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Title: THE STATISTICAL SIGNIFICANCE OF MULTILEVEL MATERIALS ON POSTTEST SCORES FOR A BASIC BUSINESS UNIT ON BUSINESS ORGANIZATIONAL STRUCTURE

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Statement of the Problem

This study was designed to determine whether or not the use of multilevel materials would influence to a statistically significant degree posttest scores on a comprehensive objective test. The high school basic business multilevel materials on business organizational structure were compared with materials having a reading grade level of 11.5. This was also the grade level placement of the general business classes in which the unit was taught. In addition, information concerning the range of students' reading grade levels and reading rates was collected.

Description of Procedures

After the development of the multilevel materials and the comprehensive pretest and posttest, the students were equated into

matched pairs based upon four matching factors. These factors were reading grade level, intelligence, social class, and pretest scores. Those students in the experimental groups were given materials with a reading grade level which was closely correlated to their individual reading grade levels as determined by the Nelson-Denny Reading Test, Form A, while those students in the control groups were given materials with a reading grade level equal to the grade level placement of the classes--11.5. Each teacher involved in the experiment taught the unit as he thought it could best be taught. A comprehensive unit posttest was administered to all students. The results of the experimental and control groups were computed, and various statistical tests were calculated. Data concerning the reading grade levels and reading rates were tabulated.

Conclusions

The following conclusions were made based upon this study:

1. High school basic business students make greater gains in learning when they use reading materials which are closely correlated to their individual reading grade levels rather than reading materials with an arbitrarily chosen 11.5 reading grade level, which was also the grade level placement of the general business classes in which the unit was taught. The gain was statistically significant at the .05 level when the reading grade level was 8.5 or less.

2. As reading grade levels increase, the accompanying gain from the use of multilevel materials which are closely correlated with the individuals' reading grade levels tends to decrease and yet to remain positive.

3. Reading grade levels of students within a high school basic business class vary considerably. A range of approximately eight reading grade levels appears to be an accurate estimate of the dispersion of reading grade levels within a class.

4. Approximately 20 percent of high school basic business students read within plus or minus one reading grade level of the middle eleventh-grade placement of the unit. About 35 percent of the students read one or more reading grade levels below the grade level placement of the unit. Approximately 45 percent of the students read one or more reading grade levels above the grade level placement of the unit.

5. The typical high school basic business student has a reading grade level of approximately eleventh grade, fifth month, if he is selected from tenth-, eleventh-, and twelfth-grade students.

6. Reading rates of high school basic business students vary considerably. A range of approximately 525 words per minute appears to be an accurate estimate of the dispersion of reading rates within a class.

7. Approximately 4 percent of high school basic business students have reading rates of 100 words per minute or less. About 21 percent of the students have reading rates of 101-200 words per minute, while 35 percent of the students have reading rates of 201-300 words per minute. Approximately 25 percent of the students have reading rates of 301-400 words per minute. About 10 percent of the students have reading rates of 401-500 words per minute, while 5 percent of the students have reading rates of 501-600 words per minute.

8. The typical high school basic business student has a reading rate of approximately 250-300 words per minute.

The Statistical Significance of Multilevel Materials on Posttest Scores for a Basic Business Unit on Business Organizational Structure

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TABLE OF CONTENTS

LIST OF TABLES

THE STATISTICAL SIGNIFICANCE OF MULTILEVEL MATERIALS ON POSTTEST SCORES FOR A BASIC BUSINESS UNIT ON BUSINESS ORGANIZATIONAL STRUCTURE

I. INTRODUCTION

Background of the Study

The purpose of this study was to determine the effectiveness of multilevel materials in basic business classes and to make this information available to business and reading educators. In addition, information was gathered about the students' reading grade levels and reading rates. With this information as a partial basis, business and reading educators jointly will be able to develop teaching materials that better meet the individual reading abilities of basic business students. Such materials will help to improve reading performance in the basic business content area.

Statement of the Problem

This study was designed to determine whether or not the use of multilevel materials would influence to a statistically significant degree posttest scores on a comprehensive test. The basic business multilevel materials on business organizational structure were compared with materials having a reading grade level of 11.5. This was also the grade level placement of the general business classes in

which the unit was taught. In addition, information concerning the range of students' reading grade levels and reading rates was collected.

Present Status of Meeting Individual Reading Needs in Secondary Schools

Much has been written and said in the past 20 years about providing for individual differences in the classroom. Yet little has been done about providing for individual differences in reading materials in the content areas. Aaron (1) reminded teachers that in addition to teaching the special reading skills that are related to the subject field, there is the responsibility of bringing each student into contact with materials that suit his own unique reading level. Yet instead of providing the student with a text that he could understand, the teacher was more likely to provide him with one that did not meet his instructional reading level.

Considerable research needs to be done in the area of readability in order to better match the pupil and his reading materials. This need for research into the readability of materials for public schools has been expressed since the early 1950s. Among the first to do so were Michaelis and Tyler (46:497):

> Finally, it would appear that there is a need for extended study of the readability of various types of materials intended for use in the public schools. ... Further study

> of the problem of readability is indicated, probably especially designed to consider the nature of the concepts involved.

Witty (62:21) expressed the challenge of providing for individual differences in reading materials in the high schools in 1952:

> This wide range of ability persists in classes throughout the high school, and presents a challenge to every teacher.
>
> One of the most significant movements in the area of reading centers in the provision of reading materials designed to satisfy these differences in ability and graded so as to promote continuous growth.

Yet progress toward this goal was slow, particularly at the secondary level.

The critical problem of providing for individual differences in reading was reiterated by Moulton and Thomas (48:4) 16 years later: "Teachers face a problem critical in schools the nation over, the problem of a staggering range in reading achievement. . . ." In that time span, interest in reading mounted. Although progress has been made in the right direction, particularly at the elementary level, almost nothing has been done to remedy the problem at the secondary level.

The need for better matching the content-oriented high school student and his reading material has been more urgently and widely expressed in the 1970s. In evaluating secondary teaching procedures, Dulin (17:3) wrote:

> A continuing problem for every secondary teacher is the matching of reading materials to the reading abilities of particular individuals and groups. Daily decisions must be made as to which selections should be read by all the students, which would be particularly valuable to the slow students, and which would be challenging and enriching for the more able within the group. Faced with a range of at least four or five grade levels of reading ability among their students, many teachers find this problem almost as crucial as the selection of course content per se.

Geeslin (24:644), criticizing teaching approaches, advocated better matching of students and materials so that the chances of success would be enhanced:

> The approaches do not reflect a direct attempt to reach the heart of the problem, the discrepancy between difficulty of materials and ability of students. If . . . the student could be matched with materials on his reading level, much more success would be evidenced.

Yet this rarely happened in the content-oriented secondary classroom.

Present Status of Reading in Business Education

Although the emphasis on reading has increased significantly in the past decade, little is known about it as it applies to the content areas. Almost nothing is known about the reading skills necessary for success in the area of business education. But the problem is evident as Harrison (27:169) pointed out:

> Based upon writings in the journals and panel discussions at professional meetings, there seems to be general agreement among business educators that one of the greatest hindrances to effective learning is the inability of a large number of students to read textbook material with comprehension.

Robinson, Carter, and Hokanson (54:202) have described the deplorable dearth of research relating to reading in business education classes and have urged competent parties to conduct much-needed research in the area:

> The lack of research in the area of business and reading will be readily apparent to the careful reader. Hopefully this article will inspire others in the fields of reading and business education to design and carry out worthwhile investigations. Once methods and procedures are developed which are specifically adapted to the field of business education, meaningful results will be obtained.

