviate some of his fears regarding the disease or at least make him act in time to recognize the disease in its embryonic stages.[34]

Timed writings with meaningful content which might be appropriately used for straight-copy typing have been developed by Vincent. These timed writings are based on the history and development of the typewriter. Vincent assumed that through the use of these specially prepared timed

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[29]Russon and Wanous, pp. 298-306.

[30]R. F. Webb, "Selecting Typing Materials," The Business Education World, XVI (1935), 205-06.

[31]Wayne M. Baty, "What We Type Is Important, Too," Journal of Business Education, XXXIII (1958), 246.

[32]Ibid., p. 246.

[33]Ethel Hale, "Let's Teach Our Students More Than Shorthand and Typewriting!" The Balance Sheet, XXXX (1959), 212-13.

[34]Ibid., p. 213.

writings "the typing student has been provided with writing materials that can be used to test his typing skill and to improve his knowledge of his machine."[35]

Timed writings presenting other subject matter content have been developed by Fries and Nanassy in their Business Timed Writings[36] and Tidwell and Bell in their Tested Timed Writings.[37] Such timed writing development seems to indicate a notion by these writers that students can comprehend what they are typing. Such an assumption, although not supported by experimental evidence, has been presented by Engberg who states: "A systematic increase in vocabulary can be accomplished by typing lists and lines of words which may be distributed to be copied on the typewriter, which provides practice with words in specific contexts."[38]

Reading of Copy. Book in his classical study of the acquisition of skill in typewriting emphasized that the task of a typist in reading copy accurately while typing is not the same at all stages in practice. It was thought by Book that a typist begins with a reading of letters in separate words and progresses to a group of words making up phrases. Thus, according to Book, "the expert reads his copy in a certain way, and several words ahead of the hands."[39]

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[35]Bernice Vincent, "Timed Writings Based on the History and Development of the Typewriter" (unpub. M. S. thesis, University of Southern California, 1956), p. 89.

[36]Albert C. Fries and Louis G. Nanassy, Business Timed Writings (Englewood Cliffs, 1960), pp. 1-64.

[37]M. Fred Tidwell and Mary L. Bell, Tested Timed Writings (Englewood Cliffs, 1950), pp. 1-63.

[38]Ebba R. Engberg, "A Study of the Possibility of Integrating Other Subject Matter into the Teaching of Typewriting in the Junior High School" (unpub. M. S. thesis, University of Southern California, 1933), p. 34.

[39]William F. Book, Learning to Typewrite (New York, 1925), p. 169.

Dvorak et al. provide similar conclusions by stating:

> Like typewriting, reading moves in word-wholes. Try reading by letters and your speed will be cut in half. Any beginning typist, to be sure, may pronounce every sound softly as he strikes the corresponding letter key with a slow, careful stroke. Yet you notice that this is no more reading than it is typewriting. Such practice is preliminary exploring of a keyboard. It could not be typewriting. Not even proofreading is letter by letter. Well-known groups of numbers, too, are read in wholes.[40]

As revealed by data provided through photographing the eye-movements and the eye-hand span of nineteen typists, Butsch refuted the assumption that an expert reads several words ahead of his hands. He concludes that a typist "reads only rapidly enough to supply the copy to the hand as it is needed."[41] Fuller, presenting evidence using similar experimental apparatus with one hundred second- and third-year typists on the high school level, concludes:

> . . . it would appear that word-recognition patterns are the basic reading patterns of typewriting. The eye-movement habits and data on both English and French typewriting copy, and the nature of the kinaesthetic typewriting patterns completely point to the fact. If reading by word-wholes alone took place, there would be far fewer fixations and regressions. The eye would take in a word at a single fixation and pause while the word was typed. Instead there is apparently a more detailed scanning of the words, regular and even, supplying of copy to the hand as needed.[42]

Speed of Reading. Fuller found that even the slowest reader could read over twice as fast as was considered necessary for the fastest typist.[43] Prusynski's findings were similar as revealed by timed writings

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[40]August Dvorak et al., Typewriting Behavior (New York, 1936), p. 181.

[41]Russell L. C. Butsch, "Eye Movements and the Eye-Hand Span in Typewriting," Journal of Educational Psychology, XXIII (1932), 113.

[42]Robert C. Fuller, Reading Factors in Typewriting, Delta Pi Epsilon Research Award, Oklahoma A. and M. College (1945), pp. 97-98.

[43]Ibid., p. 83.

and reading tests administered to forty high school typewriting students. Prusynski concludes that,

> . . . although there is a significant relationship between success as measured by timed writings and the reading tests, the person less gifted in reading can still have a typewriting reading speed that is far below the minimum silent reading speed.[44]

It was further concluded by Prusynski that even though a typist generally perceives the word or part of the word which is being typewritten, he "does not necessarily comprehend the meaning of what he is typing."[45]

In a study involving seventy-eight high school sophomores who completed typewriting, reading, and I. Q. tests, Sorrell concluded that even those in the lowest I. Q. and reading levels could profit from typewriting instruction even though "very few of those who are low in either I. Q. or reading reach the high level in typewriting."[46] Rundle in an earlier study found little correlation between reading speed and typewriting speed in a second-year typewriting class of twenty-nine students on the senior high school level.[47]

Reading Comprehension. Although students were given writings which were meaningful in Fuller's experiment, no score of comprehension was recorded from questions asked following the writings "because the purpose of the questions was merely to be sure that the subject read the selection

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[44]Chester S. Prusynski, "Reading for Typewriting" (unpub. M. S. thesis, University of Southern California, 1953), p. 31.

[45]Ibid., p. 31.

[46]Helen H. Sorrell, "A Study of Typewriting and Reading Scores" (unpub. M. S. thesis, University of Wisconsin, 1958), p. 29.

[47]Edna E. Rundle, "A Study of the Correlation Between Reading Speed and Typewriting Speed," National Business Education Quarterly, XVII (1948), 53.

thoughtfully."[48] Fuller concludes that "reproduction of symbols, rather than comprehension, is the major purpose of reading for typewriting."[49] Thus, he does not rule out that comprehension might be possible while a student is typewriting meaningful material. Actually, the correct habits of reading for typewriting which "requires the typist to move his eyes effectively across the copy, making as few regressions as possible, and to read slowly and carefully"[50] might be conducive to comprehension.

Robertson attempted to ascertain through an experimental investigation the extent of reading comprehension while students were typing a standardized reading test. The study involved sixty-one cases composed of beginning typewriting students on the collegiate and senior high level. Robertson concluded that "the degree to which typists comprehend the materials being copied depends upon their basic ability to comprehend any factual materials."[51]

Subject Matter Content. Only one study was found concerning the presenting of economic concepts in typewriting classes through the use of specially organized materials. Orpin measured the extent to which beginning and advanced typewriting students could "improve their economic literacy by typing materials composed of an economic content."[52] A total of 199 beginning and advanced typewriting students in one high school

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[48]Fuller, p. 17.

[49]Ibid., p. 103.

[50]Ibid., p. 104.

[51]Donald James Robertson, "A Study of the Degree of Students' Reading Comprehension While Typewriting" (unpub. M. S. thesis, University of Southern California, 1936), p. 75.

[52]Orpin, p. 2.

were involved in the study. A Student Economic Handbook was assembled in which paragraphs were reprinted from a high school economics textbook. The materials in the Student Economic Handbook were practiced daily as drills and exercises during an eight-week period by members of the experimental group. During the same period, members of the control group were not exposed to the specially organized materials.

A standardized test developed by Linn[53] was used as a pre- and post-test in providing data for the findings. In enumerating some of the specific findings of the investigation, Orpin summarizes as follows:

> . . . (1) The arithmetic mean scores for the experimental group on the first test was 23.36 and on the second test, 27.61. (2) The t test of significance of the differences between the two means reveals that the differences are significant at the .01 level. (3) The arithmetic mean score of the control group on the first test was 23.38 and on the second test, 22.96. (4) The control group scored slightly lower on the second administration, but loss in achievement was not significant. (5) The scores of the experimental and control groups were not significantly different at the beginning of the experiment, but the scores were significantly different at the end of the experiment.[54]

Korn conducted an experimental study in eleven classes in nine high schools involving 189 pupils who took timed writings presenting American history content and 93 pupils who did not take the specially prepared timed writings. Recall quizzes over the specially prepared timed writings were given to both groups of pupils. A "very significantly high score" was made by pupils who took the specially prepared timed writings when compared with students who did not take these timed writings.[55]

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[53]John Howard Linn, "An Analysis of the Teaching of Certain Economic Topics in the California Public Junior Colleges" (unpub. Ed.D. dissertation, University of Southern California, 1958).

[54]Orpin, p. 32.

[55]Nancy H. Korn, "A Study of the Effect on Typewriting Performance and General Education When Timed Writings Based Upon American History Are Used" (unpub. M. S. thesis, University of Florida, 1955), p. 41.

Meaningful Versus Meaningless Materials. Although no study was found that attempted to ascertain the extent to which meaningful materials have been incorporated in typewriting textbooks, Clark made a study of the readability level of typewriting textbooks. By sampling from fourteen textbooks, Clark found no significant differences between the readability levels of these books. Through application of the Dale-Chall readability formula, Clark found the textbooks "had a high of 7.63 (9th-10th grade), and a low of 6.96 (9th grade)."[56]

Barton has demonstrated the importance of typewriting materials having meaningful content in developing typing skill.[57] Two groups of beginning typewriting students, Group P composed of fifteen high school students and Group W composed of thirteen high school students, were established in Barton's experiment. Group P typed from copy that was made up mainly of nonsense syllables and individual words. Group W typed from contextual material. For instance, some of the materials used were from bulletins published by the Red Cross and from history texts or other school books.

Members of Group P began in September of the school year by practicing meaningless materials for fourteen weeks. A beginning typewriting class for members of Group W was not organized until the twelfth week of school. Group W started at this time with the practice of meaningful materials. Both groups typed meaningful material during the remaining thirty-six weeks of the experimental period. The findings resulted in a significantly

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[56]Marshall Clark, "A Study of the Readability Level of Typewriting Textbooks" (unpub. M. S. thesis, University of Southern California, 1958), p. 31.

[57]J. W. Barton, "Comprehensive Units in Learning Typewriting," Psychological Monographs, XXXV, No. 3 (1926), pp. 1-46.

superior performance for Group W in terms of speed and accuracy both at the end of the sixteenth week and the thirty-sixth week of the experiment. Barton attempted to explain the findings by concluding:

> It may be possible that the motivating factors were neither as many nor as good during the time that Group P was using the smaller unit material, since there were no speed tests given during this time. It is a fact that most of the learners manifested 'ennui' while the exercise material was of the meaningless kind. Group W also had no speed tests during the first five weeks of their work, but they showed nothing like the same degree of lack of interest that was shown by the other group. Possibly the kind of material used is a factor in determining what the attitude of the learner will be in typewriting, as is doubtless true also for many of the higher forms of learning.[58]

An experiment carried on later by West involving three hundred forty-five airmen resulted in better typists when the practice was from meaningful copy as opposed to nonsense copy. West found generally that "both for sentence and code typing, the use of word or sentence materials appears to give learners an initial advantage over those trained on nonsense sequences."[59] Furthermore, West concludes that the superiority of meaningful materials over nonsense materials may be explained by these factors:

> . . . (a) the greater allowance for individual differences in ability to attempt stroking habits of a higher order, (b) the absence of possible interference from earlier practice on sequences which do not exist in the language, (c) the greater variety of responses allowed by the practice, and (d) the higher levels of attention, concentration, and interest.[60]

Interesting Versus Noninteresting Materials. Dodson attempted to determine experimentally whether or not the use of interesting timed

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[58]Ibid., p. 24.

[59]Leonard J. West, "An Experimental Comparison of Nonsense, Word, and Sentence Materials in Early Typing Training," Journal of Educational Psychology, XLVII (1956), 487.

[60]Ibid., pp. 488-89.

writings would make possible increased typing skill when compared with the use of noninteresting timed writings.[61] 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.

The finding was that "students typewriting from interesting timed writings were able to recall the content of a greater number of the timed writings than were those students typewriting from noninteresting timed writings."[62] Dodson concludes:

> Changes in typewriting speed during the experimental period of four weeks, as measured in this study, differed between the two groups by amounts which are significant statistically. But, there was not an appreciable increase or decrease in gross words typewritten per minute. 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.
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> The accuracy of both groups used in this study did not improve during the experimental period; however, the changes in typewriting accuracy differed between the two groups by amounts which were not significant statistically. The group using interesting material increased less than one error (.99) in three minutes, and the group using noninteresting material increased 2.04 errors in three minutes of typewriting.[63]

Vocabulary Development. Blavat attempted to provide an increase in word knowledge through the use of timed writings presenting commonly misunderstood business terms.[64] He conducted a pilot study during a three-

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[61]Glenna A. Dodson, "The Effect of Interesting and Noninteresting Copy Material on Speed and Accuracy in Typewriting" (unpub. Doctoral dissertation, College of Education, University of Florida, June, 1959).

[62]Ibid., p. 44.

[63]Ibid., pp. 44-45.

[64]Herbert Blavat, "An Experimental Study to Determine if Typewriting Can Be Used as a Means of Increasing Vocabulary and Comprehension" (unpub. M. S. thesis, University of Southern California, 1957).

week summer-session typewriting class with thirty-six high school students. After conducting the experimental study, he found that the group exposed to the specially prepared writings had a significant gain in word knowledge over a group which had not been exposed to such material.

A more extensive study growing out of the pilot study conducted by Blavat was conducted by Baty.[65] Four-hundred and fifty-six high school students enrolled in beginning typewriting classes were divided into three groups. The Clear Group composed of 203 students was exposed to timed writings in which word definition was apparent; the Not-Clear Group composed of 199 students was exposed to timed writings in which the same word was incorporated without making its meaning apparent; and the Neither Group composed of 54 students was exposed to timed writings which had no content association with the other two groups.

Baty found that students who were in the Clear Group were able to increase their vocabulary by about eight and one-half words during the experimental period of fifty class sessions. Those students in the Not-Clear Group increased their vocabulary by slightly over one word. Students who were not exposed to the specially prepared timed writings increased less than one word during the experimental period. Baty concluded that the gain in vocabulary was a function of the number of repetitions of each timed writing. "Three repetitions of a paragraph produced more gain than one repetition; six repetitions produced more gain than three repetitions."[66]

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[65]Wayne M. Baty, "Incidental Learning of Vocabulary in Beginning Typewriting Classes" (unpub. Ph.D. dissertation, University of Southern California, 1958).

[66]Ibid., p. 109.

Related Literature in Economics

Introduction to Related Investigations. "The development of economic understanding and competence must be an integral part of the general education of every citizen."[67] Furthermore, according to Eyster:

> To have the opportunity to learn about the American business and labor system and to develop economic understanding at the nontechnical or nontheoretical level is the right of every American youth and adult. The future not only of the free enterprise or competitive economic system but also of democracy depends at least in part upon raising the level of economic and business understanding on the part of the general public. Attitudes that are not compatible with the principles of democracy and with the free enterprise system often stem from a lack of knowledge and understanding of democracy and of free enterprise.[68]

The need for economic education might be met partially in a beginning typewriting class through the use of timed writings that present economic concepts at the nontechnical or nontheoretical level.

In view of the growth of typewriting as a course offering on both the secondary and elementary levels, it would seem advantageous to incorporate economic education in the area of typewriting wherever it is possible to do so without neglecting the development of the skill of typewriting.

Business educators, whose orientation in economics is probably as strong as that of any other group of educators on the secondary level, are in a strategic position to integrate economics into existing courses. It has been concluded by Felder and Hall that:

> Every school system in the country does not have to teach a course in the principles of economics, but every business teacher must assume responsibility for introducing and putting into practice economic concepts at the time when they are relevant to discussion and study in the regular classes.[69]

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[67] Elvin Eyster, "The Need for Economic Education," The American Business Education Yearbook, XV (1958), 15.

[68] Ibid., p. 18.

[69] Rodney Felder and J. Curtis Hall, "Economic Understandings--Our Future Depends Upon It, Part I," Journal of Business Education, XXXV (1959), 128.

Business educators can lend aid in improving economic education "by helping to establish 'pilot projects,' to develop, try out, and test new methods and materials in this field."[70]

Attempts have been made to integrate economic understandings into certain courses in business education. 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.[71]

Typewriting teachers should avail themselves of ways to relate learning experiences of students to certain economic understandings. There have been some attempts to do this. LeCornu taught her typewriting class under the assumption that more should be learned than a manual skill.[72] Typewritten requests of advanced typewriting students were mailed to public and private organizations asking for available materials concerning certain economic topics. In addition, personal interviews were arranged by students with some of the responding organizations. As a result of studying the materials and conducting the interviews, reports concerning certain economic topics were typewritten by the students. Although no timed writings presenting economic concepts were used in the project, LeCornu proposed a method whereby certain economic information could be incorporated in a typewriting course through composition at the typewriter.

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[70]Derwood G. Baker, The Business Educator's Responsibility for Economic Education, Tenth Annual Delta Pi Epsilon Lecture, Chicago, December 28, 1951 (Cincinnati, 1952), p. 25.

[71]Robert E. Keller, "Building Better Bookkeepers Through Integration with Typewriting," Business Education Forum, XIII (1958), 13.

[72]Mabel LeCornu, "Teaching Economic Education in the Typewriting Class," The Balance Sheet, XXXV (1954), 305-308.

Measurement of Economic Concepts. Once it has been discovered that certain ways and means may be used to integrate economics in a typewriting course, a question concerning what specific concepts to incorporate arises. Overman, in a study involving economic concepts, suggests:

> Although industry has, in many cases, sought the advice of outstanding economists as to the basic facts or concepts that should be included in the educational programs of industry, economists themselves have not agreed on the economic facts or ideas which should become a part of the common knowledge of all individuals.[73]

Using 5,000 statements of concepts collected through visits to 35 firms having printed materials used in their educational programs and from a list provided by 23 business executives having considerable experience in economic education, Overman established a rank order of 49 frequently appearing economic concepts.[74]

Moorman found in a study involving basic concepts that authors of textbooks in economics are not in agreement as to which are the essential concepts for the high school student.[75] Through an analysis of textbooks and ratings by a jury of experts, Moorman developed a test to measure students' understanding of economic concepts. Sheldon,[76] Jelley,[77] and Linn[78]

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[73]Glenn D. Overman, Economic Concepts Everyone Should Know, Monograph 95, Cincinnati, South-Western Publishing Company, 1954, 3.

[74]Ibid., p. 16.

[75]J. H. Moorman, Basic Economic Concepts, Monograph 73, Cincinnati, South-Western Publishing Company, 1949, 14.

[76]Robert J. Sheldon, "Measurement of Business Understandings, Skills, and Abilities Possessed by High School Students in the San Francisco Bay Area" (unpub. M. S. thesis, San Francisco State College, 1959).

[77]Herbert M. Jelley, "A Measurement and Interpretation of Money Management Understandings of Twelfth-Grade Students" (unpub. Ed.D. dissertation, University of Cincinnati, 1958).

[78]Linn.

have made similar studies in which tests for measuring certain economic concepts have been developed.

Economic Education on the High School Level. Available evidence indicates that economic education has not become an integral part of the general education of high school youth. According to Quellette, "the basic research conducted by the Opinion Research Corporation in the area of business and economic understanding disclosed that we are a nation of economic illiterates."[79] In this research project conducted by the Opinion Research Corporation of Princeton, New Jersey, 1280 high school seniors were involved. If students had indicated replies in complete ignorance of the content of the inquiry, these replies would have been similar to those of students who had answered the questions after having thought about them. The law of chance would have provided a score of 45.7, while the mean score for the students was only 48.1.[80]

A search for new guides to the essential content of high-school economic education was one of the first projects of the newly established Council for Advancement of Secondary Education. From this project grew two research studies that were undertaken to discover:

> . . . (a) which economic principles and topics are fundamental and therefore indispensable in the understanding of anyone who would be economically literate; and (b) which economic terms are commonly met with in the press and consequently essential in the vocabulary of the intelligent newspaper and magazine reader.[81]

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[79]Vernon A. Quelette, "Research in Economic Education," The National Business Education Quarterly, XXVIII (1960), 9.