Hence it is apparent that there is clearly a need for more research into the area of reading in business education and for providing for individual differences in reading abilities.

Definitions and Assumptions

Multilevel materials are materials that express the same content on various reading grade levels. The readability level is an indication of the difficulty of the reading material in terms of the grade level at which it might be expected to be read successfully. In this study the readability levels of the multilevel materials were calculated with the Flesch Reading Ease Formula. The calculation was based upon the number of syllables per hundred words and the number of words per sentence in the hundred-word passage. Each student was matched as closely as possible to the materials which were closely

related to his reading ability. The use of multilevel materials predicated that a standardized reading test was administered.

A standardized test is one which has been given to a large, representative sampling of the population to which the test will be applied, and it is characterized by the norms which enable comparisons. Two standardized tests were used in this study. The Nelson-Denny Reading Test, a group silent reading test, was administered to determine the reading rate and reading grade level of each student. The Henmon-Nelson Tests of Mental Ability, a group intelligence test, was also administered to determine the intelligence quotient of each student.

The reading grade level is the level of reading achievement typically achieved by students in that particular grade of school.

The grade placement of the unit is the level at which the unit is covered in the curriculum. In the Independent School District of Boise City, Boise, Idaho, the unit on business organizational structure was covered in general business classes. General business was a one-semester class offered to tenth-, eleventh-, and twelfth-grade students. The average or typical student was in eleventh grade when he was exposed to the unit. Hence the reading grade level equal to the grade placement of the general business classes was a reading grade level of 11.5 since approximately half of the enrollees took general business first semester and the other half took it second semester.

A statistically significant degree in this study is assumed to be at the .05 level based upon a two-tailed *t* test. This means that there is actually a .025% rejection area on each end of the distribution curve. This is a somewhat more stringent test than the one-tailed *t* test at the .05 level.

A basic business unit is a collection of material relating to any subject covered in any of the following classes: (1) general business; (2) consumer economics; (3) economics; (4) business principles and management; (5) business law; and (6) economic geography. Basic business units are not vocationally oriented but rather are personal-use oriented for the most part. They are designed to provide the student with the information necessary to understand our economic system and to deal effectively with it.

A basic business unit on business organizational structure is a unit that can be covered in any basic business class. The unit deals with the make-up of the business world, the different types of businesses, and the advantages and disadvantages of each type of business.

The range of reading grade levels refers to the difference between the highest student's reading grade level as measured by a standardized reading test and the lowest student's reading grade level as measured by the same standardized reading test.

The range of reading rates refers to the difference between the fastest student's reading rate as measured by a standardized reading

test and the slowest student's reading rate as measured by the same standardized reading test.

Delimitations and Limitations of the Study

Interpretation of the results of this study may be delimited and limited by the general factors of the sampling procedures, the materials used, and the methods used.

The population sample used in this study may not have been typical of basic business students outside of the Independent School District of Boise City or of all basic business students within the Independent School District of Boise City. Those basic business students taking general business may not have been typical of those taking other basic business classes. Those students excluded from the experiment may not have been adequately represented by the sampling procedures used. The relatively small sample size may have distorted the statistical analyses.

The multilevel materials that were designed by the researcher for the study may have been erroneous due to the limitations of the Flesch Reading Ease Formula on which they were based or by writer error. Although precautions were taken to construct a comprehensive pretest and posttest that were of equal difficulty and reading grade level, the possibility of error cannot be entirely eliminated.

Error may have developed through the testing and matching processes. The period of time that the multilevel materials on business organizational structure were used may have been too short to fully disclose their merits. It was impossible to accurately measure the amount of actual text reading done by each student involved in the experiment. Student interest and attendance may have influenced classroom performance. Something in the experimental situation such as the extensive testing or the use of duplicated materials may have been so out of the ordinary that it may have affected the outcomes more than would be desirable.

Significance of the Study

One of the many content areas of reading about which little information is known is business education. Very little reading-related research has been done in this area, although the need for research on reading as it applies to business education is known.

This study was designed to explore the use of multilevel materials as they applied to a basic business unit on business organizational structure and to gather information about the reading skills of basic business students. The study attempted to determine whether or not the use of multilevel materials would influence to a statistically significant degree posttest scores on a comprehensive test. The basic business multilevel materials on business organizational structure

were compared with materials having a reading grade level of 11.5. This was also the grade level placement of the general business classes in which the unit was taught. The study also obtained information about the reading grade levels of basic business students as well as about their reading rates. This information may be helpful in attacking the reading problems that affect performance of basic business students as well as in developing effective teaching materials for basic business students.

II. REVIEW OF RELATED LITERATURE

This study was concerned with determining whether or not multilevel materials would significantly improve posttest scores on an objective test. The test was over a basic business unit on business organizational structure.

Several aspects relating to this study have been researched by those in reading and related fields --measures of readability and multilevel material experiments. However, no researcher has addressed himself to a study of the effectiveness of multilevel materials for a basic business unit on business organizational structure.

Definition of Readability

Readability is a concept that has almost become operational by definition. According to Klare (33), it is generally recognized that readability is desirable and absolutely essential for the reader's sake. First, more readable material provides for a marked increase in both reading speed and efficiency. Secondly, the reader prefers a more readable version of material to a less readable version of material regardless of his educational level. Thirdly, writing that is highly readable attracts more readers than writing that is less readable. Lastly, readable writing influences comprehension, learning, and retention, especially when any of the following occur: (1) the reading

time is limited; (2) the less readable material is more difficult than the more readable material; and/or (3) the reader lacks background experiences in the subject that is covered.

However, there is a lack of consensus as to how readability is to be measured. Many attempts have been made with varying degrees of success. A few of the more important attempts follow.

Historical Development of Readability Formulae

One of the earlier modern attempts toward a readability formula was that of Lively and Pressey (35) in 1923. Their method was designed to give an estimate of the difficulty of vocabulary based on a sample of 1,000 words systematically selected throughout the book. The factors to be considered were an index of difficulty based upon the frequency of each word as found in Thorndike's Teacher's Word Book and the number of words not on Thorndike's list of 10,000 most common words, with the latter considered as the measure of technical vocabulary. Lively and Pressey found that their "weighted median index number" agreed fairly consistently with the difficulty ranking of the criterion pieces of reading matter.

In 1925 Washburne and Vogel (60) used Lively and Pressey's formulae to analyze 700 books which had been named by at least 25 out of 37 thousand children as ones that they had recently read and

enjoyed. The team used the available scores of the paragraph meaning section of the Stanford Achievement Test for each child and found the median score for the children who read and liked the book. This computed grade rating correlated .80 with Lively and Pressey's formula.

This investigation by Washburne and Vogel was significant because it was the first validation study of a formula element using an outside criterion. It provided a base upon which they constructed their own readability formula. Vogel and Washburne (58) selected passages in 152 of the 700 books on their list with representative reading grades from grade three through grade nine. From their analysis of the style elements of the selected books, they identified four factors: (1) number of different words per thousand; (2) number of prepositions; (3) number of words not on Thorndike's list of 10,000 words; and (4) number of simple sentences in 75 sample sentences. These correlated .845 with the reading test scores of the children who read and liked the criterion books. In addition, it also represented the prototype of modern readability formulae.

Most other readability formulae have departed from the Vogel and Washburne formula whereby the average amount of reading ability needed to understand the material is implicit in the readability index of the material.

One of the first easy-to-use readability formulae was developed by Lorge in 1939 (37) and refined in 1944 (36). This formula yielded a good index of readability in terms of grade scores by counting the relative number of different uncommon words not found on the Dale list of 769 words, by finding the average sentence length, and by calculating the relative number of prepositional phases within the selection.