[80]The Public Opinion Index for Industry, The High School Market for Economic Education, Princeton, Opinion Research Corporation, 1951.

[81]Baldwin Lee and Galen Jones, "Keys to Understanding Our Economy," The Clearing House, XXXI (1956), 142.

The first study entitled Key Understandings in Economics gives the views of "some 2,000 competent leaders of the major groups in the economy."[82] An Inventory of Economic Understandings, based on this study, was later prepared.[83] The second study which was developed by the Council for Advancement of Secondary Education involved the compilation of a basic economic vocabulary through:

> . . . an extensive canvass of the content of the American press in order to determine the nature and amount of its economic terminology. It analyzed for economic terms, an aggregate of 2,332 issues of 62 publications published from 1950 to 1954.[84]

This extensive search yielded five lists of economic terms including 224 terms from national magazines, 459 terms from general newspapers, 394 terms from farm journals, 351 terms from labor union journals, and 235 terms from company publications.

One of the requisites for economic literacy suggested by this survey is an "ability to read with comprehension the more thoughtful parts of the newspapers and magazines of the day as a result of familiarity with the terms enumerated in our five lists of commonly used economic terms."[85] The fulfilling of such a requisite prior to the typing of timed writings presenting economic concepts would probably provide for a better understanding of the economic concepts presented.

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[82] Key Understandings in Economics, Derivation, Validation, and Evaluation of a Composite List of Basic Economic Topics, Washington, D. C., Council for Advancement of Secondary Education, 1956, 13.

[83] Inventory of Economic Understandings, Evanston, Illinois, Northwestern University, or New York, Joint Council on Economic Education.

[84] ____, "Our Study on Economic Education," National Association of Secondary-School Principals Bulletin, XXXXI, Pt. 2 (1957), 304.

[85] Requisites for Economic Literacy, Washington, D. C., Council for Advancement of Secondary Education, 1956, 29.

Hillier selected economic concepts from the report entitled Key Understandings in Economics for use in a study intended to "contribute information concerning the efficiency of instruction in the economic education of teachers."[86] He found that "the economic education of the teacher does make a difference in the number of economic concepts taught."[87]

Summary

Although incidental learning has been the subject of extensive experimentation, very few studies have involved incidental learning in typewriting classes. Certain of the studies which were reviewed seemed to have implications for typewriting instruction. These studies involved mostly the types of materials, rate of presentation, extent of instruction, and retention of materials in incidental learning. Studies of this nature have usually provided an analysis of intentional learning as opposed to incidental learning. In most of the investigations which were reviewed, incidental learning was found to be less effective than intentional learning. Generally, these studies did not rule out the possibility of incidental learning.

Only one study was found in which incidental learning of economic concepts was attempted through the use of specially organized materials in typewriting classes. This study was limited to a single school, and the instructional materials were compiled from a high school economics textbook rather than developed for the purpose of the specific experiment.

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[86]Kenneth Lynn Hillier, "The Effect of the Economic Education of Teachers on the Number of Economic Concepts Reported Taught" (unpub. Ed.D. dissertation, Oklahoma State University, 1959), 2.

[87]Ibid., p. 42.

Certain other studies which were indirectly related to the present investigation involved reading while typewriting, content in typewriting materials, and vocabulary development while typewriting. Studies of this nature which were reviewed support the generalization that learning of subject matter content, although not the major purpose in typewriting instruction, is possible in typewriting classes. Even those studies involving reading in typewriting, but not necessarily comprehension while typewriting, did not rule out the possibility of learning certain concepts as materials were being typewritten. Results of such studies could have widespread implications for typewriting instruction.

CHAPTER III

EXPERIMENTAL DESIGN AND PROCEDURE

In conducting the study and testing the hypothesis the following steps were involved: (1) Providing statistical analyses that could be readily interpreted; (2) Selecting a test that would be appropriate in measuring certain economic concepts on the high school level; (3) Conducting a pilot study in a selected high school; (4) Preparing and validating writings presenting certain economic concepts; and (5) Conducting the study in five high schools.

Experimental Design

Analysis of Variance. In order to test the hypothesis, it was necessary to select an appropriate statistical design. The analysis of variance technique was selected which provides "an efficient test of the significance of the differences between two or more groups simultaneously."[1] According to Lindquist, "the methods of analysis of variance will perhaps be most frequently applied in educational research to analyze the results of 'methods' experiments."[2]

Analysis of variance provides an F-test which when applied to variances "may be considered as essentially a way of applying the t-test

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[1]James E. Wert, Charles O. Neidt, and J. Stanley Ahmann, Statistical Methods in Educational and Psychological Research (New York, 1954), p. 172.

[2]E. F. Lindquist, Statistical Analysis in Educational Research (Boston, 1940), p. 93.

to all differences in methods means simultaneously."[3] According to Tate:

> The most widely useful test of the significance of a difference in variability between two samples is based upon the sampling distribution of the variance ratio, commonly known as the F ratio. The F distribution is the most general of the various sampling distributions. It is applicable to samples of any size and to many sorts of problems.[4]

Analysis of variance may be used in experiments in randomly selected schools for classes of either equal or unequal size. During a conference prior to treating the data, personnel of the statistical laboratory at Oklahoma State University recommended an analysis of variance for classes of equal size as being more practicable. Machine processing of the data was provided by the statistical laboratory in making the analysis. In order that uniformity of class size could be maintained, it was necessary to reduce groups to equivalent size through random selection from larger groups. The same procedure was followed when analyzing stratified data involving intelligence quotients and reading comprehension levels.

In regard to the rules of analyzing pooled results of duplicated experiments in randomly selected schools having uniformity in class size within each school, Lindquist states:

> The essential elements in the design are that the classes are of equal size in each school (but not necessarily from school to school), that the classes, teachers, rooms, etc. have been randomly assigned to the methods, and that comparable criterion measures are secured from all pupils at the close of the experiment.[5]

The analysis of variance design used in the present investigation provided for these essential elements. The criterion measures for measuring gains, if any, in economic understandings and typing skill were comparable as the same initial and final tests were administered in each group.

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[3]Ibid., p. 98.

[4]Merle W. Tate, Statistics in Education (New York, 1955), p. 493.

[5]Lindquist, Statistical Analysis in Educational Research, p. 120.

Gains, if any, between groups in economic understandings and typing skill were compared through the analysis of variance statistical technique. Findings were stratified to the extent that students with 90 through 110 I. Q. scores on the Otis Mental Ability Test (Gamma Test: Form FM) were grouped and compared through the analysis of variance technique. The same type of analysis was used for students with a reading level of tenth through twelfth grade as measured by the Nelson-Denny Reading Test (Form A: For High Schools and Colleges). The Table of F values as given by Lindquist was used in determining the level of confidence.[6] After treating the data, the hypothesis was to be accepted if an obtained F value at the .01 level of confidence was reached.

Pearson-Product Moment Correlation. In addition to analysis of variance, certain other statistical techniques were employed in testing the hypothesis. Relationship of gains in economic understandings to gains in typing skill, to reading comprehension, to intelligence quotient, and to initial economic understandings was computed by the use of the Pearson-Product Moment Formula. According to Tate this formula is "the most widely used and best measure of correlation."[7] The computation of the formula has been suggested by such authors as Lindquist,[8] Thorndike and Hagen,[9] Garrett,[10] and Walker.[11]

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[6]Ibid., pp. 62-65.

[7]Tate, p. 233.

[8]Lindquist, A First Course in Statistics (Boston, 1942), pp. 169-75.

[9]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (New York, 1955), pp. 543-46.

[10]Garrett, pp. 128-39.

[11]Helen M. Walker, Elementary Statistical Methods (New York, 1943), pp. 225-35.

Kuder-Richardson Test Reliability. The reliability of the Alft Test of Economic Understandings was computed through the use of the Kuder-Richardson Formula.[12] The formula yields a reliability coefficient which "provides a conservative estimate of the split-half type of reliability."[13] Use of the formula in providing an estimate of test reliability has been suggested by Garrett[14] and Tate.[15] Reliability coefficients arrived at through the use of the Kuder-Richardson Formula were determined for the initial economics test comprised of sixty-five items.

Detailed computation of the formulas involved in the statistical analysis of the findings will be more specifically referred to in Chapter IV and may be found in Appendix B, pages 156-158.

Experimental Procedure

Selecting the Economic Understandings Test. A search was made for a test of economic understandings which would be appropriate for use on the high school level and which might be satisfactory for the present investigation. It was thought that the multiple-choice type test would be appropriate in measuring economic understandings. According to Thorndike and Hagen:

> The multiple-choice item is the most flexible and most effective of the objective item types. It is effective for measuring information, vocabulary, understandings, application of principles, or ability to interpret data.[16]

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[12]Thorndike and Hagen, p. 131.

[13]Ibid.

[14]Garrett, p. 336.

[15]Tate, pp. 367-68.

[16]Thorndike and Hagen, p. 58.

Furthermore, Travers states that "nearly every useful function which the true-false item or the completion item can perform is better executed by multiple-choice questions . . . ."[17]

Economic tests listed in each Mental Measurements Yearbook[18, 19, 20] between the years 1949 and 1959 were either presently out of print or had not been revised to provide for current use. A list of testing companies was obtained from each Yearbook. A letter asking for information which might lead to the discovery of an appropriate test was mailed to each of these companies. In addition, letters requesting similar information were sent to the textbook companies that publish the economic textbooks adopted for use in high schools of Oklahoma. These surveys revealed that both the testing and textbook companies were unable to suggest tests or sources for tests which might be appropriately used in the present study.

Requests for information concerning an economic test which might be appropriate for the present study were also sent to certain organizations that are associated with economic education on the national level. These organizations are the Joint Council on Economic Education, the Council for Advancement of Secondary Education, the American Economic Foundation, and the Opinion Research Corporation of Princeton. The Joint Council on Economic Education was the only one of these organizations to suggest a test which

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[17]Robert M. W. Travers, How to Make Achievement Tests (New York, 1950), p. 60.

[18]Oscar Krisen Buros, ed., The Third Mental Measurements Yearbook (New Brunswick, 1949), p. 598.

[19]Oscar Krisen Buros, ed., The Fourth Mental Measurements Yearbook (Highland Park, 1953), pp. 660-61.

[20]Oscar Krisen Buros, ed., The Fifth Mental Measurements Yearbook (Highland Park, 1959), p. 850.

might be appropriate. The Associate Director of this organization suggested that the best economic education test his organization had for use at the secondary level was the Alft Test of Economic Understandings which had been developed in cooperation with the Illinois Council on Economic Education.

The Executive Secretary of the Illinois Council on Economic Education was asked for further information regarding the Alft Test of Economic Understandings. According to the Executive Secretary of this organization, the validity of the test was established by having eight economists from business, labor, agriculture, the Federal Reserve Bank of Chicago, and the academic field go over the test. Also, according to the Executive Secretary, hundreds of graduating high school seniors took the test, which originally contained one hundred questions. From the results of testing these students, the testing department at Northwestern University, Evanston, Illinois, aided in selecting sixty-five questions used in the revised form of the test. It was further indicated by the Executive Secretary that the median score for several hundred Illinois high school seniors who had been given the revised test was 38.

The following announcement concerning the Alft Test of Economic Understandings appeared in a newsletter of the Joint Council on Economic Education:

> Over 6,300 high school seniors in the public high schools of Hawaii were tested in economic understanding in September as they began their study of the required American Problems Course. The sixth revision of the test prepared by E. C. Alft of Elgin High School, Elgin, Illinois, was used for this large scale project. Percentiles and the standard deviation have been calculated and a histogram prepared.[21]

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[21] 6300 High School Seniors in Hawaii Complete Test, Joint Council on Economic Education Newsletter (February, 1960), p. 16.

In a personal communication with the Director of Economic Education for Hawaii, it was learned that the mean score for the tests administered in Hawaii was 30.005 and the median score was 29.57. The standard deviation was 8.90. From data provided by the Director of Economic Education for Hawaii a reliability coefficient of .81 was found, using the Kuder-Richardson Formula 21.[22] Appendix B, page 156 shows the calculation of this reliability coefficient.

Certain writers of dissertations, including Sheldon,[23] Jelley,[24] and Linn,[25] who have been involved with developing tests in the area of economics were asked to furnish information concerning their test development. It was found from this survey that the tests developed by these writers were either for a different level than high school or did not involve the wide variety of topics found in the Alft Test of Economic Understandings. Although the Linn test has been suggested for use on the high school level as well as on the junior college level, it was not made available in printed form until after the pilot study had been conducted and specially prepared timed writings had been produced for the present study. Therefore, it was decided that the Alft Test of Economic Understandings would be used in the present investigation.

The Alft Test of Economic Understandings is of the multiple-choice type with a total of sixty-five questions. It can be administered within a forty-minute class period. Permission to reproduce the test for use in

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[22]Thorndike and Hagen, p. 131.

[23]Sheldon.

[24]Jelley.

[25]Linn.

the present investigation was granted by the Illinois Council on Economic Education. The test to be administered in the five high schools was printed by the offset process. Answer sheet forms which could be machine scored were obtained from the Bureau of Tests and Measurements, Oklahoma State University. The test is included in pages 132 through 139 of Appendix A.

Conducting the Pilot Study. In order to conduct a pilot study, a school located in the geographical area in which the study was to be conducted was selected. The pilot study was conducted one year prior to the conducting of the study in five high schools. Forty students were involved in the pilot study, with twenty students in a control group and twenty students in an experimental group. The designation of the control and the experimental group was determined by a flip of a coin by the cooperating teacher.

All students participating in the pilot study were enrolled in the second semester of beginning typewriting. There were eight boys and twelve girls in the control group and four boys and sixteen girls in the experimental group. The mean age in years for each group was 16.6. The mean I. Q. score for both groups was 99.83, with 97.00 for the control group and 102.65 for the experimental group.

The Alft Test of Economic Understandings was used as the pre- and post-test to be administered in determining the economic understandings possessed by the students. From the twenty-four most-frequently missed items on the test, twenty-four specially prepared timed writings were developed in which a separate concept was presented in each writing. The number of strokes for each timed writing was between 500 and 600. Syllabic intensity was between 1.3 and 1.4. The mean readability for

the specially prepared timed writings, based on the Dale-Chall Formula for Predicting Readability, was 7th through 10th grade.[26]

The length of the experimental period for the pilot study was forty class meetings. Two timed writings were administered during each meeting in both the experimental and control groups. Students in the experimental group typed timed writings presenting economic concepts while students in the control group typed timed writings appearing in the adopted typewriting textbook. Students in each group were given two minutes for proofreading each timed writing. One group of six timed writings presenting economic concepts was repeated six times, another group three times, and another group one time in the experimental group.

The gain in economic understandings for the experimental group over the control group was significant at the .01 level of confidence based on an analysis of variance as described by Lindquist.[27] It was further determined that repetition was a function of gains in economic understandings. The more frequently the timed writings were repeated the higher the gain in economic understandings.

Writing the Paragraphs for Timed Writings. Fifty-five timed writings presenting economic concepts were prepared prior to the time that the experimental study was conducted in the five schools. These timed writings are given in Appendix A, pages 104-131. The timed writings were written for the purpose of stating the concepts found in the first fifty-five multiple-choice questions on the Alft Test of Economic Understandings.

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[26]Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability: Instructions," 37-54.

[27]Lindquist, Statistical Analysis in Educational Research, pp. 93-99.

The last ten questions on the Alft Test of Economic Understandings were not used as a source for these timed writings. These ten questions, concerned with vocabulary and reading comprehension and reading a graph, did not seem to be appropriate for the present study.

An effort was made to begin each timed writing with a topic sentence presenting the economic concept. The statement of the concept was followed in most instances by a discussion of the multiple-choice distractors which were included in each question as alternative answers. Twenty-four of the writings were written a year prior to the experimental study conducted in the five participating high schools. These writings dealt with the concepts missed most frequently on the Alft Test of Economic Understandings by the forty students involved in the pilot study. After the pilot study and before the study in the five high schools, thirty-one additional timed writings presenting economic concepts were prepared.

Each of the fifty-five writings had a readability index of grades 7 through 10 as computed by the Dale-Chall Readability Formula.[28] Table I shows the readability level in terms of formula raw score and corrected grade levels for each of the timed writings. The formula raw score for each writing was obtained by adding: (a) the average sentence length, (b) the relative number of words that did not appear on a list of 3,000 commonly used words, and (c) a constant of 3.6365. After conducting several experiments in comparing the formula predictions with judgments of experienced teachers, readability experts, and actual comprehension scores of readers on passages, Dale and Chall concluded:

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[28]Dale and Chall, "A Formula for Predicting Readability: Instructions," 37-54.

TABLE I

READABILITY OF TIMED WRITINGS PRESENTING ECONOMIC CONCEPTS

Timed Writing	Raw Score	Adjusted Grade Level	Timed Writing	Raw Score	Adjusted Grade Level
1-A	6.1579	7th-8th	15-A	7.9444	9th-10th
1-B	7.6782	9th-10th	15-B	7.5294	9th-10th
2-A	6.6903	7th-8th	16-A	6.2753	7th-8th
2-B	6.0091	7th-8th	16-B	6.0496	7th-8th
3-A	6.4150	7th-8th	17-A	7.7278	9th-10th
3-B	7.0152	9th-10th	17-B	6.7308	7th-8th
4-A	7.0567	9th-10th	18-A	7.0557	9th-10th
4-B	7.4029	9th-10th	18-B	7.4798	9th-10th
5-A	6.6316	7th-8th	19-A	7.9262	9th-10th
5-B	7.1863	9th-10th	19-B	7.2136	9th-10th
6-A	7.8543	9th-10th	20-A	6.7804	7th-8th
6-B	7.4707	9th-10th	20-B	6.3563	7th-8th
7-A	7.6782	9th-10th	21-A	7.5704	9th-10th
7-B	7.6964	9th-10th	21-B	6.8887	7th-8th
8-A	6.5225	7th-8th	22-A	6.9970	7th-8th
8-B	6.5225	7th-8th	22-B	7.0061	9th-10th
9-A	6.2662	7th-8th	23-A	7.6873	9th-10th
9-B	7.1549	7th-8th	23-B	7.4712	9th-10th
10-A	6.5820	7th-8th	24-A	7.2946	9th-10th
10-B	6.7399	7th-8th	24-B	7.9535	9th-10th
11-A	6.5324	7th-8th	25-A	7.5203	9th-10th
11-B	6.1488	7th-8th	25-B	6.4332	7th-8th
12-A	6.1579	7th-8th	26-A	6.9069	7th-8th
12-B	6.9879	7th-8th	26-B	6.3654	7th-8th
13-A	7.9444	9th-10th	27-A	7.0648	9th-10th
13-B	7.5699	9th-10th	27-B	7.3624	9th-10th
14-A	6.7399	7th-8th	28-A	6.8573	7th-8th
14-B	6.8482	7th-8th			

> Of the fifty-five passages of health-education materials, we found that our two-factor formula predictions correlated .92 with the judgments of readability experts, and .90 with the reading grades of children and adults who were able to answer at least three questions out of four on thirty of these passages.[29]

Corrected grade levels were established by Dale and Chall as a result of various experiments using reading passages from health-education materials, current-events magazines, government pamphlets, and newspapers.

Each of the fifty-five timed writings presenting economic concepts was limited to a range of 500 to 600 strokes. This means that each writing contained 100 to 120 standard words. Table II shows the number of strokes, standard words, and actual words in each of the specially prepared timed writings. Assuming a typing speed of 20 to 24 gross words per minute, students would be able to type each writing at least once during a five-minute interval.

Table III shows the syllabic intensity of each of the specially prepared timed writings presenting economic concepts. The syllabic intensity of each of these timed writings was between 1.3 and 1.4. According to Lamb, "a syllabic intensity of 1.4 indicates that the material is of average difficulty."[30] Furthermore, according to Lamb, "in most typewriting textbooks, material for early lessons is below 1.4 syllabic intensity, and the intensity is gradually increased as the students increase in typing power."[31]

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[29]Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability," Educational Research Bulletin, XXVI (1948), 18.

[30]Marion M. Lamb, Your First Year of Teaching Typewriting (Cincinnati: 1947), pp. 53-54.

[31]Ibid., p. 54.

TABLE II

LENGTH OF TIMED WRITINGS PRESENTING ECONOMIC CONCEPTS IN TERMS OF NUMBER OF STROKES, ACTUAL WORDS, AND STANDARD WORDS

Timed Writing	Number of Strokes	Actual Words	Standard Words	Timed Writing	Number of Strokes	Actual Words	Standard Words
1-A	596	116	119	15-A	524	99	105
1-B	524	103	105	15-B	559	108	112
2-A	541	100	108	16-A	566	105	113
2-B	516	97	103	16-B	584	101	117
3-A	548	107	110	17-A	548	108	110
3-B	578	110	116	17-B	568	105	114
4-A	588	110	118	18-A	572	109	114
4-B	541	102	108	18-B	575	104	115
5-A	593	112	119	19-A	561	105	112
5-B	561	108	112	19-B	543	105	109
6-A	555	105	111	20-A	561	108	112
6-B	548	98	110	20-B	599	116	120
7-A	570	105	114	21-A	595	112	119
7-B	525	102	105	21-B	584	107	117
8-A	571	108	114	22-A	594	117	119
8-B	571	108	114	22-B	535	100	107
9-A	558	108	112	23-A	524	106	105
9-B	529	99	106	23-B	525	98	105
10-A	573	110	115	24-A	520	103	104
10-B	562	106	113	24-B	517	102	103
11-A	594	117	117	25-A	589	106	118
11-B	569	109	114	25-B	597	107	119
12-A	565	115	113	26-A	541	106	108
12-B	591	115	118	26-B	598	119	120
13-A	558	101	112	27-A	558	108	112
13-B	598	109	120	27-B	574	106	115
14-A	545	105	109	28-A	585	112	117
14-B	563	102	113				

TABLE III

SYLLABIC INTENSITY OF TIMED WRITINGS PRESENTING ECONOMIC CONCEPTS

Timed Writing	Syllabic Intensity	Timed Writing	Syllabic Intensity
1-A	1.33	15-A	1.36
1-B	1.39	15-B	1.40
2-A	1.39	16-A	1.40
2-B	1.35	16-B	1.40
3-A	1.36	17-A	1.38
3-B	1.34	17-B	1.37
4-A	1.39	18-A	1.38
4-B	1.40	18-B	1.38
5-A	1.38	19-A	1.39
5-B	1.39	19-B	1.39
6-A	1.40	20-A	1.40
6-B	1.39	20-B	1.40
7-A	1.40	21-A	1.35
7-B	1.35	21-B	1.35
8-A	1.38	22-A	1.38
8-B	1.38	22-B	1.36
9-A	1.31	23-A	1.34
9-B	1.34	23-B	1.37
10-A	1.33	24-A	1.35
10-B	1.40	24-B	1.38
11-A	1.31	25-A	1.40
11-B	1.30	25-B	1.38
12-A	1.36	26-A	1.37
12-B	1.39	26-B	1.32
13-A	1.39	27-A	1.40
13-B	1.38	27-B	1.39
14-A	1.35	28-A	1.38
14-B	1.36		

Validating the Timed Writings. After the writings had been checked for readability, stroke count, and syllabic intensity, a panel of five judges suggested by the Director of the Joint Council on Economic Education judged the writings for their adequacy or inadequacy in presenting economic concepts. The letter and reply card used in seeking the cooperation of the panel of judges are shown in Appendix A on pages 140-141. The letter and reply card were mailed to each of the five individuals suggested by the Joint Council on Economic Education. Two of these individuals agreed to participate in the evaluation of the specially prepared timed writings. As it was thought that a larger number of judges should be involved in the evaluation, the letter and reply card were sent to twelve other persons suggested by the Joint Council on Economic Education. Three from this group agreed to serve on the panel of judges.

Although the panel of five judges was informed that names would be withheld in the formal writing of the report, each member furnished certain information concerning his qualifications. Members of the panel were from four of the fifty states of the union. Three of the panel members held Ph.D. degrees; one held an Ed.D. degree and one held an M. S. degree with advanced graduate work in economics. Two of the panel members listed eight years of teaching experience in the area of economics, economic education, or related fields; one indicated ten years; one indicated twelve years; and one indicated he was in his first year of teaching a specific course in economics. All five judges were active members of the Joint Council on Economic Education.

In early October, 1960, prior to the beginning of the experimental study in January, 1961, the fifty-five timed writings were mailed to the panel of five judges. The letter written to each of these judges, the

Instructions for Judging Timed Writings, the Check Sheet for Judging Timed Writings, and the Data Sheet for Judges are given in Appendix A, pages 142-145. Table IV presents the initial rating of the fifty-five writings.

Writings judged inadequate by more than one of the five judges were revised. It was necessary to revise twelve writings which were judged inadequate by two or more judges. Suggestions given by the panel members were incorporated in the twelve writings when it was possible to incorporate them without violating one or more of the criteria relating to stroke count, syllabic intensity, and readability. Changes suggested by the five judges for the other writings were made when the general meaning was not modified and the criteria were not violated. Table V provides a list of each of the twelve revised timed writings and the adequacy and inadequacy of each as checked by the panel of judges. The instructions and check sheet for the re-evaluation of the twelve revised writings are given in Appendix A, pages 146-148. Timed Writing 13-A, which was the only timed writing that was judged inadequate by more than one judge in the second evaluation, was re-written. When resubmitted to the panel of judges, it was judged adequate by all except one of the five judges. The check sheet and instructions for judging revised timed writing 13-A are given in Appendix A, page 149.

Conducting the Experiment. The last step was the actual conducting of the experiment in the five high schools. Originally the experiment was to be conducted in six high schools, but one school was unable to furnish complete data because a new teacher who was transferred to the experimental group did not complete the experiment. Partial findings were made available from this school and will be presented in Chapter IV. The schools were chosen by random selection. Schools within a fifty-mile radius of Tahlequah, Oklahoma, were listed on cards. These cards were

TABLE IV

INITIAL RATING OF FIFTY-FIVE TIMED WRITINGS PRESENTING ECONOMIC CONCEPTS JUDGED BY PANEL MEMBERS

Timed Writing	Number of Panel Members Judging Timed Writing Adequate	Number of Panel Members Judging Timed Writing Inadequate	Timed Writing	Number of Panel Members Judging Timed Writing Adequate	Number of Panel Members Judging Timed Writing Inadequate
1-A	4	1	15-A	4	1
1-B	4	1	15-B	4	1
2-A	4	1	16-A	4	1
2-B	5	0	16-B	4	1
3-A	3	2	17-A	4	1
3-B	4	1	17-B	4	1
4-A	4	1	18-A	4	1
4-B	4	1	18-B	3	2
5-A	5	0	19-A	3	2
5-B	2	3	19-B	3	2
6-A	4	1	20-A	4	1
6-B	5	0	20-B	4	1
7-A	3	2	21-A	3	2
7-B	4	1	21-B	5	0
8-A	5	0	22-A	4	1
8-B	5	0	22-B	2	3
9-A	5	0	23-A	5	0
9-B	4	1	23-B	3	2
10-A	5	0	24-A	5	0
10-B	5	0	24-B	5	0
11-A	4	1	25-A	5	0
11-B	4	1	25-B	4	1
12-A	4	1	26-A	4	1
12-B	5	0	26-B	5	0
13-A	2	3	27-A	5	0
13-B	3	2	27-B	3	2
14-A	5	0	28-A	5	0
14-B	4	1			

TABLE V

RATING OF TWELVE REVISED TIMED WRITINGS PRESENTING ECONOMIC CONCEPTS JUDGED BY PANEL MEMBERS

Timed Writing	Number of Panel Members Judging Timed Writing Adequate	Number of Panel Members Judging Timed Writing Inadequate
3-A	4	1
5-B	5	0
7-A	5	0
13-A*	3	2
13-B	5	0
18-B	4	1
19-A	5	0
19-B	5	0
21-A	5	0
22-B	5	0
23-B	5	0
27-B	5	0

*Resubmitted and judged adequate by 4 out of 5 panel members.

shuffled and the first six schools drawn were asked to participate in the experimental study. The school serving as the pilot school was not entered in the drawing because it was thought that certain students who had been involved in the pilot study the previous year might relate information that would cause the experiment to lose some of its "incidental learning" aspects in that particular school.

After the schools were selected, teachers and administrators were visited in each of the schools at least six weeks prior to the beginning of the actual experiment in January, 1961. Each teacher and administrator visited agreed to cooperate in the study. A follow-up was conducted during the second week in December, 1960, in order to leave testing materials with each of the teachers in the participating schools. At this time each teacher determined the experimental group and control group in his school by a flip of a coin. The teacher designated each beginning typewriting class as either No. 1 or No. 2. If heads came up after the toss of a coin, No. 1 was designated as the experimental group. If tails came up after the toss of a coin, No. 2 was designated as the experimental group. The other group became the control group. The two groups in each school were to be instructed in the same manner except that timed writings presenting economic concepts were to be given in the experimental group while timed writings appearing in the adopted textbook were to be given in the control group.

During the third week in December, 1960, prior to the beginning of the experimental period, the following tests were administered to students in both groups: (a) Otis Mental Ability Test [Gamma Test: Form FM]; (b) Nelson-Denny Reading Test [Form A: For High Schools and Colleges]; and (c) Alft Test of Economic Understandings [Sixth Revision]. The Otis Mental Ability Test and the Nelson-Denny Reading Test provided: (a) data for computing the relationship of mental ability and reading ability with gains, if any, in economic concepts, and (b) data for stratifying the data with respect to mental ability and reading ability. The Alft Test of Economic Understandings was given in order to: (a) obtain reliability data through the use of the Kuder-Richardson Formula; (b) identify the

thirty most-frequently missed questions in Part I from which to provide topics for a booklet of thirty specially prepared timed writings; and (c) establish a basis from which to determine gains, if any, in understandings of economic concepts. Table VI reveals the rank order of items missed on Part I of the Alft Test of Economic Understandings by 357 beginning typewriting students.

During the third week in January, 1961, each school again was visited. At this time the procedures to be followed in conducting the experiment were explained to each teacher. A copy of the Instruction Sheet for Teachers that was given to each teacher is included in Appendix A, page 150. A schedule of timed writings to be administered was provided for each teacher. A copy of the schedule is given in Appendix A, pages 151-152. In addition, booklets containing thirty timed writings relating to the thirty most-frequently missed questions on the Alft Test of Economic Understandings were made available to the teachers for distribution to students in the experimental group in each of the participating schools. These booklets were to be passed to students immediately before the writings each day and taken up immediately after the writings had been typewritten and proofread. The sequence for administering the timed writings in the booklets was provided through drawing suffled cards on which the numbers of the thirty most-frequently missed understandings were listed.

During the fourth week in January, 1961, two five-minute timed writings were administered in order to determine initial typewriting skill. Gross words per minute and total errors were computed for each student from the five-minute timed writing on which he had the higher number of gross words per minute. Copies of the two five-minute timed writings used for this purpose are given in Appendix A, page 153.

TABLE VI

RANK ORDER OF ITEMS MISSED ON PART I OF THE ALFT TEST OF ECONOMIC UNDERSTANDINGS BY 357 BEGINNING TYPEWRITING STUDENTS

Number of Test Item	Number of Timed Writing	Number of Students Missing Item	Number of Test Item	Number of Timed Writing	Number of Students Missing Item
4	2-B	328	1	1-A	193
37	19-A	328	9	5-A	192
23	12-A	318	51	26-A	191
41	21-A	309	6	3-B	187
21	11-A	304	26	13-B	182
45	23-A	299	8	4-B	176
17	9-A	293	55	28-A	174
34	17-B	281	2	1-B	170
28	14-B	257	44	22-B	169
31	16-A	256	15	8-A	164
52	26-B	251	43	22-A	158
10	5-B	250	50	25-B	148
47	24-A	242	32	16-B	146
11	6-A	239	53	27-A	140
36	18-B	237	42	21-B	133
48	24-B	232	39	20-A	129
12	6-B	231	22	11-B	124
33	17-A	226	38	19-B	121
19	10-A	223	25	13-A	112
14	7-B	219	54	27-B	107
18	9-B	219	24	12-B	98
46	23-B	218	30	15-B	90
5	3-A	212	3	2-A	77
29	15-A	208	7	4-A	76
27	14-A	203	20	10-B	75
49	25-A	203	40	20-B	75
13	7-A	197	16	8-B	70
35	18-A	195			

Students in both the experimental and control groups typed two five-minute timed writings during each of forty-five class periods which followed. Specially prepared timed writings provided in the booklet were administered in the experimental group with two minutes allowed for the proofreading of each writing. The control group typed two five-minute writings each period from the textbook used in the particular school. During the forty-five class periods, all other activities in the two groups were planned by the teacher. As the timed writings were repeated three times during the experimental period of forty-five school days, a student in the experimental group could have been absent at the time a particular writing was given and still have had other opportunities to typewrite the same writing.

After the experimental period of forty-five school days, students in both groups were retested on the Alft Test of Economic Understandings. In addition, two five-minute timed writings were administered at the close of the experimental period. Copies of these two five-minute timed writings are given in Appendix A, page 154. All of the five-minute timed writings used in establishing initial and final typewriting skill were similar in nature with a range in syllabic intensity of 1.30 to 1.34 and in standard words of 120 to 122. The data provided by the initial and final writings were used to compute the gain, if any, in typing skill that occurred in each group during the period of the experiment. The scores on the typing tests also provided data for computing the relationship of typing skill with the gain, if any, in economic concepts.

CHAPTER IV

FINDINGS

Answers were sought to the following questions: (1) To what extent can students increase their economic understandings while using timed writings in which certain concepts are obvious? (2) Will students who type specially prepared timed writings presenting economic concepts show growth in typewriting skill comparable to that achieved by students who do not type these writings? (3) What is the correlation of gains in economic understandings with gains in typewriting skill, with reading comprehension, with intelligence quotient, and with initial economic understandings?

In seeking answers to these questions, an investigation was conducted in five randomly selected high schools within a fifty-mile radius of Tahlequah, Oklahoma. Within each of these five schools, one experimental group and one control group were established. In order not to include names of schools participating in the investigation, the five schools were designated as Schools A, B, C, D, and E. A total of 224 students in these five schools were included in the findings. These 224 students represent 83% of the 270 students who were originally included in the experiment conducted in the five schools. The other 46 students were eliminated from the experiment because drop-outs, transfers, and absences made it impossible to secure complete test data from them.

Originally six schools were included in the experimental study. One school was unable to furnish complete data for its students and was

eliminated from the main study for this reason. It was possible, however, to secure from this school data for a seven-week period instead of the full experimental period of nine weeks; and these data were analyzed for whatever value they might have. It should be noted that there was a lapse of eight weeks between the time of typing the specially prepared writings and the time of taking the final economic test and five-minute timed writings. The thirty students in this school's experimental group showed a mean gain of 5.70 economic understandings. Students in the control group of thirty students showed a mean loss of .63 economic understandings. The experimental group had a gross word per minute average gain of 7.33 words as compared with 7.77 words for the control group. The experimental group had a decrease of 6.63 errors on the five-minute timed writings as compared with 1.27 for the control group. The results from this school were not included in the findings that follow as the experimental period and procedure were not comparable to those established and maintained in the other five schools.

Certain Characteristics of the Students. Certain characteristics of the 224 students in beginning typewriting classes in the five high schools are compared in Table VII. The experimental group had a mean age of 16.44 while the control group had a mean age of 16.54. The mean age of students in the two groups was not significantly different at the .05 level of confidence.

Table VII reveals a mean I. Q. score difference of .97 between the experimental group and the control group. The experimental group had a mean I. Q. score of 100.14 and the control group had a mean I. Q. score of 101.11. The difference between groups for I. Q. scores was not significant at the .05 level of confidence.

TABLE VII

COMPARISON OF CERTAIN CHARACTERISTICS OF THE STUDENTS IN TYPEWRITING CLASSES IN FIVE SELECTED HIGH SCHOOLS

Characteristic	Number in Each Group	Groups	
		Experimental	Control
Mean Age	112	16.44	16.54
Mean I. Q. Scores	112	100.14	101.11
Mean Reading Comprehension Grade Level	112	10.65	11.03
Mean School Grade	112	10.84	10.80

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Age:				
Among Schools	4	30.1923	7.5481	
Between Groups	1	.6153	.6153	.45*
Error	4	5.5286	1.3822	
Total	9	36.3362		
I. Q. Scores:				
Among Schools	4	1,131.6640	282.9160	
Between Groups	1	52.0520	52.0520	.28*
Error	4	744.6235	186.1559	
Total	9	1,928.3395		
Reading Grade Level:				
Among Schools	4	99.6128	24.9032	
Between Groups	1	8.1811	8.1811	.97*
Error	4	33.6252	8.4063	
Total	9	141.4191		
School Grade:				
Among Schools	4	13.3277	3.3319	
Between Groups	1	.0714	.0714	.04*
Error	4	7.1774	1.7944	
Total	9	20.5765		

*Not significant at the .05 level of confidence

Data concerning the reading comprehension grade level of students in the experimental group and control group are presented in Table VII. A difference of .38 was found in reading comprehension grade level between the two groups. The mean grade level for the experimental group was 10.65 as compared with 11.03 for the control group. The difference between groups for reading comprehension grade level was not significant at the .05 level of confidence.

A final characteristic presented in Table VII is the mean school grade. Students in the experimental group had a mean grade level of 10.84 as compared with 10.80 for students in the control group. The difference between groups for grade level of students was not significant at the .05 level of confidence.

TABLE VIII

SEX OF STUDENTS IN BEGINNING TYPEWRITING CLASSES IN FIVE SELECTED HIGH SCHOOLS

Group	Number of Male Students	Number of Female Students	Total
Experimental	70	42	112
Control	50	62	112

The number of male and female students in each of the groups is given in Table VIII. Of the 112 students in the experimental group, 70 were male students and 42 were female students. Of the 112 students in the control group, 50 were male students and 62 were female students. Of the 224 students involved in the experiment, 120 were male and 104 were female students.

A comparison of initial economic understandings of students in the control and experimental classes in beginning typewriting in the five high

schools is given in Table IX. First, the groups were compared with respect to initial mean scores on 30 most-frequently missed items on Part I of the Alft Test of Economic Understandings. The mean score in the experimental group was 9.17 as compared with 9.78 in the control group. The difference in these scores was not significant at the .05 level of confidence. Second, a comparison was made between groups on the initial mean scores on all items in the Alft Test of Economic Understandings. The mean score in the experimental group was 30.30 as compared with 30.97 in the control group. The difference in these scores was not significant at the .05 level of confidence.