In 1943 Flesch (21) developed a readability formula which he claimed discriminated between materials at above the eighth-grade level more satisfactorily. His formula was based on three factors: (1) average sentence length; (2) relative number of affixed morphemes (prefixes, suffixes, inflectional endings); and (3) relative number of personal references within the passage. Five years later Flesch (22) made a revision of his formula. Hayes, Jenkins, and Walker (28:22) reported: "In view of the wide use of his formula, Flesch published a revision in 1948 designed to increase its utility and make its application and interpretation easier." The Flesch Reading Ease Formula (20) as it became known, was based on two factors: (1) the average number of words per sentence in the passage; and (2) the average number of syllables per hundred words in the passage. The scores were interpreted in terms of grade levels from grade five through college graduate.

Another formula developed in 1948 which yielded nearly similar values, not only in terms of intercorrelation coefficients but also in grade levels, was the readability measure of Dale and Chall (15). This formula used two factors: (1) the number of words outside the Dale list of 3,000 words; and (2) the average sentence length.

All three formulae--the Lorge, Flesch, and Dale-Chall--used as their criterion the McCall-Crabbs Standard Test Lessons in Reading, a series of 376 passages of children's readings already graded in difficulty of comprehensibility of questions at the end of each passage. The grade-placement value referred to the average reading ability needed to answer an arbitrary percentage of the test-passage questions for the three formulae.

For coverage of other developments in readability, refer to Chall (13), Klare (33), and Bormuth (10). The latter reference is the most current of the three and emphasizes research with the cloze procedure.

Questionable Value of Readability Formulae

Lorge (38:89) has questioned the validity of using, as a criterion, the amount of comprehensibility in any passage as measured by asking questions about the content of the passage.

> The questions are designed to reveal the reader's general understanding of the text, his grasp of specific details, his utilization of the ideas, and so on. The comprehension

> of the text, therefore, is measured in part by the response to the questions set for it. Such questions may vary not only in the level of the language used, but also in the level of concepts considered. . . . The net result is that the procedure for measuring the comprehension of a passage influences the rating of it.

The validity of the criterion for comprehensibility was not the only facet of readability formulae which has been suspect. Several reading experts have been concerned that textbook authors were using these efficient predictors as more than efficient yardsticks. Betts (9:449) cited the dangers of misinterpreting readability research:

> One of the chief dangers in education arises from misinterpretations of the findings. Structural elements in readability can be overemphasized. Witness the inane initial reading materials sometimes provided for beginners! It is exceedingly difficult, if not impossible, to build comprehension checks over most of the material labeled 'preprimers.' In many of these materials, the exercise of rigid and invalidated mechanical controls over structural elements has precluded the possibility of considering semantic values. In short, the material doesn't make sense. Regimentation of mechanical factors can be as deadening to instructional materials as the regimentation of classroom instruction can impoverish the spirit of children.

Horn (30:169), on the other hand, conceded that provided the ideas were not too difficult, a selection could be made easier to read by simplifying the structural elements. But he also joined Betts in cautioning against regarding readability formulae as a panacea.

> Because more data are available on structural elements than on other matters, and because these data are easier to use in making and appraising books, they tend to distract attention from other elements of equal or greater importance. And even if their subordinate position be

> pointed out and their limited validity explained, their apparent objectivity, although somewhat illusory, is a temptation, irresistible to many, to use them as the principal basis for the selection and rejection of text and reference books. It is but another illustration of the perennial tendency to try to solve educational problems through formal and mechanical procedures.

With the majority of emphasis upon structural elements, there was great concern that other important factors in writing would often be ignored. Horn (30:169) asserted that the treatment of concepts within a passage was of greater importance.

> The most important factors are the number and inherent difficulty of the concepts, the lack of pertinence to the experience and interests of the prospective reader, the author's failure to define explicitly the large ideas that the reader is to obtain, and the meagerness of treatment . . . the simplification of a selection will often demand that it be greatly expanded in order to include the necessary detail and illustrative material.

Encyclopedia-like presentations, which are often found in our textbooks, were discussed by McCullough, Strang, and Traxler (45: 79-80).

> Like geography books, histories are often packed so full of facts that only a student with a photographic memory or a specialist in the subject could do full justice to the reading--and then at a pace much slower than that usually required if the material is to be 'covered' within the time allotted in the syllabus. There is little doubt that, for many a poor reader, the subject is not only 'covered,' but well under the sod.

Another factor often scrutinized by those wishing to question the status of readability formulae was the error and lack of accuracy in grade level placements according to Anderson (4). Chall (13) indicated

that the error of prediction in readability formulae was approximately plus or minus one year. Mulkey (49:27) continued the argument: "Flesch, Russell and Fea, and Chall agree that readability formulas currently available cannot measure readability with a high degree of accuracy or effectiveness." Furthermore, according to Marshall (43:346):

> Most of the important formulas have been developed by using as the criterion the McCall-Crabbs Standard Test Lesson in Reading. These are short passages of general information written in a narrative style.

He continued his argument that no experiment attempting to evaluate the use of these formulae with physics books, which are usually far from narrative, had been conducted; yet the unproven formulae were continually being used as an evaluative device for the selection of physics texts. Wall (59:14) added to the serious questioning concerning the use of readability formulae when he asserted another point:

> In summary, then, we have seen that readability formulas tend to under-estimate reading difficulty while reading tests tend to over-estimate the pupil's apparent reading proficiency.

Perhaps Klare (33:24-25) best summarized the limitations of readability formulae:

> First, formulas measure only one aspect of writing--style. ... Second, formulas measure only one aspect of style--difficulty. ... Third, formulas do not even measure difficulty perfectly. ... Fourth, formulas are not measures of good style.

Klare, (33) cited the work of Powers, Sumner, and Kearl in recalculating the Flesch Reading Ease Formula. Powers et al. (53) found that their recalculation showed a standard error of .85; this meant that about 68 percent of the grade ratings would fall within these limits away from an empirically determined value. Hence the estimated error value for the Flesch and other formulae of plus or minus one grade level was fair.

Klare (33:155-156) defended the validity of readability formulae against outside criteria.

> Inspection of the results indicates that reading efficiency may definitely be increased by the use of more readable materials. It would seem, in fact, that this is probably a major effect of increased readability. ... A final expected effect of increased readability is increased comprehension and retention. This would be expected because readability was originally studied, and formulas were intended, as providers and predictors of desired comprehension levels.

An experiment by McCracken (44) led to his conviction that the place of a readability formula was as a guide rather than as an absolute. He developed a grade seven or eight story from a grade three or four story while he developed a grade four or five story from a grade seven or eight story as measured by the Chall and Yoakum formulae. He concluded from his experiment that selections written to conform to a set of vocabulary standards might not increase or decrease readability as indicated by the formulae. Secondly, he found that readability formulae should be used to evaluate difficulty of

selections rather than as a writing standard for predetermined levels of readability. Lastly, he concluded that pupils tended to judge a selection as hard or easy by the number of difficult words they encountered rather than by how well they comprehended the selection.

Mulkey (49:27) reported from his review of recent readability research at Boston University that:

> Existing readability ratings produce approximate assessments of readership levels of factual material. However, on creative material, they are relatively ineffective.

From her study, Allbaugh (2:91) indicated that readability formulae are applicable to the social studies area.

> From the results of this investigation, the use of a readability formula to determine the ease of comprehension of social studies materials seems to be valid. The students' performances overall decreased as difficulty level, as designated by the formula, increased.

Peterson (51:3) perhaps best summarized the dilemma surrounding the readability formulae:

> Formula techniques, then, appear to have limitations, although they can assist authors and educators to estimate certain structural difficulties of passage material. They are also of value in promoting further research into the nature of reading comprehension.