Table X reveals the initial typewriting skills of students in the experimental and control groups in the five schools. All of the students had completed approximately one semester of beginning typewriting when the initial five-minute typewriting tests were administered. Students in the experimental group were able to type 35.64 mean gross words per minute on five-minute typewriting tests as compared with 35.63 mean gross words in the control group. A comparison of the groups provided an F value of only .0001 which is not significant at the .05 level of confidence. In addition, the difference in group mean errors was not significant at the .05 level of confidence. The experimental group obtained initial mean errors of 16.37 on five-minute typewriting tests as compared with 14.74 in the control group.

Class Schedules of Students. Matching of beginning typewriting students in the experimental and control groups on the basis of class schedule was not attempted. A survey was conducted, however, in order to determine whether beginning typewriting students involved in the experiment were enrolled in regularly scheduled courses in economics and/or courses related

TABLE IX

COMPARISON OF INITIAL ECONOMIC UNDERSTANDINGS OF STUDENTS IN TYPEWRITING CLASSES IN FIVE SELECTED HIGH SCHOOLS

Data Compared	Number in Each Group	Experimental Group	Control Group
Initial Mean Score on 30 Most-Frequently Missed Items on Part I of Alft Test of Economic Understandings	112	9.17	9.78
Initial Mean Score on All Items on Alft Test of Economic Understandings	112	30.30	30.97

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
30 Most-Frequently Missed Items:				
Among Schools	4	91.4698	22.8675	
Between Groups	1	20.6915	20.6915	1.79*
Error	4	46.2563	11.5641	
Total	9	158.4176		
All Items:				
Among Schools	4	316.1176	79.0294	
Between Groups	1	25.1384	25.1384	.45*
Error	4	224.2370	56.0593	
Total	9	565.4930		

*Not significant at the .05 level of confidence

TABLE X

COMPARISON OF INITIAL TYPEWRITING SKILL OF STUDENTS IN TYPEWRITING CLASSES IN FIVE SELECTED HIGH SCHOOLS

Data Compared	Number in Each Group	Experimental Group	Control Group
Mean Gross Words Per Minute on Initial Five-Minute Typewriting Tests	112	35.64	35.63
Mean Errors on Initial Five-Minute Typewriting Tests	112	16.37	14.74

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Gross Words:				
Among Schools	4	1,098.6075	274.6519	
Between Groups	1	.0129	.0129	.0001*
Error	4	598.5680	149.6420	
Total	9	1,697.1884		
Errors:				
Among Schools	4	2,045.8914	511.4729	
Between Groups	1	149.1453	149.1453	.58*
Error	4	1,028.0876	257.0219	
Total	9	3,223.1243		

*Not significant at the .05 level of confidence

TABLE XI

COURSES IN ECONOMICS AND OTHER SUBJECTS WITH POSSIBLE ECONOMIC CONTENT ENROLLED IN BY 224 BEGINNING TYPEWRITING STUDENTS IN THE FIVE SELECTED HIGH SCHOOLS

Schools	Number of Students Enrolled			
	Economics		Other Related Courses	
	First Semester	Second Semester	First Semester	Second Semester
School A				
Experimental Group	2	0	0	0
Control Group	3	0	0	0
School B				
Experimental Group	0	0	7*	7*
Control Group	0	0	0	0
School C				
Experimental Group	0	0	8**	8**
Control Group	0	0	6**	6**
School D				
Experimental Group	0	0	1**	1**
Control Group	0	0	0	0
School E				
Experimental Group	0	0	1*	1*
Control Group	0	0	0	0

*Problems of Democracy

**General Business

to economics. Students were asked to fill in data sheets on which their first and second semester schedules were to be listed.

The results of the survey are presented in Table XI. Only one of the five schools had beginning typewriting students who were enrolled in a formal course in economics. Two students in the experimental group and three students in the control group in this school were enrolled in a course in economics during the first semester of the school year in which the experiment was conducted. Beginning typewriting students were enrolled in certain subjects with titles that seemed to denote possible economic content; namely, Problems of Democracy and General Business. Eight students within the five schools in the experimental group were enrolled in a course entitled Problems of Democracy during the first and second semesters. Also, within the five high schools nine students in the experimental group and six students in the control group were enrolled in a course entitled General Business during the first and second semesters.

TABLE XII

TIME OF MEETING AND LENGTH OF PERIOD FOR BEGINNING TYPEWRITING CLASSES IN FIVE SELECTED HIGH SCHOOLS

School	Experimental Group		Control Group	
	Hour of Day	Number of Minutes	Hour of Day	Number of Minutes
A	8:45	65	9:45	65
B	12:50	55	2:50	55
C	10:55	55	9:55	55
D	9:00	50	12:45	50
E	1:45	60	11:00	60

The time of meeting and length of period for beginning typewriting classes in the five selected high schools are given in Table XII. Although the length of period varied from school to school, there was no variance within schools. The range for beginning typewriting periods was from 55 to 65 minutes. The time of meeting of the groups varied both among and within schools. The experimental and control groups were somewhat balanced in terms of time of meeting. There were three morning and two afternoon classes in each group.

Growth in Economic Understandings. Table XIII presents a comparison of the mean group gains between groups on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings. The mean initial and final scores of students in each of the five schools are given. From these scores the mean gains in economic understandings were computed. All schools in the experimental group showed gains, with Schools A, B, C, D, and E, having mean gains of 5.50, 3.67, 5.27, 2.65, and 3.77, respectively. In the control group, Schools B, C, D, and E had mean gains of .33, 1.27, .15, and 1.12, respectively. School A showed a loss of .35 understandings in the control group.

Mean group scores, gains, and standard deviations on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings are also summarized for the experimental group and the control group in Table XIII. The mean score on the initial test for the experimental group was 9.17 as compared with 9.78 for the control group. The mean score on the final test for the experimental group was 13.32 as compared with 10.32 for the control group. The mean gains of 4.15 understandings for the experimental group and .54 understandings for the control group were computed from the initial and final mean group scores. The

TABLE XIII

COMPARISON OF MEAN GROUP GAINS BETWEEN GROUPS ON 30 MOST-FREQUENTLY MISSED ITEMS IN PART I OF THE ALFT TEST OF ECONOMIC UNDERSTANDINGS

School	Number in Each Group	Experimental Group Initial Score	Experimental Group Final Score	Experimental Group Mean Gain	Control Group Initial Score	Control Group Final Score	Control Group Mean Gain
A	20	10.10	15.60	5.50	10.00	9.65	.35*
B	24	10.42	14.09	3.67	10.21	10.54	.33
C	22	9.27	14.54	5.27	9.14	10.41	1.27
D	20	8.50	11.15	2.65	10.15	10.30	.15
E	26	7.73	11.50	3.77	9.46	10.58	1.12

Group	Number of Students	Initial Test S.D.	Initial Test Mean	Final Test S.D.	Final Test Mean	Gain S.D.	Gain Mean
Experimental	112	3.45	9.17	4.36	13.32	3.43	4.15
Control	112	3.17	9.78	3.16	10.32	2.69	.54

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Among Schools	4	81.7153	20.4288	
Between Groups	1	728.8593	728.8593	37.85**
Error	4	77.0254	19.2564	
Total	9	887.6000		

*Loss

**Significant at the .01 level of confidence

difference between groups was highly significant at the .01 level of confidence.

Table XIV presents a comparison of mean group gains between groups on the Alft Test of Economic Understandings. This comparison is made for the complete test which consists of sixty-five questions. Mean gains in economic understandings on the sixty-five question test were computed from initial and final scores as given in Table XIV. All schools in the experimental group showed gains, with Schools A, B, C, D, and E, having mean gains of 6.70, 3.13, 4.72, 3.15, and 2.35, respectively. In the control group, Schools B, C, and E had mean gains of 1.96, 3.09, and 3.31, respectively. Schools A and D showed a loss of 1.55 and .45, respectively.

Mean group scores, gains, and standard deviations on the sixty-five question economic test are also summarized for the experimental group and control group in Table XIV. The mean score on the initial test for the experimental group was 30.30 as compared with 30.97 for the control group. The mean score on the final test for the experimental group was 34.21 as compared with 32.41 for the control group. A mean gain of 3.91 understandings for the experimental group as compared with a mean gain of 1.44 understandings for the control group was computed from the initial and final mean group scores. The difference between groups was not significant at the .05 level of confidence. The nature of the different tasks to be performed in the last ten items might have influenced the gains on the complete test of sixty-five questions. The last ten items on the test involved vocabulary and reading comprehension and reading a graph. These ten items were excluded in selecting the 30 most-frequently missed economic understandings.

TABLE XIV

COMPARISON OF MEAN GROUP GAINS BETWEEN GROUPS ON ALFT TEST OF ECONOMIC UNDERSTANDINGS

School	Number in Each Group	Experimental Group Initial Score	Experimental Group Final Score	Experimental Group Mean Gain	Control Group Initial Score	Control Group Final Score	Control Group Mean Gain
A	20	31.80	38.50	6.70	32.30	30.75	1.55*
B	24	33.04	36.17	3.13	30.50	32.46	1.96
C	22	29.14	33.86	4.72	29.91	33.00	3.09
D	20	29.15	32.30	3.15	32.90	32.45	.45*
E	26	28.50	30.85	2.35	29.81	33.12	3.31

Group	Number of Students	Initial Test S.D.	Initial Test Mean	Final Test S.D.	Final Test Mean	Gain S.D.	Gain Mean
Experimental	112	7.92	30.30	8.88	34.21	5.61	3.91
Control	112	6.77	30.97	7.47	32.41	5.34	1.44

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Among Schools	4	139.2481	34.8120	
Between Groups	1	340.0222	340.0222	2.58**
Error	4	527.8363	131.9591	
Total	9	1,007.1066		

*Loss

**Not significant at the .05 level of confidence

A comparison of mean group gains in economic understandings between groups of students with I. Q. scores of 90 through 110 is given in Table XV. The range in I. Q. scores of 90 through 110 represents approximately 10 points on either side of the mean I. Q. of 100.62 for the two groups. As an average I. Q. is generally thought to be within a range of 90 through 110, students with scores within this range were included in this group stratification. After students with I. Q. scores of 90 through 110 were stratified in the experimental and control groups, each group consisted of 68 students.

Table XV provides a comparison of the gains between groups on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings and between groups on all items included in the Alft Test of Economic Understandings. The experimental group had a gain of 4.13 as compared with a gain of .42 in the control group on the 30 most-frequently missed items on Part I of the Alft Test of Economic Understandings. The experimental group had a gain of 3.56 as compared with a gain of 1.65 in the control group on all sixty-five items appearing on the Alft Test of Economic Understandings. A significant difference at the .01 level of confidence was found between groups in comparing gains on the 30 most-frequently missed items. The difference in gains between groups on all items was significant at the .05 level of confidence.

A comparison of mean group gains in economic understandings between groups of students with reading comprehension scores of tenth through twelfth grade level represents the three school grade levels on which beginning typewriting was being taken by students involved in the experiment. Therefore, it is thought that students of comparable grade and reading level have been included in this group stratification. After

TABLE XV

COMPARISON OF MEAN GROUP GAINS IN ECONOMIC UNDERSTANDINGS BETWEEN GROUPS OF STUDENTS WITH I. Q. SCORES OF 90 THROUGH 110

Data Compared	Number in Each Group	Experimental Group	Control Group
Gain on 30 Most-Frequently Missed Items on Part I of Alft Test of Economic Understandings	68	4.13	.42
Gain on All Items on Alft Test of Economic Understandings	68	3.56	1.65

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
30 Most-Frequently Missed Items:				
Among Schools	4	68.3448	17.0862	
Between Groups	1	467.3860	467.3860	28.50*
Error	4	65.6031	16.4008	
Total	9	601.3339		
All Items:				
Among Schools	4	108.5555	27.1389	
Between Groups	1	398.9546	398.9546	11.45**
Error	4	139.3506	34.8377	
Total	9	646.8607		

*Significant at the .01 level of confidence

**Significant at the .05 level of confidence

students with reading comprehension grade level of tenth through twelfth grades were stratified in the experimental and control groups, each group consisted of 37 students.

Table XVI provides a comparison of the gains between groups on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings and between groups on all items included in the Alft Test of Economic Understandings. The experimental group had a gain of 4.46 as compared with a gain of .54 in the control group on the 30 most-frequently missed items on Part I of the Alft Test of Economic Understandings. The experimental group had a gain of 4.51 as compared with a gain of 1.62 in the control group on all sixty-five items appearing on the Alft Test of Economic Understandings. A significant difference at the .01 level of confidence was found between groups in comparing gains on the 30 most-frequently missed items. The difference in gains between groups on all items was not significant at the .05 level of confidence.

Growth in Typewriting Skill. Table XVII presents a comparison of mean group gains in gross words per minute between groups on five-minute typewriting tests. In this table the mean initial and final gross words per minute of students in each of the five high schools on the five-minute typewriting tests are given. The mean gains in gross words per minute were computed from the difference in results of these initial and final tests. In the experimental group, Schools A, B, C, D, and E had mean gains in gross words of 10.60, 5.38, 3.68, 4.90, and 6.54, respectively. In the control group, Schools A, B, C, D, and E had mean gains in gross words per minute of 6.50, 5.50, 4.82, 12.05, and 7.69, respectively.

Mean group gross words, gains, and standard deviations on the five-minute typewriting tests are also summarized for the experimental group

TABLE XVI

COMPARISON OF MEAN GROUP GAINS IN ECONOMIC UNDERSTANDINGS BETWEEN GROUPS OF STUDENTS WITH READING COMPREHENSION SCORES OF TENTH THROUGH TWELFTH GRADE LEVEL

Data Compared	Number in Each Group	Experimental Group	Control Group
Gain on 30 Most-Frequently Missed Items on Part I of Alft Test of Economic Understandings	37	4.46	.54
Gain on All Items on Alft Test of Economic Understandings	37	4.51	1.62

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
30 Most-Frequently Missed Items:				
Among Schools	4	139.3786	34.8447	
Between Groups	1	284.0860	284.0860	29.22*
Error	4	38.8926	9.7232	
Total	9	462.3572		
All Items:				
Among Schools	4	170.7206	42.6802	
Between Groups	1	154.7451	154.7451	1.75**
Error	4	354.3120	88.5780	
Total	9	679.7777		

*Significant at the .01 level of confidence

**Not significant at the .05 level of confidence

TABLE XVII

COMPARISON OF MEAN GROUP GAINS IN GROSS WORDS PER MINUTE BETWEEN GROUPS ON FIVE-MINUTE TYPEWRITING TESTS

School	Number in Each Group	Experimental Group Initial Score	Experimental Group Final Score	Experimental Group Mean Gain	Control Group Initial Score	Control Group Final Score	Control Group Mean Gain
A	20	34.30	44.90	10.60	34.85	41.35	6.50
B	24	37.29	42.67	5.38	36.42	41.92	5.50
C	22	37.77	41.45	3.68	40.91	45.73	4.82
D	20	32.50	37.40	4.90	36.15	48.20	12.05
E	26	35.77	42.31	6.54	30.62	38.31	7.69

Group	Number of Students	Initial Test S.D.	Initial Test Mean	Final Test S.D.	Final Test Mean	Gain S.D.	Gain Mean
Experimental	112	7.75	35.64	8.22	41.80	4.66	6.16
Control	112	8.10	35.63	8.26	42.85	5.59	7.22

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Among Schools	4	612.1826	153.0457	
Between Groups	1	63.0701	63.0701	.39*
Error	4	647.9158	161.9790	
Total	9	1,323.1685		

*Not significant at the .05 level of confidence

and control group in Table XVII. The mean gross words on the initial test for the experimental group was 35.64 as compared with 35.63 for the control group. The mean gross words on the final test for the experimental group was 41.80 as compared with 42.85 for the control group. A mean gain of 6.16 gross words for the experimental group as compared with a mean gain of 7.22 gross words for the control group was computed from the initial and final scores on the five-minute typewriting tests. The difference between groups was not significant at the .05 level of confidence.

Table XVIII presents a comparison of mean group decreases in errors between groups on five-minute typewriting tests. In this table the mean initial and final errors of students in each of the five schools on the five-minute typewriting tests are given. The mean decreases in errors were computed from the difference in results of these initial and final tests. In the experimental group, Schools B, C, and E had decreases in errors of 7.71, 1.95, and .54, respectively. Schools A and D showed increases in errors of 7.90 and 1.90, respectively. In the control group, Schools B and C had mean decreases in errors of 6.00 and 1.45, respectively. Schools A, D, and E showed increases in errors of .80, 4.00, and 4.00, respectively.

Mean group errors, decreases, and standard deviations on the five-minute typewriting tests are also summarized for the experimental group and control group in Table XVIII. The mean errors on the initial test for the experimental group were 16.37 as compared with 14.74 for the control group. The mean errors on the final test for the experimental group were 15.96 as compared with 14.96 for the control group. A mean decrease of .41 errors for the experimental group as compared with a

TABLE XVIII

COMPARISON OF MEAN GROUP DECREASES IN ERRORS BETWEEN GROUPS ON FIVE-MINUTE TYPEWRITING TESTS

School	Number in Each Group	Experimental Group			Control Group		
		Initial Errors	Final Errors	Mean Decrease	Initial Errors	Final Errors	Mean Decrease
A	20	15.55	23.45	7.90*	22.25	23.05	.80*
B	24	20.25	12.54	7.71	15.25	9.25	6.00
C	22	16.86	14.91	1.95	11.00	9.55	1.45
D	20	18.05	19.95	1.90*	16.75	20.75	4.00*
E	26	11.73	11.19	.54	10.12	14.12	4.00*

Group	Number of Students	Initial Test		Final Test		Decrease	
		S.D.	Mean	S.D.	Mean	S.D.	Mean
Experimental	112	11.16	16.37	12.63	15.96	13.20	.41
Control	112	9.45	14.74	10.15	14.96	11.13	.22*

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Among Schools	4	3,641.2228	910.3057	
Between Groups	1	21.9250	21.9250	.11**
Error	4	832.0650	208.0163	
Total	9	4,495.2128		

*Increase

**Not significant at the .05 level of confidence

mean increase of .22 errors for the control group was computed from the initial and final scores on the five-minute typewriting tests. The difference between groups was not significant at the .05 level of confidence.

As revealed in Tables XVII and XVIII, typewriting skill varied among schools. As the teaching methods probably differed from class to class, this variation was expected. One teacher may have been emphasizing accuracy in a certain class while another teacher may have been emphasizing speed.

Table XIX provides a comparison of mean group gains in typewriting skill between groups of students with I. Q. scores of 90 through 110. Sixty-eight students were included in each of the groups. The experimental group and control group were compared on the basis of gains in gross words per minute and decreases in errors on five-minute typewriting tests. The experimental group had a gain in gross words per minute of 6.37 as compared with a gain in gross words of 7.04 in the control group. The experimental group had a decrease in errors of 1.98 as compared with an increase in errors of .31 in the control group. Neither of the obtained F's for the gross words or errors was significant at the .05 level of confidence.

Table XX provides a comparison of mean group gains in typewriting skill between groups of students with reading comprehension scores of tenth through twelfth grade level. Thirty-seven students were included in each of the groups. The experimental group and control group were compared on the basis of gain in gross words per minute and decrease in errors on five-minute typewriting tests. The experimental group had a gain in gross words per minute of 6.97 as compared with a gain in gross words of 8.19 in the control group. The experimental group had an increase

TABLE XIX

COMPARISON OF MEAN GROUP GAINS IN TYPEWRITING SKILL BETWEEN GROUPS OF STUDENTS WITH I. Q. SCORES OF 90 THROUGH 110

Data Compared	Number in Each Group	Experimental Group	Control Group
Gain in Gross Words Per Minute on Five-Minute Typewriting Tests	68	6.37	7.04
Decrease in Errors on Five-Minute Typewriting Tests	68	1.98	.31*

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Gross Words:				
Among Schools	4	405.5551	101.3888	
Between Groups	1	15.6130	15.6130	.22**
Error	4	289.3875	72.3469	
Total	9	710.5556		
Errors:				
Among Schools	4	1,882.3197	470.5799	
Between Groups	1	178.0934	178.0934	.99**
Error	4	720.6962	180.1741	
Total	9	2,781.1093		

*Increase

**Not significant at the .05 level of confidence

TABLE XX

COMPARISON OF MEAN GROUP GAINS IN TYPEWRITING SKILL BETWEEN GROUPS OF STUDENTS WITH READING COMPREHENSION SCORES OF TENTH THROUGH TWELFTH GRADE LEVEL

Data Compared	Number in Each Group	Experimental Group	Control Group
Gain in Gross Words Per Minute on Five-Minute Typewriting Tests	37	6.97	8.19
Decrease in Errors on Five-Minute Typewriting Tests	37	.95*	1.59

Source of Variation	Degrees of Freedom	Sum of Squares	Variance Estimate	Obtained F
Gross Words:				
Among Schools	4	443.8730	110.9683	
Between Groups	1	27.4013	27.4013	.27**
Error	4	402.2930	100.5733	
Total	9	873.5673		
Errors:				
Among Schools	4	503.3278	125.8320	
Between Groups	1	119.4562	119.4562	.61**
Error	4	787.0024	196.7506	
Total	9	1,409.7864		

*Increase

**Not significant at the .05 level of confidence

in errors of .95 as compared with a decrease in errors of 1.59 in the control group. Neither of the obtained F's for the gross words or errors was significant at the .05 level of confidence.

Relationships of Gains. Correlations of gains of the 30 most-frequently missed understandings with typewriting skill are given in Table XXI. The correlation coefficients for all of the factors correlated were low and some were negative. Gains in economic understandings and gains in gross words per minute in the experimental group were correlated at .08 while in the control group there was a negative correlation of -.07. Gains in economic understandings and decreases in errors on five-minute typewriting tests were negatively correlated in both groups with a correlation coefficient of -.08 in the experimental group and -.10 in the control group.

The correlation coefficients between gains in economic understandings and initial gross words per minute as measured by a five-minute typewriting test were low. The correlation coefficient in the experimental group was .06 as compared with .07 in the control group. Gains in economic understandings and initial errors on a five-minute typewriting test were correlated in the experimental group with a correlation coefficient of .06. In the control group there was a negative correlation of -.06.

The correlation coefficients between gains in economic understandings and final gross words per minute as measured by a five-minute typewriting test were low. The correlation coefficient in the experimental group was .10 as compared with .03 in the control group. Gains in economic understandings and final errors on a five-minute typewriting test were correlated with a correlation coefficient of .13 in the

TABLE XXI

CORRELATIONS OF GAINS ON 30 MOST-FREQUENTLY MISSED ECONOMIC UNDERSTANDINGS WITH TYPEWRITING SKILL

Groups Correlated	Number of Students	Factors Correlated	Correlation Coefficient
Experimental	112	Gains in Economic Understandings with Gains in	.08
Control	112	Gross Words per Minute	.07*
Experimental	112	Gains in Economic Understandings with Decrease in	.08*
Control	112	Errors per Five Minutes	.10*
Experimental	112	Gains in Economic Understandings with Initial	.06
Control	112	Gross Words per Minute	.07
Experimental	112	Gains in Economic Understandings with Initial	.06
Control	112	Errors per Five Minutes	.06*
Experimental	112	Gains in Economic Understandings with Final	.10
Control	112	Gross Words per Minute	.03
Experimental	112	Gains in Economic Understandings with Final	.13
Control	112	Errors per Five Minutes	.05

*Negative

experimental group as compared with .05 in the control group. This .13 was the only correlation coefficient above .10 in comparing gains in economic understandings with typewriting skill.

The correlation coefficients of gains on the 30 most-frequently missed economic understandings with reading comprehension grade level

are given in Table XXII. The coefficients were low in both groups. The experimental group showed a correlation coefficient of .11 as compared with .02 in the control group.

TABLE XXII

CORRELATIONS OF GAINS ON 30 MOST-FREQUENTLY MISSED ECONOMIC UNDERSTANDINGS WITH READING COMPREHENSION GRADE LEVEL

Groups	Number of Students	Correlation Coefficient
Experimental	112	.11
Control	112	.02

The correlation coefficients of gains on the 30 most-frequently missed economic understandings with I. Q. scores are given in Table XXIII. The coefficients were low in both groups. The experimental group showed a correlation coefficient of .01 as compared with .06 in the control group.

TABLE XXIII

CORRELATIONS OF GAINS ON 30 MOST-FREQUENTLY MISSED ECONOMIC UNDERSTANDINGS WITH I. Q. SCORES

Groups	Number of Students	Correlation Coefficient
Experimental	112	.01
Control	112	.06

The correlation coefficients of gains on 30 most-frequently missed economic understandings with initial economic understandings are given

in Table XXIV. The coefficients were negative in each group, the experimental group having a correlation coefficient of -.20 as compared with -.44 for the control group. The negative correlation coefficients might be explained in part by the probability that greater gains were possible for students who had a limited knowledge of the 30 most-frequently missed concepts. For instance, a student with an initial knowledge of 20 understandings would have an opportunity of gaining a maximum of 10 understandings. A student with an initial knowledge of 5 understandings would have an opportunity of gaining a maximum of 25 understandings.

TABLE XXIV

CORRELATIONS OF GAINS ON 30 MOST-FREQUENTLY MISSED ECONOMIC UNDERSTANDINGS WITH INITIAL ECONOMIC UNDERSTANDINGS

Groups	Number of Students	Correlation Coefficient
Experimental	112	.20*
Control	112	.44*

*Negative

Reliability of Economic Understandings Test. The reliability of the Alft Test of Economic Understandings was estimated using test data provided from an initial testing of 357 beginning typewriting students in six randomly selected high schools within a fifty-mile radius of Tahlequah, Oklahoma. The following formula known as the Kuder-Richardson Formula 20[1] was used in calculating the reliability of the test:

$$r_{11} = \frac{n}{n-1} \cdot \frac{s_t^2 - \Sigma pq}{s_t^2}$$

[1]Thorndike and Hagen, p. 131.

In this formula: r_{11} is the estimate of reliability; n is the number of items in the test; s_t is the standard deviation of the test; Σ means "take the sum of" and covers the n items; p is the per cent passing a particular item; and q is the per cent failing the same item.

Appendix B, page 157 provides the computation of the formula using machine scored data provided by the Bureau of Tests and Measurements of Oklahoma State University, Stillwater, Oklahoma. The results of the formula computation provided a reliability coefficient of .77 for the Alft Test of Economic Understandings administered in the six high schools.

One of the six schools was not included in the findings for reasons given in Chapter III. As p and q values were not originally secured for the five schools separately, the Kuder-Richardson Formula 21[2], which does not require these values, was used in calculating the reliability of the test for the five participating schools completing the experiment. Formula 21 yields a reasonable close approximation of Formula 20 with the additional symbol M_t representing the mean score of the group. The Kuder-Richardson Formula 21 is calculated as follows:

$$r_{11} = \frac{n}{n-1}\left(1 - \frac{M_t\left(1 - \frac{M_t}{n}\right)}{s_t^2}\right)$$

Appendix B, page 158 provides the computation of the formula using machine scored data furnished by the Bureau of Tests and Measurements of Oklahoma State University, Stillwater, Oklahoma. The results of the formula computation provided a reliability coefficient of .72 for the Alft Test of Economic Understandings administered in the five high schools.

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[2] Ibid.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem of the investigation was to test the following hypothesis: When students type from timed writings which present economic concepts, there will be a significant increase in economic understandings. More specifically, the problem was analyzed through seeking answers to the following questions: (1) Will students increase their economic understandings by typing and proofreading specially prepared timed writings presenting concepts which are frequently missed on an economic test? (2) Will students who type specially prepared timed writings presenting economic concepts show an increase in gross words comparable to that achieved by students who type timed writings from an adopted typewriting textbook? (3) Will students who type specially prepared timed writings presenting economic concepts show a decrease in errors comparable to that achieved by students who type timed writings from an adopted typewriting textbook? (4) What is the relationship of gains, if any, in economic understandings with gains, if any, in (a) typewriting speed, (b) typewriting accuracy, (c) reading comprehension grade level, (d) intelligence quotient, and (e) initial economic understandings.

In order to test the hypothesis an investigation was conducted in five high schools within a fifty-mile radius of Tahlequah, Oklahoma. A total of 224 students were included in the study within these five high schools. An experimental group and a control group were established in beginning typewriting classes within each of the schools. During daily

class sessions for a nine-week period, students in experimental groups typed two five-minute timed writings presenting economic concepts. In control groups, students typed two five-minute timed writings from the adopted textbook used in the particular school. Other than the time devoted to typewriting and proofreading timed writings, the schedule of activities in each typewriting class in the five schools was arranged by the teacher in charge.

Summary

To determine gains, if any, in economic understandings and typewriting skill, initial and final tests were administered to beginning typewriting students within each of the five high schools. As a result of the investigation, the following findings are summarized.

1. Students in the experimental group showed a mean gain of 4.15 understandings on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings. In the control group, students showed a mean gain of .54 understandings.

2. Students in the experimental group with I. Q. scores of 90 through 110 showed a mean gain of 4.13 understandings on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings. In the control group, students with comparable I. Q. scores showed a mean gain of .42 understandings.

3. Students in the experimental group with reading comprehension levels of tenth through twelfth grade showed a mean gain of 4.46 understandings on the 30 most-frequently missed items in Part I of the Alft Test of Economic Understandings. In the control group, students with comparable reading comprehension grade levels showed a mean gain of .54

understandings.

4. Students in the experimental group showed a mean gain of 3.91 understandings on the sixty-five items appearing in the Alft Test of Economic Understandings. In the control group, students showed a mean gain of 1.44 understandings.

5. Students in the experimental group with I. Q. scores of 90 through 110 showed a mean gain of 3.56 understandings on the sixty-five items appearing in the Alft Test of Economic Understandings. In the control group, students showed a mean gain of 1.65 understandings.

6. Students in the experimental group with reading comprehension grade levels of tenth through twelfth grade showed a mean gain of 4.51 understandings on the sixty-five items appearing in the Alft Test of Economic Understandings. In the control group, students with comparable reading comprehension grade levels showed a mean gain of 1.62 understandings.

7. Students in the experimental group showed mean gains of 6.16 gross words per minute on five-minute typewriting tests as compared with mean gains of 7.22 gross words per minute in the control group.

8. Students in the experimental group with I. Q. scores of 90 through 110 showed mean gains of 6.37 gross words per minute on five-minute typewriting tests. In the control group, students with comparable I. Q. scores showed a mean gain of 7.04 gross words per minute.

9. Students in the experimental group with reading comprehension levels of tenth through twelfth grade showed a mean gain of 6.97 gross words per minute on five-minute typewriting tests. In the control group, students with comparable reading comprehension grade levels showed a mean gain of 8.19 gross words per minute.

10. Students in the experimental group showed a mean decrease of

.41 errors on five-minute typewriting tests as compared with a mean increase of .22 errors in the control group.

11. Students in the experimental group with I. Q. scores of 90 through 110 showed a mean decrease of 1.98 errors on five-minute typewriting tests. In the control group, students with comparable I. Q. scores showed a mean increase of .31 errors.

12. Students in the experimental group with reading comprehension levels of tenth through twelfth grade showed a mean increase of .95 errors on five-minute typewriting tests. In the control group, students with comparable reading comprehension grade levels showed a mean decrease of 1.59 errors.

13. All of the correlation coefficients establishing the relationship of gains on the 30 most-frequently missed economic understandings with factors involving typewriting skill were low. As measured on five-minute typewriting tests, the experimental group had slightly higher correlation coefficients than the control group when gains in economic understandings were compared with (a) gains in gross words per minute, (b) decrease in errors, (c) initial errors, (d) final gross words per minute, and (e) final errors. As measured on five-minute typewriting tests, the control group had a slightly higher correlation coefficient than the experimental group when gains in economic understandings were compared with initial gross words per minute. The range of correlation coefficients between gains in economic understandings and factors involving typewriting skill was small in both groups, with the highest positive correlation being .13 and the highest negative correlation being -.10.

14. The correlation of gains in economic understandings with reading comprehension grade level was very low with a correlation coefficient of

.11 in the experimental group and .02 in the control group.

15. The correlation of gains in economic understandings with I. Q. scores was very low with a correlation coefficient of .01 in the experimental group and .06 in the control group.

16. The largest difference between groups in correlation coefficients was the result of correlating gains in economic understandings with initial economic understandings. The experimental group had a negative correlation coefficient of -.20 as compared with a negative correlation coefficient of -.44 in the control group.

Conclusions

As a result of the experimental study conducted in the five selected high schools, certain conclusions have been evolved. The scope and limitations of the present investigation were recognized in drawing these conclusions.

1. The experimental group had the greater mean group gain on the 30 most-frequently missed items on Part I of the Alft Test of Economic Understandings. The difference in gains between groups was highly significant at the .01 level of confidence. In comparing the difference in mean group gains in economic understandings for students with I. Q. scores of 90 through 110, the difference between groups was highly significant at the .01 level of confidence. The same level of confidence was found for the difference in gains between groups for students with reading comprehension levels of tenth through twelfth grade. The conclusion is that students can increase their economic understandings by typing specially prepared timed writings presenting economic concepts.

2. The experimental group had the greater mean group gain in gross

words per minute as measured on five-minute typewriting tests. As the .05 level of confidence was not reached, the difference in gains between groups was not considered significant. In comparing mean group gains in gross words per minute between groups for students with I. Q. scores of 90 through 110, the .05 level of confidence was not reached. Neither was the .05 level of confidence reached in comparing mean group gains in gross words per minute between groups for students with reading comprehension of tenth through twelfth grade. The conclusion is that students who type specially prepared timed writings presenting economic concepts will show growth in typewriting speed comparable to that achieved by students who type timed writings from typewriting textbooks.

3. The experimental group had the greater mean group decrease in errors as measured on five-minute typewriting tests. As the .05 level of confidence was not reached, the difference in decreases between groups was not considered significant. In comparing mean group decreases in errors between groups for students with I. Q. scores of 90 through 110, the .05 level of confidence was not reached. Neither was the .05 level of confidence reached in comparing mean group decreases in errors between groups for students with reading comprehension of tenth through twelfth grade. The conclusion is that students who type specially prepared timed writings presenting economic concepts will show growth in typewriting accuracy comparable to that achieved by students who type timed writings from typewriting textbooks.

4. Correlation coefficients of gains in economic understandings with gains in gross words per minute and decrease in errors were very close to zero in both the experimental group and control group. Neither were gains in economic understandings highly correlated with initial or

final typewriting speed and accuracy in either group. The conclusion is that gains in economic understandings are almost entirely independent of factors involving typewriting skill.

5. Correlation coefficients between gains in economic understandings and intelligence quotient were very close to zero in both the experimental group and the control group. In addition, correlation coefficients were low between gains in economic understandings and reading comprehension grade level. The conclusion is that gains in economic understandings are almost entirely independent of I. Q. scores and reading comprehension grade levels.

6. Correlation coefficients obtained in comparing gains in economic understandings with initial economic understandings were of a negative nature. The probability that greater gains were possible for students with limited initial economic understanding might at least in part explain the negative correlation coefficients. This probability might have influenced the low correlation coefficients when gains in economic understandings were compared with typewriting skill, intelligence quotient, and reading comprehension grade level.

Recommendations

In the light of the conclusions drawn from the findings of the investigation, certain recommendations are given.

1. Typewriting teachers should assume responsibility for increasing a student's knowledge of economic concepts through appropriate ways and means that will not impede the development of typewriting skill. In order that general education opportunities of high school students may be increased, typewriting teachers should provide in typewriting classes

certain materials which cut across subject lines. In addition, contextual materials related to specific subjects of major interest to students should be incorporated in the materials to be practiced during classroom periods.

2. Publishers of typewriting materials should make an effort to incorporate in their publications certain contextual materials in order to provide more than an opportunity for increasing typewriting skill. These contextual materials should be tested in controlled experiments in order to determine the extent of their effectiveness.

3. Research workers should conduct studies similar to the present investigation in order to assist in determining the reliability of the findings. In conducting similar investigations, a comparison might be made between groups of students who know the purpose of the study and groups who are not aware of the purpose. Studies integrating subject areas other than economics should be undertaken to determine the feasibility of integrating such areas in beginning and advanced typewriting classes through specially organized and prepared materials. Studies in which economics is integrated in other business subjects such as shorthand and bookkeeping should also be conducted.

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1-A

More Income Through Increased Production

Most workmen in the U. S. receive higher incomes than do workers 65
in other countries. A main reason for this is the production rate of 134
the U. S. worker due not only to his training but also the machines 201
with which he works. With the making of more goods per hour by U. S. 270
workmen, more goods are made to be sold. This means more income for 338
the U. S. worker. In doing this, U. S. workers do not work longer 404
hours, nor depend on a higher protective tariff than foreign workers. 473
Neither are workers in the U. S. the only ones who are members of 538
labor unions for such unions are found in other countries. 596

1-B

An Illustration of an Economic Problem

How to decide which one of a number of possible goods to make 62
with a punch press is a good example of an economic problem. Pre- 128
paring a blueprint for such a press is not a good example of such a 195
problem. Neither is the case of installing the press a good example. 264
Nor does deciding how to train a worker in the use of a punch press 331
represent an important problem of such a nature. Instead, how to de- 400
cide which one of a group of certain goods or products to make with 467
the punch press is a good example of an economic problem. 524

2-A

Conservation of Natural Resources to Eliminate Waste

Conservation of natural resources can be said to be the use of 63
them without waste. To stop a person from putting resources to use 130
is not always the thing to do. Nor can all goods be made without the 199
use of such resources. For instance, think of the many things in your 269
own home which are made of wood. Also, to provide these resources for 339
the use of all through ownership by the government does not mean that 408
conservation has taken place at all times. The use of natural re- 474
sources without waste is the best way of conserving such resources. 541

2-B

Amount of Goods and Services -- Less than the People Want

The amount of goods and services produced is less than the people 66
want. This means that all the wants of man cannot be satisfied even 134
though a large amount of goods and services is found in the U. S. 199
Even though man has been able to resist certain forces of nature, the 268
quantity of goods and services has been limited. Man wants more and 336
more goods and services to satisfy his wants. Certain ones of these 404
goods and services which man wants are scarce. Thus, the amount is 471
not great enough to satisfy all of his wants. 516

3-A

The Holding Company -- A Means of Controlling Other Corporations

A form of business combination in which one company has acquired 65
all or a majority of the stock of several firms is called a holding 132
company. A holding company holds the voting stock of other firms. 198
For example, the U. S. Steel Company would be a holding company if it 267
would buy all or more than half of the stock of a number of firms. 333
This means that U. S. Steel would be able to control certain firms by 402
holding all or more than half of the stock. Thus, a holding company 470
is one which combines with other firms and holds more than half of 536
their stock. 548

3-B

Increased Speed of Operation Through Labor Specialization

Among the gains of labor specialization is the growth in speed 63
of operation. This is true in the auto industry. One person does 129
only one thing to a car and this tends to increase the speed at which 198
the cars are made. This type of work would not give the auto worker a 268
great feeling of freedom or self-reliance. Much of the speed of work 337
depends on what others do. Growth in pride of workmanship on the part 407
of the worker would not be found to a large extent. The worker would 476
find it hard to adjust to other jobs. Thus, speed of operation is a 544
gain of labor specialization. 578

4-A

Economic Functions of the National Government

The national or U. S. government is limited as to the kind of 62
functions it performs. It does not, for instance, limit the price 128
which can be charged by a manufacturer or maker of a washing machine 196
for his product. It regulates the railroad and truck rates for the 263
one hauling the goods. Also, it supports the prices of certain farm 331
goods. The government of the U. S. enforces pure food and meat in- 398
spection laws, too. Even with these and other functions to perform, 466
the U. S. government does not carry on the function of limiting a 531
price of a good made by most firms except in time of war. 588

4-B

Wage Earners and Salaried Workers -- Number One in National Income

Almost all of the people in the U. S. work for wages or salaries 65
so the greatest share of our national income is received by wage earn- 135
ers and salaried workers. The share of national income is larger for 204
the group of wage earners and salaried workers than for the group who 273
owns stock in corporations. The share is not as large for the group 341
of people who receive payments of interest and rent. Thus, wage earn- 411
ers and salaried workers as a group receive the biggest part of the 478
national income in the U. S. as it is by far the largest group. 541

5-A

The Decline of National Income During a Depression

National income tends to drop when a time of general business de- 66
pression is taking place. During such a time the price of things goes 136
down and business failures take place at a fast rate. Jobs are lost 204
at a fast rate during such a time, too. This is not true in a time of 274
prosperity for the price of things goes up, business failures slow 340
down, and a move to full employment takes place. During such a time 408
national income tends to go up, too. Thus, such income tends to go up 478
during a time of general business prosperity while it tends to go down 548
during a time of general business depression. 593

5-B

Farming -- A Great Number of Competitors

Although competitors in the economy can be found in more than a 64
few fields of economic activity in the U. S., the farmer has more com- 134
petitors or rivals than is found in most other fields. For instance, 203
the field of farming is one of the fields which ranks above the auto 271
industry in the number of rivals. This can be found to be the case 338
when the number of rivals in the field of farming is compared with the 408
number in either the field of publishing or public utilities. Of 473
these and most other fields found in the U. S., the farm has the 535
greatest number of rivals. 561

6-A

Increased Prices Through a Protective Tariff

A protective tariff is a tax on goods brought from foreign countries to the U. S. It tends to raise the price paid for goods by the U. S. consumer. When the U. S. has a high tariff, the home producer of goods has his market protected. Price competition from the foreign maker of goods is thus restricted. This tends to make the price go up for the one who buys in the U. S. A protective tariff discourages international specialization of labor. Foreign trade is discouraged by the high tariff charge which makes the price go up for the buyer in the U. S.