Arguments for the Use of the Flesch Reading Ease Formula

Of all the readability measures, the Flesch Reading Ease Formula has been among the most popular. According to Kingston (32:45):

> Probably the most commonly used formulas for determining readability at the high school, college, and adult levels are those developed by Flesch, Dale and Chall, and Lorge.

Powers et al. (53:104) indicated, "Of popular formulas without word lists, the Flesch formula is statistically best."

Hayes et al. (28), from their study of the Flesch Reading Ease and Farr-Jenkins-Patterson formulae, reported that these formulae had high analyst reliability. Differences between analysts with these two formulae were not significant at the .05 level. They believed that for practical purposes their formulae and the directions for their use were sufficiently objective to be used to obtain accurate estimates of reading ease by inexperienced analysts.

Lee (34:141) reported from his study that certain of the readability formulae had high validity.

> The Winnetka, Dale-Tyler, Gray-Leary, Lorge, Flesch, and Dale-Chall Readability Formulas have given clear-cut evidence of validity. ... When these formulas are applied to materials similar to that of their criteria, they can be expected to classify the materials into broad levels of difficulty. An error of about one grade in the average prediction can be expected.

Klare (33:118), after having studied the comparative validity of the Flesch Reading Ease Formula with other readability formulae, concluded:

> By far the highest intercorrelations have been with Dale-Chall scores, in one case as high as .98. ... Similarly, the estimated grade placements derived from the Flesch

> formula have been the most comparable to those of the Dale-Chall formula.

Flesch (19) proposed that a random sample of from three to five selections from an article would yield a fair estimate of the Flesch Reading Ease Score. A recent study brought out another point. Coke and Rothkopf (14:209-210) have suggested that under some circumstances a larger sample might be advisable. They added:

> While its practical significance is doubtful, a computer technique for obtaining a Flesch Reading Ease Score may have theoretical utility. For example, the adequacy of current sampling practices in calculating Reading Ease Scores could be evaluated by determining the distribution of Reading Ease Scores in a substantial body of instructional text. ... This in turn may make automatic procedures for determining Reading Ease Scores more economically attractive to producers of written instructional material.

Marshall (43:337) outlined five reasons for choosing the Flesch Reading Ease Formula over other readability measures. First, it did not employ a word list; often vocabulary lists for many subject areas do not exist. Second, the count of syllables per hundred words has been shown to be a good index of word complexity (Flesch [22]). Third, the Flesch measure of sentence complexity has been shown to be a reliable measure of abstraction (Flesch [22]). Fourth, the measurement of sentence length was important because experts have shown repeatedly that we read sentence by sentence rather than word by word. Fifth, the formula was developed with the assessing of adult reading materials in mind.

Although a vast majority of experiments involving the Flesch Reading Ease Formula have found it to be a reliable measure of readability, a few experiments have found the converse to be true. Young (63) reported an experiment in which UNESCO passages were simplified according to the Flesch formula. But testing, despite the formula predictions, did not verify the simplification. Marshall (43) questioned the use of the Flesch formula for the assessment of the difficulty level of science material. He found no relationship between the readability level and the level of comprehension of the passages. He concluded that the Flesch Reading Ease Formula should not be used on high school physics texts because norms were established for non-technical, non-scientific material.

Nevertheless, the Flesch Reading Ease Formula has been one of the most highly regarded readability formulae in existence today.

Development of Multilevel Materials

With the development of statisfactory measures of readability came the possibility of structuring and measuring materials on varying levels of readability. The idea of expressing the same content in different words on different readability levels has made possible the development of reading materials that could be understood by all students.

Wall (59:15) wrote: "The principal idea underlying the measurement of readability is to match the reading material with the reader's comprehension level."

Present Classroom Materials Do Not Meet Students' Needs

All students need texts that they can read and comprehend. Marksheffel (42:177) very clearly made this point:

> No teacher or any other individual has the right to deprive a student from learning subject matter in any area because the student is unable to read a particular textbook. The student who is unable to read the assigned textbook, regardless of the causal factors for his inability, should not be humiliated and frustrated by being assigned a task from which he cannot escape, and from which he can expect only failure. It is axiomatic that one learns to read only by reading. But being forced to pretend to read material that is totally incomprehensible does not improve a student's reading. In fact, a student who is placed in such a situation actually regresses in reading skill.

Miller (47:205) made a related point in a different manner:

> In fact, the ability to read and comprehend instructional materials prepared for a given grade level or subject matter area has long been recognized as one of the important criteria for school success.

A critical factor in providing instructional materials that all students can read and comprehend is the investigation of the reading abilities of those students for whom the materials are intended according to Belden (7). There appears to be disagreement among reading experts as to the exact variances of reading skills in secondary

students. Aukerman (5:540) reviewed the viewpoints of several reading experts:

> When one applies the incidence of reading disability that exists currently in grades 7-12, the number of young people who are not equipped with adequate reading skills is almost unbelievable. Conant's observations suggest 30 percent. Walcutt's exposition on Tomorrow's Illiterates interprets the figure much higher. Ruth Penty further supports the significance of poor reading in high school in her study of Reading Ability and High School Dropouts, in which she found that 49 percent of all poor readers in her study dropped out of high school. . . .

Penty (50) also reported in her study that the dispersion of standardized reading grade equivalents for tenth-grade students was from 4.3 to 13.0, a range of reading abilities of almost nine grade levels. Donovan (16) found that 53 percent of the students entering the academic high schools of New York read below grade norms and that 23 percent of the students were from two to five years below the norm. This indicated that as Miller (47:208) stated:

> . . . authors should make an effort to control the factors of readability in order that the reading difficulty of the textbook might be more compatible with the reading abilities of a majority of students who will use them.

Harris (26), noted that many attempts have been made to make materials more readable for the users.

Numerous investigators have found that the reading level of most of our secondary texts was above the reading level of the student for whom they were designed. Mulkey (49), Wall (59), Beard (6), and Hill (29) have supported this argument. Hill (29:412) has

suggested that the traditional textbook may be a hindrance rather than a help to the student:

> There is solid evidence to confirm that the content area textbook, as traditionally used, is less help, and possibly more hindrance, to the student than commonly assumed. Efforts to improve the readability of the text by control of vocabulary and concepts, interjecting more personal tone and motivating illustrations, and developing at least in the sense that the problem is increasingly recognized.

Aukerman (5) revealed that few, if any, of the literature anthologies could be read by any of the secondary school students in the bottom 25 percent; hence he reported that there were thousands of "functional non-readers of literature."

Considerable investigation has been done in the sciences concerning the suitability of their texts by persons such as Beldon (7), Mallinson and his associates (39, 40, 41), and others. Beldon (7) found that only one of five high school biology texts was readable by over half of the students in the grade for which it was intended. These researchers have agreed that science textbooks are far too difficult for the students who will attempt to read them.

Similar results came from investigations into the suitability of social studies texts. Miller (47), Porch (52), and others have indicated that while a progression of difficulty could be found from elementary through high school social science materials, the progression was not consistent. The progression, as they saw it, did not provide for the normal growth in reading abilities of students.

The greatest departure from the uniform progression according to Porch (52) was found between the sixth- and seventh-grade textbooks and between the ninth- and tenth-grade textbooks. Based on an experiment by Peterson (51), Hill (29:411) wrote:

> Experimental evidence of the possibility for improving readability in secondary textbooks has been provided by Peterson. Passages from a popular history text book were rewritten to increase their color and improve their logical organization. The comprehension of her subjects was significantly improved as a result.

In the social studies area researchers have found that although the materials are not well suited to the students, a more appropriate level of the materials was likely to significantly improve comprehension.

In the area of vocational training, textbooks were found to be too difficult. Bentley and Galloway (8) concluded that reading ability varied widely among vocational agriculture classes and within classes at a given grade level and that, in general, agricultural reference books tended to be too difficult for their reading ability. While studying shop texts, Miller (47) discovered a wide range of readability levels--from grade five to college graduate as measured by the Dale-Chall formula--and a minimum dispersion of grades five through twelve in the text with the smallest range of readability. He noted, too, that this information was unreported when the average of the samples from a textbook was revealed.

Most of the recent readability studies in business education have been in the area of bookkeeping. House (31) found that 60 percent

of all bookkeeping students did not have sufficient reading skills to read and comprehend the subject matter of the course. Hafner, Gwaltney, and Robinson (25) found, among other things, that teachers had trouble in making accurate predictions of their students' ability to read bookkeeping material. Calhoun and Calhoun (11) reported that Calhoun and Rhodes concluded that (1) the reading levels of bookkeeping students ranged from seventh grade to college level; (2) approximately one-half of the students were reading below grade level placement; (3) the readability range in bookkeeping textbooks was from sixth grade to college graduate; and (4) traditional instructional materials were not suitable for many bookkeeping students. In another article, the same researchers (12) were critical because of the previously mentioned factors plus the fact that many non-technical terms should have been replaced with easier synonyms, that many technical terms were not defined when introduced, and that the earlier passages tended to be more difficult than passages further on in the textbook. They indicated that it would become necessary for teachers to bypass textbooks unless authors and publishers could meet the need for graded readability in textbooks.

Calhoun and Rhodes (12:25-26) made the following recommendations concerning bookkeeping:

> In light of the findings of this study, it is concluded that the attainment of adequate reading skills is necessary to assure a high likelihood of bookkeeping success. ... The

> reading problem does not necessarily stem from poor reading instruction at the elementary level, but in many instances results from the technical, abstract nature of bookkeeping content, which requires the application of reading skills at a higher and more refined level than has generally been previously required of the student. . . . Methods through which reading achievement might be significantly improved in bookkeeping instruction include not only the development of more adequate reading skills, but also an increase in the readability of instructional materials.

Anderson (3), from his study of the readability of general business training textbooks, concluded that further evidence was needed to determine whether the Yoakum formula or the Flesch formula was more accurate in studying the readability of content subjects in the higher grades. He added that if the Flesch formula was accepted as reliable, then 18 of the 28 textbooks that he measured would have been too difficult for the ninth-grade pupils who were expected to use them. If the Yoakum formula was accepted as reliable, then two of the texts would have been considered too difficult while seven of the texts would have been considered too easy for the ninth-grade pupils. One significant fact from Anderson's study was that both formulae measured the readability of each textbook in a uniform direction, i. e., each measured the same book as difficult or easy as the case might have been. He reported that the results from the two formulae might have been more alike if the Flesch formula provided precise grade placement. Anderson, after recommending vocabulary work and study-type

reading lessons, suggested that the effects of reading lessons in general business should be studied.

As Harris (26:1073) so poignantly wrote:

> A salient finding of research in the past decade into the readability of school texts in various content fields is that they are frequently too difficult for the intended level of use.

Multilevel Materials Meet Students' Needs

Studies have found that the use of multilevel materials significantly improved performances in all levels of schooling. Tamblyn (57), for example, found that elementary pupils who were taught reading by permissive teachers using the bilevel method of instruction achieved significantly more reading skill than those who were taught by traditional teachers using the unilevel method of instruction. He also found that the bilevel method of reading instruction was more effective with upper elementary pupils than with lower elementary pupils. Williams (61) found that the comprehension of sixth-grade students increased significantly when multilevel materials were used for science texts. Scarborough, Bruns, and Frazier (55) found that with multilevel materials in English, social studies, and science, eighth-grade students made a gain in the median grade score in reading achievement from 9.4 to 11.3 in one year--a gain of almost two years. Of the 73 students completing the experiment, 10 made no

gain, 12 gained one reading grade (average), 23 gained two reading grades, 8 gained three reading grades, 11 gained four reading grades, and 9 gained five or more reading grades in one school year. With multilevel materials, 49 of the 73 students made progress that was far above the average.

Numerous authorities and researchers have come to the conclusion that multilevel materials help to improve reading and, in turn, to improve comprehension in content areas. Marksheffel (42:174) wrote:

> First, one of the most plausible reasons why students are unable to read the textbook is that all students do not have the same reading ability. It has been previously noted that the range of reading achievement among high school students may be as great as from seven to ten grade levels. The unwarranted and inhuman practice of assigning all students to read a single textbook ignores completely the differences in students' reading ability. Such practice contributes to the lack of efficient learning of content material and improvement of reading skills.

Others who have taken similar viewpoints in favor of multilevel materials have included Smith and Dechant (56), Flanagan (18), Aukerman (5), and Williams (61:204) who wrote:

> Adequate provision for individual differences among children, and some guarantee of a reasonable degree of pupil success with its accompanying sense of self-confidence, requires, among other factors, textual materials written nearer to the reading level of individual pupils.

Although most experts and experimental studies have propagated the belief that the use of multilevel materials is a superior method of

instruction, Gaudette (23) found that they brought no significant difference over other methods when teaching elementary reading. The vast majority of writers, however, appear to strongly favor multilevel materials over traditional textbooks.

Synopsis

A review of the literature relating to the topic under investigation revealed that readability formulae have served very usefully as guides in determining readability but not as absolute and infallible rules. Of the readability formulae that have been developed, the Flesch Reading Ease Formula has been highly regarded because of its accuracy and ease of application, as well as because of its suitability to non-juvenile materials. With the aid of a readability formula, it has been possible to write multilevel materials that express the same content on various levels of readability. Materials that have existed for classroom use have not been suitable for those who would use them--often they were much too difficult for a large portion of the class. Most of the studies dealing with multilevel materials have found them to be a factor that has significantly increased reading skills and comprehension--the most important factor to content-area teachers.

III. PROCEDURES

Development of the Multilevel Materials

Since no multilevel materials were known to exist for a basic business unit on business organizational structure, it was necessary to develop some. The content for the unit was developed by surveying texts covering the topic, by talking with business educators, and by personal experiences from teaching the unit. The ideas were brought together to form the basic content text. From the basic content text, the multilevel materials were developed. All four levels of the unit had the same content, but the content in each level was expressed in different words.

After a passage was written, it was measured for readability by the Flesch Reading Ease Formula (see Appendix D). The passage was rewritten as many times as necessary in order to express the content at the desired reading grade level. Four levels of materials were prepared based upon the Flesch formula (see Appendix E):

Grade 7.5	for students reading up through grade 8.5
Grade 9.5	for students reading from grade 8.6 through grade 10.5
Grade 11.5	for students reading from grade 10.6 through grade 12.5
College level	for students reading from grade 12.6 and beyond

The Flesch formula is considered to be accurate plus or minus one grade level. Hence the grade 9.5 materials would have, for example, correlated closely to the reading grade level of a student reading somewhere between grades 8.6 and 10.5. The college-level materials were designed to include reading materials from grades 13, 14, 15, 16, and the graduate level. Based upon the consensus of authorities, the four designated levels appear to provide reading materials which are closely correlated to the reading level of any student found in a basic business class.

Care was taken in the preparation of the various levels to keep the readability within the limits of plus or minus one grade level. The average readability of any single level of the text was the reading grade designation of the text as measured by the Flesch Reading Ease Formula. Variations above or below the plus or minus one grade level were almost nonexistent. They occurred only when it was nearly impossible to explain the concept involved at a lower level of readability based upon the rigid standards that a careful application of the Flesch formula brought. In rare instances it was felt to be better to slightly exceed the Flesch standard in order to have a more readable copy.