65 134 202 272 342 408 476 546 555

6-B

The Purpose of Workmen's Compensation Laws

The purpose of workmen's compensation laws is to pay workers for losses suffered because of injuries on the job. The aim is not to make wages go up if they do not keep up with rising costs of living. Nor do such laws provide workers with funds during periods when employment is low caused by a recession. These laws which are set up for this aim are called unemployment compensation laws. Thus, these laws should not be confused with workmen's compensation laws which provide for payments to workers for losses suffered when they are hurt on the job.

65 131 199 266 333 401 467 537 548

7-A

A Nonrestricted Monopolist Can Secure the Greatest Net Profit

A monopolist has full control of the supply of a good in a given 65
market. If not controlled by the government, he will probably sell 132
his goods at a price which returns the most net profit. Although the 201
search for maximum net profit occurs within almost every firm, the 267
monopolist has the unique power to control price through the quantity 336
of goods offered for sale. There are no competing goods so he does 403
not have to worry about selling his goods at a lower price than some 471
other firms. Nor are there adequate substitute goods which might be 539
used in place of his own goods. 570

7-B

The Bank Statement -- Not a Form of Consumer Credit

One kind of bank statement is a list of facts made about a bank 64
at a certain time called a balance sheet. The bank's assets, liabili- 134
ties, and net worth are shown. The bank statement is not to be used 202
as a form of credit but is used to show some facts about the bank. A 271
good example of a form of credit for consumers is a charge account. 338
An installment purchase is another example. Even an unpaid telephone 407
bill is a form of credit for consumers. Thus, it is clear that a bank 477
statement is not a form of credit for consumers. 525

8-A

The Importance of the Consumer in the U. S.

In the economy of the U. S., the ones who chiefly determine what 65
goods and services will be provided are the consumers. They are cast- 135
ing a vote, so to speak, for the kinds of goods and services to be 201
made in the U. S. when they buy such things. They are more important 270
in this matter than are national or state government officials. This 339
is even true when the consumer in the U. S. is compared with New York 408
bankers who provide funds for certain goods and services. Thus, the 476
consumers in the U. S. are the main ones who determine what goods and 545
services will be provided. 571

8-B

Water Power -- A Source of Eternal Energy

Have you ever wondered if there are certain sources of energy 62
which will last as long as man inhabits the earth? Which one of these 132
sources of energy--water power, coal, petroleum, or natural gas--will 201
last that long? You would be right if you would say water power. Of 270
course, you will probably never live long enough to see even one of 337
the other three sources of energy used up completely for they are 402
abundant in the world at this time. Even though this is the case, 468
they can eventually be used up completely while water power will last 537
as long as man lives on the earth. 571

9-A

Problems of the U. S. Farmer in Peacetime

The U. S. farmer in a time of peace has the ability to produce 63
enough goods to meet the demands of a growing country. Even though 130
the U. S. farmer can produce the goods to meet these needs, problems 198
do face him. One of these is the changing prices for his goods. 262
Also, farmers from foreign lands compete with him. There is also a 329
growing need for farm machines such as tractors and trucks. Even 394
though the farmer in the U. S. is facing these problems, he has the 461
"know how" in a time of peace to produce enough goods to meet the 526
demands of a growing population. 558

9-B

Ordinary or Straight Life Insurance Serves the Family

Many people are not sure what type of insurance they should buy. 65
Ordinary or straight life costs less than most forms of life insur- 132
ance. The straight life is like term life which must be paid as long 201
as the one who pays the policy lives. Straight life serves a family 269
at a lower rate per year than does an endowment policy, limited pay- 337
ment policy, or annuity. For instance, if a 30-year old man with a 404
wife and two children wants life insurance protection at a low cost 471
per year, a straight life policy is one good kind to have. 529

10-A

Socialism -- Government Ownership of Industries and Natural Resources

Socialism is best known as an economic system in which the gov- 64
ernment owns the main industries and resources of nature. This does 132
not mean that the government or state owns all the property. Nor does 202
it mean that this wealth is divided in an equal way among the people. 271
The profit motive as we know it in the U. S. does not prevail under 338
such a plan. In a place where such a plan is found to a large extent, 408
stores, mines, electric power, banks, most of the land, and other such 478
things would be owned by the state. The basic economic fields would 546
thus be owned by the state. 573

10-B

The Typical Farmer -- Capitalist, Manager, Laborer

The typical farmer in the U. S. is usually a capitalist, man- 61
ager, and laborer. Farmers are usually capitalists in that they own 129
the land they cultivate and the farm livestock they raise. As a man- 198
ager, one on the farm has many decisions to make each day. For in- 265
stance, the owner of a farm must decide what to plant, what tools to 333
buy, when to sell his goods, etc. The typical farmer is a laborer, 400
too. Even though he tends to live where he works and does not punch 468
a time clock, he will quite likely get up earlier and stop work later 536
than certain city workers. 562

11-A

Inflation -- Its Effect Upon Fixed Income

A person on a fixed income is hurt the most by inflation. The 63
purchasing power of money falls when inflation takes place. You have 132
lived in a time of inflation. For instance, at one time a hot dog 198
could be bought for a dime, later for fifteen cents, and now you pay 266
as much as a quarter for one. You can see that a person who is on 332
a fixed or set wage in such a case is hurt the most by inflation. An 401
example would be a retired policeman whose pension does not go up from 471
year to year. He is hurt more than a factory wage earner, business- 539
man, or stockholder whose income climbs with inflation. 594

11-B

Cost of Living Index Numbers Up -- Purchasing Power Down

If the cost of living index numbers rise from 120 to 130 during a 66
given period the purchasing power of the dollar declines. This does 134
not mean that money increases in value. Nor does it mean that the 200
value of the dollar remaining in savings accounts remains the same. 267
It would be found that the cost of living would be higher. For exam- 336
ple, when a pair of shoes that cost $12 last year cost $13 this year, 405
it can be said that a rise in cost of living has occurred since last 473
year. Therefore, less can be purchased this year than last year with 542
the same number of dollars. 569

12-A

The Income Tax Based on Ability to Pay

The U. S. government's personal income tax is levied on one's 62
ability to pay. This means the rates and deductions are not the same 131
for each person who pays an income tax. A person is taxed on the 196
amount of income made rather than the amount of property owned. It is 266
not a benefit tax for a person does not pay to get a direct benefit 333
from it. One in a low income tax scale pays a low percentage of his 401
income as tax; one in a high income tax scale pays a high percentage 469
of his income as tax. This is based on the principle of taxing a per- 539
son on his ability to pay. 565

12-B

Growth in the World's Population

The population of the world is growing at a more rapid rate than 65
the supply of arable or tillable land. Even with two world wars, 130
World War I and World War II, during the first half of this century 197
the number of people in the world has grown at a faster rate than the 266
supply of such land. Neither can it be found that the population of 334
the world is distributed in an even way among the nations of the earth 404
based on their area. This can be seen in such lands as China, India, 473
and Japan. Nor is the population of the world centered in those lands 543
which have the most available natural resources. 591

13-A

Increase Supply -- Reduce Prices

During periods of rising prices an increase in the available sup- 66
ply of goods tends to reduce prices. Thus, the supply of goods be- 133
comes greater than the demand for goods at the present price level. 200
This condition tends to cause a decline in the price at which the 265
goods are sold. Lowering the rate of interest on bank loans to con- 333
sumers tends to make the price of goods go up because more funds are 401
available to buy the goods. The price of goods would also go up if 468
the government were to increase its own expenditures or reduce per- 535
sonal income tax rates. 558

13-B

Custom-Made Goods -- Not a Mass-Production Practice

Production of custom-made goods is not a characteristic of modern 66
production practices in the U. S. Such a system of making goods would 136
cut down on widespread use of machines and standardization of parts 203
which are needed so much in the mass production of goods. If custom- 272
made goods were the rule rather than the exception, specialization of 341
labor would not be practiced as it is today. Take for example the 407
typewriter on which you are now typing. Think how much it would cost 476
to make one with all of its many parts if each machine had to be 540
custom-made for each person who planned to buy or use one. 598

14-A

"Hands Off" -- A Policy of Laissez-Faire

A policy of laissez-faire is one of "hands off" on the part of 63
the government toward business, agriculture, labor and the consumer. 131
Under such a policy the government does not supervise or own industry. 201
Laissez-faire is the French way of saying "let people do as they 265
wish." We know that we do not practice this fully in the U. S. This 334
is the case even though rights of each person are honored in the U. S. 404
We know that in order to protect the rights of people there must be 471
some control and not a complete lack of it on the part of the govern- 540
ment. 545

14-B

Growth in Capital Goods Needed Per Worker

The Industrial Revolution which was a change from the use of hand 66
tools to machines brought forth certain changes in the U. S. One 131
change has been the growth that has taken place in the amount of capi- 201
tal goods needed per worker. This revolution or change did not cause 270
such growth in certain other fields. For instance, there has not been 340
growth in the craft skills nor in the proportion of farmers in the 406
U. S. Neither has there been growth in the bargaining power of the 471
worker acting alone. Growth has occurred in the amount of capital 537
goods needed per worker. 563

15-A

An Increase in the Supply of a Commodity in a Free Market

Under the conditions of a free market, an increase in the supply 65
of a commodity or good tends to cause a decrease in the price of the 133
good. When the supply increases the sellers tend to bid against one 201
another to sell their output by lowering their prices. There would 268
not need to be a decrease in the demand for the good. Nor would sub- 337
stitutes for the good necessarily appear on the market when the supply 407
is increased. With the good in large enough supply to meet the de- 474
mand, the price of the good would tend to go down. 524

15-B

The Importance of Corporations

A corporation is created by a charter granted by a state. The 63
owners of such a firm have liability of a limited nature. This is the 133
form of business organization in the U. S. which hires most of our 199
wage and salary workers and makes most of our goods which are pro- 265
duced. Other forms or kinds of firms have an important place in the 333
U. S., too. For instance, there are more firms with one owner in the 402
U. S. than there are corporations. However, the corporation hires 468
more wage and salary workers who make more goods than do any other 534
kind of firm in the U. S. 559

16-A

The Limitation of Economic Specialization

An example of economic specialization is the plan of raising just 66
one crop on a farm. It is limited by the number of people who might 134
buy the crop. If all persons on the farm in the U. S. planned to 199
raise the same kind of crop, then their sales would be curbed by the 267
number of customers which might be possible. The need for trade and 335
exchange of goods grows through specialization. Also, the importance 404
of money and credit grows through it. Specialization helps do away 471
with barter systems, too. Mainly it is limited by the number of 535
people who might buy the goods. 566

16-B

Why Salaries are Different for Engineers and Teachers

If engineers get salaries which are higher than public school 62
teachers, it is mainly because those who have engineers' training are 131
more scarce when compared with teachers. Thus, the supply of teachers 201
would be more than the supply of engineers in terms of jobs to be 266
filled by each group. Of course, there are other reasons why engi- 333
neers would get salaries which are higher than public school teachers. 403
One of these is not that engineers' hours are longer than school 467
hours. Nor is it mainly the result of teachers being workers for the 536
government or having more work that is pleasant. 584

17-A

Factors Affecting the Size of National Income

The size of our national income, the total of money received each year from all sources by the people in the U. S., depends on more than just one factor. The amount of gold that backs up our money supply is not one of the factors on which the size depends. How effective our production is can be termed as one of the factors. The extent to which natural resources are available would be a factor, too. It can be seen also that the level of education and technical know-how of those who live in the U. S. is a factor in the size of our national income. 66 136 206 274 339 408 474 541 548

17-B

Exporting Goods Vs. Importing Goods

In the long run the U. S. cannot export more goods and services than it imports unless it gives goods and services to other countries without charge. Sending goods and services abroad in U. S. ships will not solve the problem. Neither does encouraging foreign tourists to come to the U. S. mean more exports. Generally, the U. S. curbs its exports when it raises its tariffs. Over a long period of time, the U. S. cannot send more goods and services to foreign lands than it gets from them unless it gives these goods and services to these lands without any cost to them. 64 133 203 271 339 407 473 543 568

18-A

A Main Difference in Socialism and Capitalism

When one speaks of the role of the profit motive, socialism and 64
capitalism are not the same. They are the same in certain other ways, 134
though. For instance, the use of machines to make goods is found in 202
each of the two systems. There is specialization of labor and trade 270
between nations, too. We in the U. S. have leaned toward capitalism. 339
The profit motive for each person in the U. S. is thus based on the 406
way he runs his own firm in making and selling goods. Under such a 473
plan as found in the U. S. there are mostly private rather than public 543
owners of productive capital. 572

18-B

The Function of Federal Reserve Banks

Federal Reserve Banks must hold deposits or cash reserves of 61
banks who are their members. Even if asked to do so, these banks 126
could not take a savings deposit of a person as a local bank would 192
do. Neither do these central banks furnish checking accounts to firms 262
engaged in interstate commerce. Nor do these banks insure savings 328
accounts in other banks. They can use their cash reserve requirements 398
as a tool to control the rate of interest and the quantity of money 465
in the economy. One function of such banks is thus to hold these cash 525
reserves of banks who are their members. 575

19-A

The Power to Raise or Lower Tariff Rates

Through our reciprocal trade agreements program, the power to 62
raise or lower tariff rates within the bounds set by Congress is given 132
to the President of the U. S. It can be seen that the right to set 199
such rates is not given to others such as the U. S. Tariff Commission, 269
the U. S. Department of Commerce, or the Federal Trade Commission as 337
some might think. The President does ask for and gets recommendations 407
from the U. S. Tariff Commission before he makes a change in tariff 474
rates. Of course, the power to change the rates rests with the Pres- 543
ident of the U. S. 561

19-B

The Purpose of the Social Security Act

One aim of the Social Security Act is to have a payroll tax for 64
the support of old age and survivors benefits. Public health and 129
accident insurance and a guaranteed wage are not a part of the act at 198
the present time. The wage a worker gets has some tax taken out which 268
is matched by the one who hires him. This tax money is held by the 335
government of the U. S. A worker's wife and children might be able to 405
draw a check each month if he should die. The Social Security Act and 475
the Federal Unemployment Tax Act provide for unemployment insurance. 543

20-A

The Importance of Checks in Our Modern Economy

The great majority of our business transactions in the U. S. are 65
made by means of checks. At one time in the history of the U. S. the 134
barter system was popular, in which goods were traded for other goods. 204
We then moved along with the barter system to a time of coins known as 274
specie which were usually made of gold or silver. Afterwards, the use 344
of paper money became popular in the U. S. Even though we find that 412
paper money and coins are used to a large extent today, the great ma- 481
jority of our business transactions by dollar volume are made by means 551
of checks. 561

20-B

Food -- A Costly Family Item

Food is usually the largest item of yearly costs for most fami- 64
lies in the U. S. For instance, it has been found that the food costs 134
of a family are usually higher than either the cost of clothing or 200
recreation. As the size of the income of a family is increased or 266
the number of members of a family is decreased, it can be seen that 333
certain other costs might become larger than that for food. This 398
might be the case of the personal income tax. Although this tax might 468
be higher for some families, it has generally been found that the 533
largest single item in the budget of a family is the cost of food. 599

21-A

Profits of U. S. Business Corporations

About 5% of the total sales of U. S. business corporations is 62
shown as profits. This might seem low but it must be kept in mind 128
that big corporations may have large sales. With these large sales 195
the 5% profit figure could mean a large profit to a firm. For in- 261
stance, a firm with sales of more than one million dollars would have 330
a profit of more than fifty thousand dollars if the rate of profit 396
were 5%. Since the investment in firms is different, a 5% profit on 464
sales for one firm could mean a much larger percentage profit on money 534
invested than for another firm which had a larger investment. 595

21-B

Savings and Loan Association

A type of financial institution which specializes in making long 65
term loans with which to build or purchase a home is called a savings 134
and loan association. It should not be confused with a consumer fi- 202
nance company which makes personal short term loans. Neither is it 269
the same as a commercial bank, since it does not hold checking ac- 335
counts for individuals. Nor should it be thought of as a stock ex- 402
change in which stocks are bought and sold. Thus, if you would wish 470
to build or buy a home, one place to get a long term loan for this 536
purpose would be a savings and loan association. 584

22-A

What Are Indirect Taxes?