In order to make the multilevel materials appear as much alike as possible from one level to another, other constraints were enforced. Each paragraph in all levels had the same number of lines. In addition,

there were the same number of lines per page. Each topic was discussed at the same place on the same page of every level.

Vocabulary previews, questions, and other exercises were developed to accompany the unit (see Appendices E, F, and G). They were written with a readability of about grades eight to ten so that they could be used in all levels of the unit and be understood by all students.

Development of the Pretest and Posttest

A comprehensive pretest and a comprehensive posttest were developed for the unit. A large item pool of objective questions of varying types was submitted to a number of business students at Dufur Public Schools, Dufur, Oregon, who had not been enrolled in a basic business class that covered the unit. From their responses, two parallel forms, A (pretest) and B (posttest), of an objective test covering the unit were developed (see Appendices C and H). The questions were matched into pairs according to type of question, number of attempts to answer, percent of correct responses, and percent of incorrect responses. Those questions which paired closely on the previously mentioned factors were then randomly assigned to the finalized forms of the objective tests, with one member of each pair going to the pretest and one member of each pair going to the posttest. Thus, two parallel objective tests of comparable difficulty were constructed. The reading grade level of the two parallel forms was checked and found to be comparable to each other.

Preliminary Testing and the Establishing of Matched Pairs

Before the experiment began, all students in the selected basic business classes in the Independent School District of Boise City, Boise, Idaho, were required to complete an information sheet which was used for the computation of Hollingshead's Two-Factor Index of Social Position, a measure of social class. The Henmon-Nelson Tests of Mental Ability, Form A, a group intelligence test, was administered to all students, as was the Nelson-Denny Reading Test, Form A, a group reading test. All students also took the unit pretest, Form A.

Students within each class were then matched by the research designer into pairs based upon the four factors in the following descending order: (1) Nelson-Denny Reading Test; (2) Henmon-Nelson Tests of Mental Ability; (3) Hollingshead's Two-Factor Index of Social Position; and (4) pretest scores, Form A. Approximately three-fourths of the students in each class were matched satisfactorily with a classmate for the purposes of this experiment.

One student from each pair was randomly assigned by the flip of a coin to the control group and one student from each pair was randomly assigned to the experimental group. Each student in the experimental group was given the level of materials which was most closely correlated with his individual reading grade level as measured by the Nelson-Denny Reading Test. Students in the control group and those

for whom no match was found were given materials with a reading grade level equal to the grade level placement of the general business classes in which the unit was taught--in this case the 11.5 materials. The double-blind technique was used. The students, who were told nothing about the experiment, could in no way determine whether or not they were actually being used in the experiment; and their classroom instructors were not told which students were participating in the experiment.

Pilot Study for the Experiment

A pilot study of the experiment was performed at Boise High School, Boise, Idaho, during the spring of 1971. Three classes were involved in the pilot study. Two classes of general business students having different teachers and one consumer economics class taught by one of the general business teachers were selected. Each teacher was free to select the teaching methodology that he preferred for the unit. The pilot study groups worked through the complete research design in three weeks. One week was allowed for the preliminary testing and two weeks were allowed for the experiment proper. The pilot study indicated that although the increase in posttest scores was not statistically significant at the .05 level, there was a very marked increase in the posttest scores for the experimental group over the control group in both the general business and consumer economics

classes. It was also found that wide ranges in students' reading grade levels and reading rate levels existed.

Revisions After the Pilot Study

Data from the pilot study provided information for making minor revisions in the materials and research design. Of particular help were the comments of the teachers involved in the study, students involved in the pilot study, and university professors.

The one-week preliminary testing period of the experimental design was extended four weeks so that it started at the beginning of the semester. Since extremely high absentee rates were found, this procedure allowed more students to complete all of the preliminary testing devices before the experiment proper began. This procedure also had the added advantage of spreading out the testing over a long enough period of time so that it created little curiosity.

Uniform, detailed instructions for the administration of both the comprehensive pretest and posttest were added, as were objectives of the testing so that the students would know why they were being tested. The pilot study revealed that one question was awkwardly written on the posttest; this matter was taken care of by rewording the question to make it clear. The wording of both the pretest and posttest was carefully scrutinized and simplified in several instances.

In order to improve syntax in the 7.5 level text, revision was necessary. This was done and the final result was found to measure a reading grade level of 7.5 by the Flesch Reading Ease Formula. Uniform symbol usage was adopted for all charts. It was necessary to correct a few typing errors that appeared in the pilot study text booklets. In order to make the illustrations more interesting, they were revised. Color was added to the text booklets to make them more appealing; the text booklets were also color-coded by the type of material found on the page.

In order to help the teachers involved understand the study, an outline of the experiment and detailed information about it was provided. A question-and-answer sheet about the experiment was developed to answer most of the questions that the teachers might desire to have answered (see Appendix A). This was supplemented with a group meeting and individual meetings with the research designer in order to clarify and answer additional questions that might arise. The teachers were free to teach the unit in any way they chose, but they were encouraged to stress the importance of reading the text booklets as well as vocabulary and to explain the use of the word-preview sections to their classes. In addition, the teachers were provided with attendance forms and text assignment forms in case texts were misplaced. Brief lesson plans and/or comments were requested from the teachers.

The Experimental Population

The experiment was performed in five of the six general business classes in the Independent School District of Boise City, Boise, Idaho, during the spring semester of 1972, following the previously mentioned methodology and procedures. The Independent School District of Boise City had an enrollment of approximately 22,500 students during the 1971-1972 school year. Approximately 5,350 of these students were enrolled in the system's three high schools--Boise, Borah, and Capital. Classes from each of these high schools participated in the experiment. One of the classes was at Boise High School, two were at Borah High School, and two were at Capital High School. A total of 137 students were enrolled in the general business classes from the beginning of the preliminary testing through the completion of the experiment proper, although not all 137 students completed the experiment.

A total of 54 matched pairs of control and experimental students were obtained at the conclusion of the preliminary testing. Six of these pairs did not complete the experiment, with at least one member of the pair officially dropping the class for various reasons. This left 48 matched pairs who worked through the entire experimental design. Those students designated as control in Table 1 were in the control group and those students designated as experimental were in the experimental group. The six pairs of students who dropped out of the classes

after the preliminary testing or who had no matched mate as a result of the dropping out comprised the dropped category. The matchless category was reserved for those students for whom no acceptable matched mate could be found within the same class. Sixteen students comprised this group and generally had rather high or low scores on at least one of the four matching factors. Students received the designation of incomplete if they entered the classes after the experiment proper had begun or missed more than ten consecutive class sessions and/or were dropped from the class roster by their teacher. Table 1 shows the number of students participating in the experiment, broken into schools and groups.

Table 1. Number of Students Participating in the Experiment by Schools and Groups.

High School	Control	Experimental	Dropped	Matchless	Incomplete	Total
Boise	9	9	0	2	5	25
Borah	20	20	4	9	3	56
Capital	19	19	8	5	5	56
Total	48	48	12	16	13	137

Standardized Evaluative Instruments

Students were administered the Nelson-Denny Reading Test, Form A, a group silent reading test, to measure their reading grade levels and reading rates. The Nelson-Denny Reading Test was selected

because of its high rating with reading and testing authorities, because of its focus on reading rate and reading grade level based upon vocabulary and comprehension, and because of its ease of administration in one class period.

At the end of the first semester, an average eleventh-grade student should have had a reading grade level of 11.5. The typical general business student in the experiment was halfway through the eleventh grade. Yet the mean reading grade level for both the experimental and control groups was in excess of the eleventh year, eighth month as shown in Table 2. Although the typical student's reading grade level was above average by more than three months, there was a widespread range in excess of 7.0 reading grade levels between the minimum reading grade level of -7.0 or below beginning seventh grade and the maximum reading grade level of 14.0+ or beyond the sophomore year of college.

Table 2. Reading Grade Levels of the Control and Experimental Groups Based Upon the Nelson-Denny Reading Test.

Statistic	Control Reading Grade Level n = 48	Experimental Reading Grade Level n = 48
mean	11.8521	11.8125
standard deviation	2.0382	2.0933
maximum	14.0000+	14.0000+
minimum	-7.0000	-7.0000

The Henmon-Nelson Tests of Mental Ability, Form A, a group intelligence test, was also administered to the students to establish the fact that they represented a population of average intelligence. The Henmon-Nelson Tests of Mental Ability was chosen because it was highly regarded by testing authorities in intelligence testing and because it was easy to administer within one class period.

Theoretically speaking, a person with average intelligence should have achieved a score of 100, but variations of plus or minus approximately ten points are considered within the average category. Table 3 shows that the control and experimental groups were of average intelligence, with mean intelligence quotients of 105 and 104, respectively.

Table 3. Intelligence Quotients of the Control and Experimental Groups Based Upon the Henmon-Nelson Test of Mental Ability.

Statistic	Control Intelligence Quotients n = 48	Experimental Intelligence Quotients n = 48
mean	105.2708	104.5417
standard deviation	10.1095	13.8533
maximum	133.0000	166.0000
minimum	72.0000	87.0000

The difference between the actual distribution of intelligence quotients and the expected distribution of intelligence quotients is shown in Table 4. The table shows that the actual distribution was

Table 4. Actual and Expected Intelligence Quotient Distributions of the Control and Experimental Groups.

Intelligence Quotients	Control Actual n = 48	Experimental Actual n = 48	Total Actual n = 96	Expected Percent Based on Normal Curve	Total Expected n = 96	Total Actual Number of Students Falling Below the Upper Boundary of a Category	Total Expected Number of Students Falling Below the Upper Boundary of a Category
148 - 166	0	2	2	0.1%	0	96	96
132 - 147	1	0	1	2.0%	2	94	96
116 - 131	6	2	8	14.0%	13	93	94
100 - 115	31	27	58	34.0%	33	85	81
84 - 99	9	17	26	34.0%	33	27	48
68 - 83	1	0	1	14.0%	13	1	15
52 - 67	0	0	0	2.0%	2	0	2
36 - 51	0	0	0	0.1%	0	0	0
	48	48	96		96		

slightly above average, with more than half of the intelligence quotient scores falling into the 100-115 category. Fewer than the expected number of intelligence quotients were found in the 36-99 categories and in the 116-147 categories. The lack of the number of intelligence quotients below 100 suggested that some students with less-than-average intelligence quotients have already disappeared from the high school scene. A comparison of the total actual and total expected number of students with intelligence quotients above 100 suggested that the upper portion of the distribution was more nearly normal.

Informal Evaluative Devices

Two informal evaluative devices were used in the preliminary testing before establishing the matched pairs. The Two-Factor Index of Social Position was administered to the students in the form of a questionnaire about themselves. The Two-Factor Index of Social Position provided an objective, easily applicable procedure to estimate the position individuals occupy in the status structure of our society. The measure was based upon the educational level and occupation of the head of a household. The educational level factor was given a weight of four while the occupational factor was given a weight of seven. This two-factor measure of social class was then scaled into five groups, with group 1 representing the upper social class and group 5 representing the lower social class. Group 3 represented the

middle or average social class. For a detailed explanation of this index, refer to Appendix B. Table 5 shows that the mean social class of students as measured by the Two-Factor Index of Social Position was in the middle-class category, although students in each group were representative of all social classes.

Table 5. Social Class of the Control and Experimental Groups Based Upon the Two-Factor Index of Social Position.

Statistic	Control Social Class n = 48	Experimental Social Class n = 48
mean	3.1667	3.1250
standard deviation	1.0586	1.1416
maximum	1.0000	1.0000
minimum	5.0000	5.0000

A comprehensive experimenter-constructed unit pretest was also administered to the classes to determine what the students already knew about business organizational structure before the unit was begun. An explanation of the test's construction was given previously.

The mean score of information known before beginning the unit was in excess of 19 points for both groups as shown in Table 6.

After the administration of the standardized and informal evaluative instruments, students were matched by the experimenter into pairs following the procedures mentioned earlier. For a detailed

classification of these students based upon the preliminary testing, refer to Table 1, page 41.

Table 6. Pretest Scores of the Control and Experimental Groups Based Upon the Unit Pretest.

Statistic	Control Pretest Scores n = 48	Experimental Pretest Scores n = 48
mean	19.9167	19.8750
standard deviation	5.5384	4.9749
maximum	32.0000	31.0000
minimum	6.0000	12.0000

Meetings with the Teachers

The researcher spent ten days in Boise, Idaho, working with the teachers who were concluding the preliminary testing and about to begin the experiment proper. In addition to scoring the evaluative instruments and matching the students into pairs, he met in a group with the teachers participating in the experiment on February 22, 1972. Throughout that week he visited and conferred individually with each teacher several times, answering questions about the experiment and delivering materials.

Experimental Time Schedule

An experimental time schedule was drawn up based upon the pilot study, and it was followed by all teachers. The preliminary testing

began on January 17, 1972, and continued until February 22 as shown in Table 7. The week of February 22 was set aside for the researcher to score evaluative instruments, to match students into pairs, and to deliver the materials necessary to complete the experiment. On February 28, the experiment proper began with each teacher introducing the booklet "Business Organizational Structure" and covering the introduction and proprietorship sections of the text booklet. Each teacher followed the time schedule precisely during the experiment proper; and on March 7, 1972, the unit posttest was administered. One week later, having allowed time for make-up work and the completion of various forms, the experimental materials were collected.

Verification of Posttest Scores and the Processing of the Data

Upon receipt of the posttest papers, the researcher rechecked them to assure that all had been scored in conformity with the standards used on the pretest papers. After necessary corrections were made, the data were recorded on tally sheets and master cards by code. Subsequently, the data were fed by teletype into the Oregon State University computer system for analyses of various types (see Appendix I).

Table 7. Time Schedule for Experiment.

Date	Event and Comments
	PRELIMINARY TESTING
January 17	Student Questionnaire[1] (Two-Factor Index of Social Position--a measure of social class) To be filled out first day with admission card--this procedure eliminates questions and confusion
January 25	Henmon-Nelson Tests of Mental Ability[1] (group intelligence test)
February 1	Nelson-Denny Reading Test[1] (group silent reading test to measure rate and reading grade level)
February 15	Pretest, Form A[1]
February 22	END OF PRELIMINARY TESTING Group meeting for teachers involved in the experiment at Boise High School, 3:30 p. m., room 215
February 28	EXPERIMENT PROPER BEGINS Introduction; the proprietorship
February 29	The partnership
March 1	The corporation
March 2	The corporation; the cooperative; study for case problem
March 3	Widgets case problem
March 6	Go over case problem; review for posttest
March 7	Posttest, Form B[1]
March 14	EXPERIMENT PROPER ENDS All experimental materials will be collected

[1] Any student absent when these evaluative instruments are administered will take them on the first day that he returns to class after the instruments have been administered to the group.