A tax which may be shifted from the one upon whom it is first im- 66
posed to another person is known as an indirect tax. Thus, when the 134
tax burden of one person is shifted to another person, it is said that 204
the tax is indirect. The tax may be proportional or progressive and 272
still be indirect. Also, an indirect tax should not be confused with 341
a double or special tax. Assume that the state government places a 408
six cents tax on gas to be paid by the refinery owners. If these own- 478
ers pass the tax on to a dealer, it is said that the tax is indirect 546
in that it has been shifted from one to another. 594

22-B

Relationship Between Real Wages and Cost of Living

If money wages increase, but the cost of living increases at a 63
faster rate, real wages are lower than before. For example, assume 130
that an individual has earned $4,000 in money wages during the pre- 197
vious year. This year he earns $4,200. As you can see, this is an 264
increase of $200 over the previous year. Assume further that since 331
the previous year his cost of living has gone up $300. It can be seen 401
that the real wages will be $100 less than for the previous year, 466
which means these wages are lower than before for they will buy less. 535

23-A

The Real Estate Tax -- A Local Government Tax

Most local governments rely on the real estate tax for most of 63
their revenue or income. This means that the real estate tax or the 131
property tax is used most of the time for raising taxes on the local 199
level such as a city or county. The income tax and excise tax are 265
used by the U. S. and some state governments. The states also usually 335
count on fees and licenses. The real estate tax is thus not relied on 405
by the U. S. or state units as it is by the local units of government. 475
Hence, the real estate tax is mostly a local tax. 524

23-B

Machines and Tools Purchased with Retained Earnings

One way of providing new machines and tools for U. S. industry is 66
with earnings retained in the firm. Money contributed by employees or 136
funds provided by the government are not generally used for such a 202
purpose. When the earnings are kept in the firm for the purchase of 270
new machines and tools, the dividends declared by the firm are not as 339
high as they could otherwise be. Of course, this may be for a short 407
time only. The new machines and tools may make possible more profits 476
in the future and thus more dividends to be paid. 525

24-A

What Determines A Nation's Economic Prosperity

A nation's economic prosperity or well being is best found out by 66
the amount of goods and services produced each year per person. The 134
amount of goods and services produced each year per person is a better 204
way to find this out than the per cent of people who are working. 269
This is also true of a good balance of trade and the prices of goods 337
in stores. This means what a nation such as the U. S. produces in 403
terms of goods and services per year per person is the best way of 469
finding out the economic well being of that nation. 520

24-B

Competition -- A Feature of Modern American Capitalism

Competition in most firms in the U. S. is a part of our way of 63
life known as U. S. capitalism. Hence, rivals are found among most 130
firms in the U. S. Also, the profit motive for making goods and regu- 200
lation of public utilities by our government are found in the U. S. 267
Private owners of most firms are found in the U. S., too. All of this 332
is thus a part of U. S. capitalism. The first statement above, which 401
concerned widespread competition among most firms, indicates one of 468
the main features of our way of life in the U. S. 517

25-A

The Result of the Growth of the Automation Processes

The growth in the use of automation processes in our factories 63
will probably increase, not decrease, the need for skilled techni- 129
cians. The amount made per man hour should be at a higher rate, not 197
at a lower rate. The quality of the good made should be higher, not 265
lower, through more use of such processes in our factories, too. The 334
need for operators of machines and inspectors of parts will more than 403
likely be decreased. Even though this will be the case, the need for 472
skilled workers will more than likely tend to grow as the use of auto- 542
mation processes tends to grow in our factories. 589

25-B

Deficit Spending Results in Increased National Debt

The national debt is most likely to increase when the U. S. gov- 65
ernment engages in deficit spending. Such spending takes place when 133
money is spent at a greater rate than it is received by the govern- 200
ment. The opposite could take place. This would be the case if the 268
government should spend less than it should receive. This would re- 336
sult in a budget surplus instead of a budget deficit. The budget for 405
a year would be balanced when the amount spent equals the amount re- 473
ceived during a year. Generally, this has not been the case in most 541
of the years in the past, especially since World War II. 597

26-A

Labor Unions in the United States

Many people in the U. S. do not understand as much as they should 66
about labor unions. For instance, some people think that the great 133
majority of workers belong to labor unions in the U. S. This is not 201
true. If one would make a careful study of the situation, he would 268
find that less than half of the U. S. labor force are union members. 336
Unions are legal in all states in the U. S. They have local organiza- 406
tions, too. It can also be found to be true that U. S. labor unions 474
generally have favored the closed shop as opposed to the open shop. 541

26-B

The Continuous Life of a Business Corporation

Most business corporations in the U. S. continue to exist upon 63
the death of one or more holders of stock. Thus, if you should hold 131
stock in such a firm and should die, the firm would still go on and 198
not form into a new one. This type of firm is not chartered by the 265
government of the U. S. but by state governments. Also, such firms 332
must pay taxes. The holders of stock in such firms do not have un- 399
limited liability as is the case of a partnership. Also, as was 463
stated above, such a firm continues even upon the death of one or more 533
holders of stock, which is not true in the case of a partnership. 598

27-A

What is a Budget?

A budget is an estimate of expected income and a plan for ex- 62
penses. It is not a list of expenditures made the past year. Nor is 131
it a means of raising money for expenses that are deemed necessary. 198
It is sometimes thought by some that a budget is a plan for buying the 268
best quality goods at the lowest prices. This is not the case. It 335
does help a firm plan an estimate of the income and expense items for 404
a period of time to come. Thus, planning a budget is forward looking 473
based on an estimate of income that is expected and for expenditures 541
that are planned. 558

27-B

Which Investments Carry the Greatest Risks?

Which of these generally carry more risk--common stock or U. S. 64
Government bonds? You would probably say common stock. You would be 133
right because you know that common stock issued by a private firm is 201
not guaranteed by the U. S. Government or one of its agencies. A sav- 271
ings account in a national bank and a postal savings account at the 338
post office would be safer for the same reason. Of course, it should 407
be kept in mind that the risk of loss in earning power during periods 476
of inflation is less for common stocks than for certain investments 543
backed by the U. S. Government. 574

28-A

Economic Fact Vs. Economic Opinion

An economic fact and an economic opinion do not mean the same 62
thing. An economic opinion leaves room for some dispute. This is not 132
true in the case of an economic fact. Such a fact shows that a thing 201
has been done. It can be seen that such a fact should not cause a 267
dispute. Such a fact might be "that real wages per person in the 332
U. S. are higher than real wages per person in the Soviet Union." An 401
economic opinion, not a fact, might be "that government farm price 467
supports should be made less." Another example of such an opinion is 536
"that national banks are safer than state banks." 585

A STANDARD ACHIEVEMENT TEST IN

ECONOMIC UNDERSTANDINGS

FOR SECONDARY SCHOOLS

Developed by

E. C. Alft
Elgin High School

In cooperation with the

Illinois Council on Economic Education

SECTION	QUESTIONS
PART I. Multiple Choice	55
PART II. Reading a Graph	5
PART III. Vocabulary and Reading Comprehension	5
TOTAL NO. OF ITEMS	65

Sixth Revision, December, 1957

GENERAL INSTRUCTIONS:

1. Do not write on the test booklet. All answers are to be placed on the answer sheet.
2. Place your name on the upper right hand corner of the answer sheet.
3. In all cases, select the one best answer for each item.
4. No questions concerning interpretations of questions will be answered.

PART I. MULTIPLE CHOICE

Directions: Select the one best answer to each question or statement and make a vertical mark in the space that corresponds to your choice on the answer sheet.

1. Most American workmen receive higher wages than most foreign workmen chiefly because (1) Americans work harder for longer hours; (2) Americans produce more goods per hour than foreign workers; (3) labor unions do not exist in foreign countries; (4) American workmen are protected by a high protective tariff.

2. Which of these is the best illustration of an economic problem? (1) preparing a blue print for a punch press; (2) how to decide which one of a number of possible products to make with the punch press; (3) installing the punch press; (4) how to instruct a worker in the use of a punch press.

3. Conservation of natural resources can best be described as (1) preventing people from using natural resources; (2) using natural resources without wasting them; (3) finding ways to produce goods without using raw materials; (4) making natural resources available to all through government ownership.

4. The amount of goods and services produced is (1) sufficient to satisfy all our wants; (2) unlimited; (3) determined by forces of nature beyond the control of man; (4) less than the people want.

5. A form of business combination in which one company has acquired all or a majority of the stock of several firms is called (1) a holding company; (2) a monopoly; (3) a cartel; (4) an oligopoly.

6. Among the advantages of labor specialization is the (1) feeling of independence and self-reliance it gives the worker on the assembly line; (2) increased speed of operations; (3) increased pride of workmanship on the part of the worker; (4) ease of adjustment to other occupations.

7. The national government performs all of these economic functions except (1) enforcing pure food and meat inspection laws; (2) regulating railroad and truck rates; (3) limiting the price which can be charged by a washing machine manufacturer for his product; (4) supporting prices of certain farm products.

8. Which of these groups receives the greatest share of our national income? (1) corporation stockholders; (2) wage earners and salaried workers; (3) people who receive interest payments; (4) people who receive rent.

9. A period of general business depression is usually accompanied by (1) high prices; (2) a decline in national income; (3) few business failures; (4) full employment.

10. In which of these fields of economic activity in the United States is there the greatest number of competitors? (1) farming; (2) publishing; (3) auto industry; (4) public utilities.

11. A protective tariff (1) promotes international specialization of labor; (2) protects foreign products; (3) tends to raise prices for the home consumer; (4) encourages foreign trade.

12. The purpose of workmen's compensation laws is to (1) increase wages; (2) provide workers with funds during periods of unemployment caused by a recession; (3) pay workers for losses suffered because of injuries on the job; (4) increase wages to match rising living costs.

13. A monopolist, if not restricted by the government, will probably sell his product at a price which (1) results in the most sales; (2) is lower than that of competing products; (3) returns the greatest net profit; (4) encourages the use of substitutes.

14. All of these are forms of credit for consumers except (1) a charge account; (2) an installment purchase; (3) an unpaid telephone bill; (4) a bank statement.

15. In our American economy, who chiefly determines what goods and services will be provided? (1) national government officials; (2) New York bankers who provide the money; (3) state government officials; (4) consumers.

16. Which of these sources of energy will last as long as man inhabits the earth, while the others can be used up completely? (1) water power; (2) coal; (3) petroleum; (4) natural gas.

17. The American farmer in peacetime is faced with all of these problems except (1) a continuing inability to produce enough to meet the demands of an increasing population; (2) fluctuating prices for his products; (3) competition from foreign producers; (4) an increasing need for agricultural machinery.

18. Which of the following should a 30-year old man with a wife and two children purchase if he wants the maximum amount of life insurance protection at the cheapest annual cost? (1) a 20-year endowment; (2) an ordinary or straight life policy; (3) a 20-year limited payment policy; (4) an annuity.

19. Socialism is best described as an economic system in which (1) the government owns all property; (2) wealth and property are equally divided among the people; (3) government owns the basic industries and natural resources; (4) the profit motive prevails.

20. The typical American farmer is usually (1) a capitalist; (2) a manager; (3) a laborer; (4) all of these.

21. Which of the following would probably be hurt the most by inflation? (1) a factory wage earner; (2) a retired policeman living on a pension; (3) a stockholder; (4) a businessman with a large inventory of goods.

22. If the cost of living index numbers rise from 120 to 130 during a given period, (1) money increases in value; (2) the purchasing power of the dollar declines; (3) the value of the dollars remaining in savings accounts remains the same; (4) the cost of living is lowered.

23. The national government's personal income tax is levied according to (1) the extent of government benefits received; (2) the amount of property owned by a person; (3) the idea of identical rates for everyone; (4) a person's ability to pay.

24. The world's population is (1) increasing faster than the supply of arable land; (2) declining because of two world conflicts; (3) distributed evenly among the nations of the earth according to the extent of their area; (4) concentrated in those nations which have the most available natural resources.

25. During times of rising prices, one way of reducing prices would be to (1) increase the available supply of goods; (2) lower the interest rate on bank loans; (3) decrease personal income taxes; (4) increase government expenditures.

26. All of these are characteristic of modern American production practices except (1) specialization of labor; (2) widespread use of machines; (3) standardization of parts; (4) custom-made goods.

27. A policy of laissez-faire is one of (1) state regulation of business; (2) governmental supervision of industry; (3) "hands off" on the part of the government toward business, agriculture, labor and the consumer; (4) government ownership of industry.

28. The Industrial Revolution has resulted in an increase in (1) the amount of capital goods needed per worker; (2) the proportion of farmers in our population; (3) the value of craft skills; (4) the bargaining power of the worker acting alone.

29. Under the conditions of a free market, an increase in the supply of a commodity tends to cause (1) substitutes to appear on the market; (2) a decrease in the price of a commodity; (3) an increase in the demand for the commodity; (4) a decrease in the demand for the commodity.

30. The form of business organization in America which employs most of our wage and salary workers and produces most of our manufactured goods is (1) individual proprietorships; (2) partnerships; (3) corporations; (4) cooperatives.

31. Economic specialization (1) decreases the need for trade and exchange; (2) encourages the growth of barter systems; (3) is limited by the number of possible customers; (4) lessens the importance of money and credit.

32. If engineers receive higher salaries than public schools teachers, it is mainly because (1) engineers' hours are longer than school hours; (2) teaching is more pleasant work; (3) teachers are government workers; (4) people with engineers' training are relatively more scarce in comparison with teachers.

33. The size of our national income depends upon all of these factors except (1) the effectiveness of our production organization; (2) the availability of natural resources; (3) the amount of gold backing up our money supply; (4) the level of education and technical know-how.

34. In the long run Americans cannot export more goods and services than we import unless we (1) raise our tariffs; (2) give goods and services to other countries without charge; (3) send goods and services abroad in American ships; (4) encourage foreign tourists to come to the United States.

35. Socialism and capitalism differ most in regard to (1) the use of machines to make goods; (2) specialization of labor; (3) trade between nations; (4) the role of the profit motive.

36. Federal Reserve Banks (1) accept individual savings deposits; (2) furnish checking accounts to businesses engaged in interstate commerce; (3) hold deposits of member banks; (4) insure savings accounts in other banks.

37. Under our reciprocal trade agreements program, the power to raise or lower tariff rates within limits set by Congress is given to (1) the President; (2) the U. S. Tariff Commission; (3) the Department of Commerce; (4) the Federal Trade Commission.

38. The Social Security Act provides for a payroll tax for the support of (1) public health and accident insurance; (2) old age and survivors benefits; (3) the guaranteed annual wage; (4) unemployment compensation.

39. The great majority of our business transactions are made by means of (1) coins; (2) paper money; (3) checks; (4) barter.

40. Which of these is usually the largest item of yearly expenditure for most American families? (1) clothing; (2) personal income tax; (3) food; (4) recreation.

41. Approximately what percentage of the total sales of American business corporations is represented by profits? (1) about 5%; (2) about 15%; (3) about 25%; (4) about 40%.

42. A type of financial institution which specializes in making long term loans with which to build or purchase a home is called (1) a commercial bank; (2) a consumer finance company; (3) a stock exchange; (4) a savings and loan association.

43. Taxes which may be shifted from the person upon whom they are originally imposed to another person are (1) special taxes; (2) double taxes; (3) proportional taxes; (4) indirect taxes.

44. If wages increase, but the cost of living increases at a faster rate, what happens to real wages? (1) they are higher than before; (2) they are the same as before; (3) they are lower than before; (4) they are not affected.

45. Most local governments rely on which of these taxes for most of their revenue? (1) income tax; (2) real estate tax; (3) licenses and fees; (4) excise taxes.

46. New machines and tools for American industry are generally purchased with (1) government funds; (2) earnings retained in the business; (3) money contributed by employees; (4) dividends.

47. A nation's economic prosperity is best measured by (1) the percentage of people who are working; (2) the amount of goods and services produced annually per person; (3) a favorable balance of trade; (4) the prices of goods in stores.

48. All of these are features of modern American capitalism except (1) the profit motive for production; (2) government regulation of public utilities; (3) absence of competition in most industries; (4) private ownership of most industries.

49. The increased use of automation processes in our factories will probably (1) lower productivity per man hour; (2) increase the need for machine operators and parts inspectors; (3) lower the quality of the product; (4) increase the need for skilled technicians.

50. The national debt is most likely to increase when the national government (1) engages in deficit spending; (2) balances the budget; (3) spends less than it receives; (4) has a budget surplus.

51. Which of these statements is true about American labor unions? (1) less than half of the American labor force are union members; (2) they generally favor the open shop; (3) they are illegal in some states; (4) they have no local organizations.

52. Most business corporations in the United States (1) are chartered by the national government; (2) provide for unlimited personal liability of the stockholders; (3) are exempt from taxes; (4) continue to exist upon the death of one or more stockholders.

53. A budget is best described as (1) a list of expenditures made the previous year; (2) an estimate of expected income and a plan for expenditures; (3) a means of raising money for necessary expenditures; (4) a plan for purchasing the best quality goods at the lowest prices.

54. Which of these places to invest your savings generally carries the greatest risk? (1) a savings account in a national bank; (2) a United States Government bond; (3) common stock; (4) postal savings account at the post office.

55. Which of these is an economic fact and not an opinion? (1) wage earners have gained more through the passage of favorable legislation than through the use of the strike; (2) real wages per person in America are higher than real wages per person in the Soviet Union; (3) national banks are safer than state banks; (4) government farm price supports should be lowered.

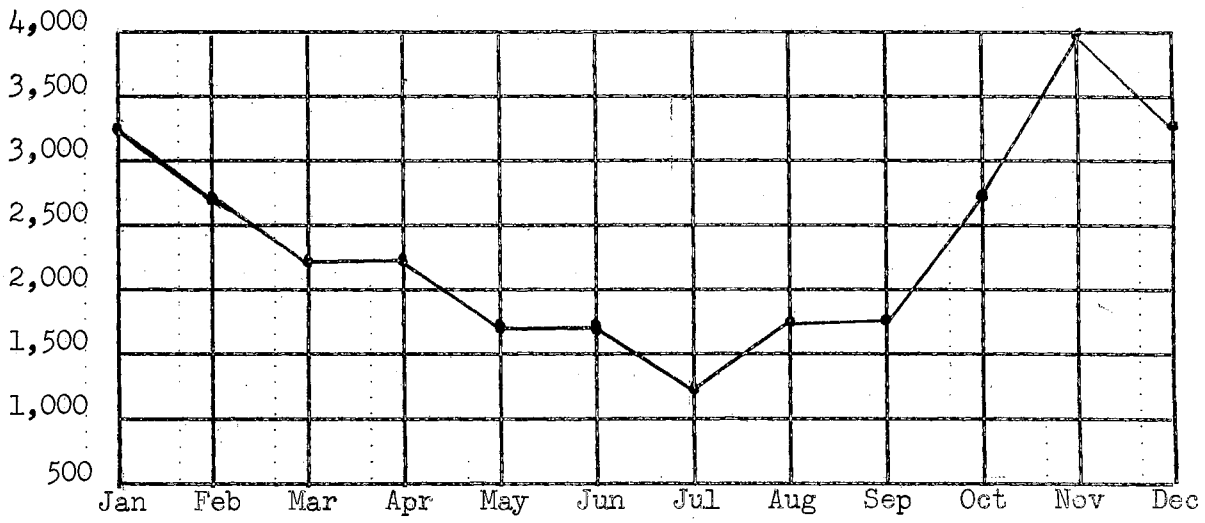
PART II. READING A GRAPH

Directions: The multiple choice questions appearing below can be answered by a careful study of the graph.

1955 HOG RECEIPTS AT ALL PUBLIC STOCKYARDS IN THE U. S.

Hogs Rec'd in Thousands

Source: U. S. Department of Agriculture



56. The above is an example of a (1) bar graph; (2) line graph; (3) circle graph; (4) picture graph.

57. The information contained in the graph was obtained from (1) the American Meat Institute; (2) the U. S. Department of Agriculture; (3) the Chicago Union Stockyards; (4) Swift & Company.

58. How many hogs were received at all U. S. Public stockyards in November, 1955? (1) over 4,000,000; (2) between 2,500 and 3,000; (3) over 4,000; (4) not shown on the graph.

59. The average price of pork in retail stores in April, 1955 was (1) 25¢ per pound; (2) 35¢ per pound; (3) 55¢ per pound; (4) not shown on the graph.

60. In which month was the amount of hog receipts at all U. S. public stockyards the smallest in 1955? (1) April; (2) June; (3) July; (4) not shown on the graph.

PART III. VOCABULARY AND READING COMPREHENSION

Directions: Read the following news article carefully. The multiple choice questions which follow are designed to test your understanding of what you have read and your familiarity with certain terms employed in labor-management relations.

NEGOTIATIONS CONTINUE AT HUMMER

CHICAGO, ILL. Oct. 27. Direct negotiations between representatives of labor and management at the Hummer Harmonica Corporation plant continue today in an effort to avert a strike scheduled for next Friday.

Agreement has been reached on a provision continuing the arrangement in the present contract requiring all non-supervisory employees to join the union after 30 days on the job, but the union's request for an increase in wages is still in dispute. Government mediators were expected to be called in if today's meetings do not result in a settlement of the issue.

All Hummer non-supervisory employees, office personnel and maintenance men as well as production workers, are members of the Harmonica Workers Union.

61. At the time the article was written, representatives of labor and management were probably attempting to settle the dispute through (1) conciliation; (2) arbitration; (3) grievance procedure; (4) collective bargaining.

62. The Harmonica Workers Union is an example of (1) a credit union; (2) an industrial union; (3) a craft union; (4) a consumers cooperative.

63. The contract provides for (1) an open shop; (2) a closed shop; (3) a union shop; (4) a blanket shop.

64. Most contract negotiations between labor and management (1) result in strikes; (2) are settled before a strike takes place; (3) are settled by the government; (4) are usually prohibited by law.

65. If the strike by the Harmonica Workers Union were to occur, (1) it would be illegal unless the union had the government's permission; (2) it could be postponed by court injunction if it created a national emergency; (3) government employees would operate the plant until it is settled; (4) it could be prohibited by the government after seven days.

September 19, 1960

Dear

Mr. M. L. Frankel, Director of the Joint Council on Economic Education, has suggested that you might be willing to serve as a member of a panel of five judges to evaluate timed writings that present economic concepts. These materials are intended for use in beginning typewriting classes in high schools. My purpose is to carry on a research project in at least six high schools to determine whether beginning typewriting students can learn certain economic concepts through specially prepared timed writings.

The content of these timed writings will be based on questions asked in the Alft Test of Economic Understandings. There will be fifty-five timed writings to be judged. The criteria established in preparing the writings include: (a) readability for grades 7 through 10; (b) syllable intensity between 1.3 and 1.4; and (c) length between 500 and 600 words. A sheet giving two of the fifty-five proposed timed writings is enclosed.

One reading of the writings will be necessary during the first part of October. Another reading of any writings requiring revision will be necessary during the first part of November. I will pay for mailing and returning the timed writings. Names of members of the judging panel will be withheld in the formal writing of the report.

Mr. Frankel has indicated that he thinks this study might be a significant contribution to economic education on the high school level. If you are willing to cooperate in this research project, please check and return the enclosed self-addressed postal card.

Yours very truly,

Dean Clayton, Assistant Professor
Department of Business Education

DC:fh

Enclosures 2

Please check one of the following:

☐ I am willing to serve as a member of a panel in judging the adequacy or inadequacy of timed writings presenting economic concepts.

☐ It will not be possible for me to serve as a member of a panel in judging the adequacy or inadequacy of timed writings presenting economic concepts.

_____

Signature

October 4, 1960

Dear

I certainly appreciate your cooperation in indicating your willingness to serve as a member of a panel in judging the adequacy or inadequacy of timed writings presenting economic concepts.

You will find the following materials enclosed:

(1) Instructions for Judging Timed Writings;

(2) Alft Test of Economic Understandings;

(3) Fifty-Five Timed Writings;

(4) Check Sheet for Judging Timed Writings; and

(5) Data Sheet for Judges.

After filling in the Data Sheet for Judges and the Check Sheet for Judging Timed Writings, would you please insert the above materials in the enclosed self-addressed stamped envelope and return to me by October 22 so that any writings requiring revision may be returned to you for your reconsideration by November 1.

Yours very truly,

Dean Clayton, Assistant Professor
Department of Business Education

DC:fh

Enclosures 6

INSTRUCTIONS FOR JUDGING TIMED WRITINGS

The timed writings presenting economic concepts are based on the first fifty-five multiple-choice questions included in the Alft Test of Economic Understandings, a copy of which is attached. An attempt was made to begin each writing with a topic sentence presenting the concept. The statement of the concept is followed in most instances by a discussion of the multiple-choice distractors which were included in each question as alternative answers.

In preparing the timed writings, these three criteria were used in providing for standardization: (a) readability between grades 7 and 10 based on the Dale-Chall Readability Formula; (b) syllable intensity between 1.3 and 1.4; and (c) length of writings between 500 and 600 strokes. It may be found that in certain instances a particular word may not seem as appropriate as another. It was necessary in some cases to use such words in order to fulfill the requirements for the criteria. For instance, it was found in some cases that the changing of a single word would cause the ranges of one or more criteria to be exceeded.

If after reading a timed writing you think the concept is presented adequately to be understandable to a secondary school student based on (a) the title given the writing in the heading and (b) the question asked concerning it in the Alft Test of Economic Understandings, would you please check (✓) adequate on the enclosed check sheet beside the appropriate number of the writing. If you think a writing does not state the concept in a manner that would be adequate for the understanding of a secondary school student, will you please check (✓) inadequate on the check sheet beside the appropriate number of the writing.

Any writings that are found to require revision will be revised and returned to you within the next few weeks for your reconsideration. Any suggestions for improvement you may wish to write on the timed writings sheets will be helpful in making revisions.

CHECK SHEET FOR JUDGING TIMED WRITINGS

INSTRUCTIONS: Please check (✓) whether you think each writing is adequate or inadequate in presenting the concept as discussed in the attached instruction sheet.

No. of Timed Writing	Adequate	Inadequate	No. of Timed Writing	Adequate	Inadequate
1-A			15-A		
1-B			15-B		
2-A			16-A		
2-B			16-B		
3-A			17-A		
3-B			17-B		
4-A			18-A		
4-B			18-B		
5-A			19-A		
5-B			19-B		
6-A			20-A		
6-B			20-B		
7-A			21-A		
7-B			21-B		
8-A			22-A		
8-B			22-B		
9-A			23-A		
9-B			23-B		
10-A			24-A		
10-B			24-B		
11-A			25-A		
11-B			25-B		
12-A			26-A		
12-B			26-B		
13-A			27-A		
13-B			27-B		
14-A			28-A		
14-B					

DATA SHEET FOR JUDGES

(Note: Names of the judges who evaluate the timed writings will be withheld in the formal writing of the report.)

Please complete the following:

Degrees held:

Number of years teaching experience, if any, in areas of economics, economic education, or related fields:

Other information concerning any past or present experiences, positions, memberships, etc., related to economics, economic education, or related areas:

INSTRUCTIONS FOR JUDGING REVISED TIMED WRITINGS

The twelve revised timed writings presenting economic concepts are based on multiple-choice questions included in the Alft Test of Economic Understandings. The list of questions applicable to the timed writings is attached.

If after reading a revised timed writing you think the concept is presented adequately to be understandable to a secondary school student based on (a) the title given the writing in the heading and (b) the question asked concerning it in the Alft Test of Economic Understandings, would you please check (✓) adequate on the enclosed check sheet beside the appropriate number of the writing. If you think a writing does not state the concept in a manner that would be adequate for the understanding of a secondary school student, will you please check (✓) inadequate on the check sheet beside the appropriate number of the writing.

Any suggestions for improvement you may wish to write on the timed writings sheets will be helpful in making final revisions.

ALFT TEST OF ECONOMIC UNDERSTANDINGS

3-A A form of business combination in which one company has acquired all or a majority of the stock of several firms is called (A) a holding company; (B) a monopoly; (C) a cartel; (D) an oligopoly.

5-B In which of these fields of economic activity in the United States is there the greatest number of competitors? (A) farming; (B) publishing; (C) auto industry; (D) public utilities.

7-A A monopolist, if not restricted by the government, will probably sell his product at a price which (A) results in the most sales; (B) is lower than that of competing products; (C) returns the greatest net profit; (D) encourages the use of substitutes.

13-A During times of rising prices, one way of reducing prices would be to (A) increase the available supply of goods; (B) lower the interest rate on bank loans; (C) decrease personal income taxes; (D) increase government expenditures.

13-B All of these are characteristic of modern American production practices except (A) specialization of labor; (B) widespread use of machines; (C) standardization of parts; (D) custom-made goods.

18-B Federal Reserve Banks (A) accept individual savings deposits; (B) furnish checking accounts to businesses engaged in interstate commerce; (C) hold deposits of member banks; (D) insure savings accounts in other banks.

19-A Under our reciprocal trade agreements program, the power to raise or lower tariff rates within limits set by Congress is given to (A) the President; (B) the U. S. Tariff Commission; (C) the Department of Commerce; (D) the Federal Trade Commission.

19-B The Social Security Act provides for a payroll tax for the support of (A) public health and accident insurance; (B) old age and survivors benefits; (C) the guaranteed annual wage; (D) unemployment compensation.

21-A Approximately what percentage of the total sales of American business corporations is represented by profits? (A) about 5%; (B) about 15%; (C) about 25%; (D) about 40%.

22-B If wages increase, but the cost of living increases at a faster rate, what happens to real wages? (A) they are higher than before; (B) they are the same as before; (C) they are lower than before; (D) they are not affected.

23-B New machines and tools for American industry are generally purchased with (A) government funds; (B) earnings retained in the business; (C) money contributed by employees; (D) dividends.

27-B Which of these places to invest your savings generally carries the greatest risk? (A) a savings account in a national bank; (B) a United States Government bond; (C) common stock; (D) postal savings account at the post office.

CHECK SHEET FOR JUDGING TIMED WRITINGS

INSTRUCTIONS: Please check (✓) whether you think each writing is adequate or inadequate in presenting the concept as discussed in the attached instruction sheet.

No. of Timed Writing	Adequate	Inadequate
3-A	____	____
5-B	____	____
7-A	____	____
13-A	____	____
13-B	____	____
18-B	____	____
19-A	____	____
19-B	____	____
21-A	____	____
22-B	____	____
23-B	____	____
27-B	____	____

CHECK SHEET FOR JUDGING REVISED TIMED WRITING NO. 13-A

Question on Alft Test:

13-A During times of rising prices, one way of reducing prices would be to (1) increase the available supply of goods; (2) lower the interest rate on bank loans; (3) decrease personal income taxes; (4) increase government expenditures.

- -

13-A

Increase Supply -- Reduce Prices

During periods of rising prices an increase in the available sup- 66
ply of goods tends to reduce prices. Thus, the supply of goods be- 133
comes greater than the demand for goods at the present price level. 200
This condition tends to cause a decline in the price at which the 265
goods are sold. Lowering the rate of interest on bank loans to con- 333
sumers tends to make the price of goods go up because more funds are 401
available to buy the goods. The price of goods would also go up if 468
the government were to increase its own expenditures or reduce per- 535
sonal income tax rates. 558

- -

Instructions:

If after reading the revised timed writing you think the concept is presented adequately to be understandable to a secondary school student based on (a) the title given the writing in the heading and (b) the question asked concerning it in the Alft Test of Economic Understandings, would you please check (✓) adequate below in the proper space. If you think a writing does not state the concept in a manner that would be adequate for the understanding of a secondary school student, will you please check (✓) inadequate below in the proper space.

No. of Timed Writing	Adequate	Inadequate
13-A	____	____

INSTRUCTION SHEET FOR TEACHERS

As this experimental study involves incidental learning, students should not be made aware of the purpose for which the timed writings presenting economic concepts are given. If a student should inquire as to the purpose of typing these timed writings, the teacher should respond somewhat as follows: "These are supplementary materials which are being used along with your textbook to add variety to the work in typewriting."

One of your classes in beginning typewriting should be designated as the experimental group and the other as the control group by a flip of a coin. The experimental group should type the specially prepared timed writings presenting economic concepts as indicated on the attached schedule. The control group should type timed writings as found in the textbook. In each group the timed writings should be of five minute length with two minutes allowed to proofread each of these writings. The timed writings in the experimental group should be passed to students immediately before the writings are given and taken up immediately after the writings have been typewritten.

Two five-minute timed writings should be given in the experimental group and control group at the beginning of the experimental study in order to determine initial typing skill. Copies of the timed writings to be used for these two five-minute writings are enclosed in the envelope marked "initial timed writings." Two minutes should be allowed to proofread after each writing. The timed writings should be double spaced with the same margin as provided in the timed writing. Students in each group should hand in the better one of the two writings in terms of gross words per minute. These writings should be placed in a stamped self-addressed envelope provided for this purpose to be mailed after all students have taken the writings. It is especially important that students write their names on the timed writings.

On the last day of the experimental study, two five-minute timed writings should be administered to each of the groups in order to determine final typing skill. Copies of the timed writings to be used for this purpose are enclosed in the envelope marked "final timed writings." Directions for administering the final timed writings are the same as those given for the initial timed writing.

As indicated on the attached schedule, the Alft Test of Economic Understandings should be given in both groups at the close of the experimental study. The attached self-addressed postal card should be mailed as soon as the experimental study has been completed so that the materials may be procured at your school.

SCHEDULE FOR EXPERIMENTAL STUDY:

Experimental and Control Groups:

Period 1: Administer timed writings marked "Initial Timed Writings" following instructions in "Instruction Sheet for Teachers." (Mail a copy of the better of two five minute writings in terms of gross words per minute for each student in the self-addressed stamped envelope.)

Period 47: Administer the "Alft Test of Economic Understandings" in the same manner as the test was originally given. Special answer sheets and pencils should be used.

Period 48: Administer timed writings marked "Final Timed Writings" following instructions in "Instruction Sheet for Teachers," (A copy of the better of two five minute writings in terms of gross words per minute for each student will be procured after the postal card has been received indicating the experimental study has been concluded.)

Control Group Only:

Periods 2 through 46: Administer two five minute writings from the adopted textbook allowing two minutes to proofread each of the timed writings. (Note: If you are using 20TH CENTURY TYPEWRITING (6th Edition), the writings found on pages 109, 112, 113, and 114-15 should not be administered during these periods as they were used in establishing initial and final typing skill.)

Experimental Group Only:

Periods 2 through 46: Administer two five minute writings per period from the specially prepared booklet following instructions given in the "Instruction Sheet for Teachers." The schedule to follow in administering the timed writings is given on the following page.

SCHEDULE FOR EXPERIMENTAL STUDY (Continued):

Period	No. of Timed Writings in Booklet	
2	8-A	15-B
3	15-A	12-A
4	9-A	8-B
5	10-B	15-B
6	14-B	8-A
7	10-A	7-B
8	3-B	14-A
9	8-B	9-A
10	14-B	5-A
11	8-B	12-B
12	7-A	12-A
13	5-B	2-A
14	11-B	6-B
15	8-A	13-B
16	4-A	3-A
17	3-B	4-A
18	2-A	13-A
19	11-B	13-A
20	6-A	1-B
21	11-A	10-B
22	12-B	3-A
23	1-B	1-A
24	4-B	13-B
25	9-B	2-A
26	10-A	14-A
27	10-A	7-A
28	9-A	9-B
29	15-B	2-B
30	6-B	11-B
31	1-A	3-B
32	12-B	7-B
33	9-B	7-B
34	1-A	14-A
35	5-B	4-B
36	12-A	5-A
37	5-B	4-A
38	6-A	15-A
39	10-B	6-B
40	14-B	5-A
41	2-B	1-B
42	11-A	2-B
43	6-A	15-A
44	13-B	11-A
45	3-A	4-B
46	7-A	13-A

A

You have often been told to throw the carriage quickly at the 62
end of a line. To throw the carriage quickly, keep the elbow 123
fairly close to the side of your body, extend the forearm and hand 189
only far enough out to reach the carriage-return lever. Be sure 253
to reach out with the hand and pivot it at the wrist. Catch the 317
carriage-return lever between the first and second joints of the 381
index finger. Keep the rest of the fingers in line with the index 447
finger to get added power. Then throw the carriage with a quick 511
snap or flick of your wrist. Do not follow the carriage across, 575
but quickly bring your hand back. 608

B

If a book had to be used for frequent reference, you would 59
not think of keeping it on a bookshelf across the room from your 123
desk. You would keep it on your desk for efficient work. We all 188
make many waste motions if we do not plan our work. The elimina- 253
tion of waste motions in typewriting will result in an amazing 315
increase in speed. The waste time can be turned into typing time. 381
The additional typing time means an increase in speed. For 440
instance, a quick carriage return saves time if you start the new 505
line without a pause. The keys can be struck quickly only if the 570
fingers are kept close to the keys. 605

A

In order to type with proper techniques and a quick, snap 58
stroke, you must recognize the need for keeping the fingers curved 124
and close to the keys. The hands and arms should be held in a 186
quiet, relaxed position and all reaches should be made with the 249
action in the fingers. The keys should be struck with the tips of 315
the fingers and released quickly. The fingers should be held in 379
an upright position to avoid glancing strokes which often cause 442
clashing and locking of the keys. As you type this paragraph, try 508
to hit the keys quickly and release them just as quickly, and keep 574
the carriage moving for best results. 611

B

Rhythm is an important factor of typing skill. You must type 62
with rhythm if you are to reach high levels of speed and accuracy. 128
Some words must be typed at a fairly slow rate because they are 191
typed entirely with the fingers of one hand. There are other 252
words that can be typed at a high rate of speed because they are 316
typed with alternate fingers of both hands. All typing is 374
composed of one-hand and balanced-hand stroking patterns which 436
when properly typed should result in a smooth, flowing rhythm. As 502
you type, just try to keep the carriage moving evenly and avoid 565
pauses. Do this by staying relaxed. 601

APPENDIX B

COMPUTATION OF KUDER-RICHARDSON FORMULA 21 FOR ALFT TEST OF ECONOMIC UNDERSTANDINGS ADMINISTERED IN HAWAII TO 4,500 STUDENTS IN MAY, 1959:

$$r_{11} = \frac{n}{n-1} \left[1 - \frac{M_t \left(1 - \frac{M_t}{n} \right)}{s_t^2} \right]$$

$$r_{11} = 1.016 \left[1 - \frac{30.005 \, (1 - .462)}{8.90^2} \right]$$

$$r_{11} = 1.016 \left[1 - \frac{30.005 \, (.538)}{79.21} \right]$$

$$r_{11} = 1.016 \left[1 - \frac{16.143}{79.21} \right]$$

$$r_{11} = 1.016 \left[1 - .204 \right]$$

$$r_{11} = 1.016 \left[.796 \right]$$

$$r_{11} = .81$$

COMPUTATIONS OF KUDER-RICHARDSON FORMULA 20 FOR ALFT TEST OF ECONOMIC UNDERSTANDINGS ADMINISTERED TO 357 STUDENTS IN SIX RANDOMLY SELECTED HIGH SCHOOLS WITHIN A FIFTY MILE RADIUS OF TAHLEQUAH, OKLAHOMA, IN DECEMBER, 1960:

$$r_{11} = \frac{n}{n-1} \cdot \frac{s_t^2 - \Sigma pq}{s_t^2}$$

$$r_{11} = \frac{65}{64} \cdot \frac{54.686 - 13.379}{54.686}$$

$$r_{11} = 1.016 \cdot .755$$

$$r_{11} = .77$$

COMPUTATIONS OF KUDER-RICHARDSON FORMULA 21 FOR ALFT TEST OF ECONOMIC UNDERSTANDINGS ADMINISTERED TO 270 STUDENTS IN FIVE RANDOMLY SELECTED HIGH SCHOOLS WITHIN A FIFTY MILE RADIUS OF TAHLEQUAH, OKLAHOMA, IN DECEMBER, 1960:

$$r_{11} = \frac{n}{n-1} \left[1 - \frac{M_t \left(1 - \frac{M_t}{n} \right)}{s_t^2} \right]$$

$$r_{11} = 1.016 \left[1 - \frac{30.511 \left(1 - .469 \right)}{7.398^2} \right]$$

$$r_{11} = 1.016 \left[1 - \frac{30.511 \left(.531 \right)}{54.73} \right]$$

$$r_{11} = 1.016 \left[1 - .296 \right]$$

$$r_{11} = 1.016 \left[.704 \right]$$

$$r_{11} = .72$$

VITA

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