IV. PRESENTATION AND ANALYSES OF THE FINDINGS

This study reported the results of the use of multilevel materials for a basic business unit on business organizational structure. The null hypothesis was that the control group gains would be equal to the experimental group gains. The alternate hypothesis was that the gains between the control and experimental groups would not be equal. In addition, the study sought to derive useful information about the students' reading grade levels and about their reading rates.

Chi-square Tests on Matching Factors

Chi-square tests were calculated between those students excluded from the experiment because of a lack of a matched mate (the matchless group) and those students included in the experiment proper (the control, experimental, and dropped groups) to determine if differences existed between the populations in terms of the four matching factors. The chi-square was the significance of the differences between the theoretical or expected frequencies found in the matchless group and the observed frequencies found in the control, experimental, and dropped groups.

The formula for the chi-square test is:

$$\text{chi-square} = \sum_{i=1}^{2} \sum_{j=1}^{C} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where

C is the number of categories into which the population has been divided

O_{ij} is the number of observations in population i that fall in category j

$$E_{ij} = \frac{(\sum_j O_{ij})(\sum_i O_{ij})}{n}$$

Table 8 shows the result of the chi-square calculation for the matching factor of reading grade level.

Table 8. Chi-square Test Between Those Excluded and Those Included in the Experiment in Terms of Reading Grade Level.

Group	Reading Grade Levels -7.0--10.0	10.1--12.0	12.1--14.0+	Chi-square* 2 d.f.
matchless	7	3	6	1.9008
control experimental dropped	30	20	58	

*Chi-square value for the .05 significance level with 2 degrees of freedom = 5.991.

The chi-square test failed to detect a significant difference between the two groups in terms of reading grade level.

Table 9 shows the result of the chi-square calculation for the matching factor of intelligence.

Table 9. Chi-square Test Between Those Excluded and Those Included in the Experiment in Terms of Intelligence.

Group	Intelligence Quotients 66-80	91-100	101-110	111-166	Chi-square* 3 d.f.
matchless	5	5	3	3	
control					9.4672
experimental	8	33	45	22	
dropped					

*Chi-square value for the .05 significance level with 3 degrees of freedom = 7.815.

The chi-square test indicated that there was a significant difference between the two groups in terms of intelligence.

Table 10 shows the result of the chi-square calculation for the matching factor of social class.

Table 10. Chi-square Test Between Those Excluded and Those Included in the Experiment in Terms of Social Class.

Group	Social Class Groups 1-2	3	4-5	Chi-square* 2 d.f.
matchless	2	7	7	
control				1.5330
experimental	29	40	39	
dropped				

*Chi-square value for the .05 significance level with 2 degrees of freedom = 5.991.

The chi-square test failed to detect a significant difference between the groups in terms of social class.

Table 11 shows the result of the chi-square calculation for the matching factor of pretest score.

Table 11. Chi-square Test Between Those Excluded and Those Included in the Experiment in Terms of Pretest Score.

Group	Pretest Scores 0-15	16-25	26-49	Chi-square* 2 d.f.
matchless	10	4	2	12.0718
control				
experimental	24	71	13	
dropped				

*Chi-square value for the .05 significance level with 2 degrees of freedom = 5.991.

The chi-square test indicated that there was a significant difference between the groups in terms of pretest score.

The chi-square tests indicated that there was a significant difference between those excluded from the experiment and those included in the experiment in terms of the matching factors of intelligence and pretest scores. This indicated that those groups included in the experiment proper (control, experimental, and dropped) were not exactly representative of the entire student population exposed to the multilevel materials although they adequately represented 108 students out of 124 students, or 87 percent of the students.

Unpaired T Test

An unpaired *t* test was calculated between the control and matchless students having arbitrarily assigned texts with a reading grade level of 11.5 and the experimental students who had texts with reading grade levels which were closely correlated to their own individual reading grade levels. For this and all other *t* test calculations, those students in the experimental group and their matched mates in the control group who had individual reading grade levels at or near 11.5 and who received the texts with the 11.5 reading grade level were excluded from the calculation. This was a desirable procedure since both the control and experimental students in this category had texts of the same reading grade level; hence there was no difference in the treatment of these students. The variable between the matched pairs was their texts, with the control group students receiving texts with a reading grade level of 11.5 and the experimental group students receiving texts closely correlated to their individual reading grade levels.

The unpaired *t* test compared the gain made by the experimental students who had texts with reading grade levels of 7.5, 9.5, and 13.5 with the control students having similar reading grade levels but who received the 11.5 grade level texts. The unpaired *t* test did not compare the gain made by the experimental student on his posttest score over his pretest score with the gain made by his control mate on his posttest score over his pretest score, but rather it compared the total

gain made by the students in the experimental group with the total gain made by the students in the control and matchless groups with the exclusions previously noted from the control and experimental groups.

The formula for the unpaired t test is:

$$\text{unpaired } t = \frac{\bar{Y}_i - \bar{Y}_j}{s_p\sqrt{\frac{1}{n_i} + \frac{1}{n_j}}}$$

where

$\bar{Y}_i$ is the experimental mean gain

$\bar{Y}_j$ is the control and matchless mean gain

s_p is the pooled variance

n_i is the number of experimental samples

n_j is the number of control and matchless samples.

Table 12 shows the result of the unpaired t test calculation.

Table 12. Unpaired T Test Between the Experimental Group and the Control and Matchless Groups.

Statistic	Experimental Gain--Posttest Over Pretest n = 38	Control and Matchless Gain--Posttest Over Pretest n = 54	T value* 90 d.f.
mean	10.4211	9.0556	2.4078
standard deviation	5.4655	6.9619	
maximum	21.0000	24.0000	
minimum	0.0000	-7.0000	

*T value for the .05 significance level with 90 degrees of freedom = 1.9867.

If one assumed that the populations were the same for practical purposes, then the unpaired t test indicated that there was a significant difference at the .05 level in the gain of posttest scores over pretest scores for the experimental group over the control and matchless groups; whereas, the combined paired t test that follows did not detect a significant difference.

Paired T Tests

A paired t test was calculated between the 7.5, 9.5, and 13.5 experimental groups combined and the control matched mates for the experimental groups combined to determine if the total gain of the experimental groups over the total gain of the control groups was statistically significant at the .05 level. The experimental and control students whose individual reading grade levels were at or near 11.5 were excluded from this calculation since they received equal treatment during the experiment.

The formula for the paired t test is:

$$\text{paired } t = \frac{\bar{Y}_i - \bar{Y}_j}{\sqrt{\dfrac{N(\Sigma D^2) - (\Sigma D)^2}{N^2 (N - 1)}}}$$

where

Y_i is the experimental mean gain

Y_j is the control mean gain

N is the number of matched pairs

N^2 is the number of matched pairs squared

D is the experimental gain over the control gain

D^2 is the experimental gain over the control gain squared

Σ is the summation of the quantities being considered.

Table 13 shows the results of the combined paired t test calculation.

Table 13. Paired T Test Between the Experimental Groups and the Control Groups.

Statistic	Experimental Gain-Posttest Over Pretest n = 38	Control Gain-Posttest Over Pretest n = 38	T value* 37 d.f.
mean	10.4211	8.7368	1.2912
standard deviation	5.4655	7.4568	
maximum	21.0000	24.0000	
minimum	0.0000	-7.0000	

*T value for the .05 significance level with 37 degrees of freedom = 2.0301.

The paired t test indicated that there was no significant difference at the .05 level in the gain of posttest scores over pretest scores for the experimental group over the control group.

A paired t test was calculated between those experimental group students receiving the 7.5 level texts and their matched mates in the control group who received the 11.5 level texts to determine if the

gain of the experimental students on posttest scores over pretest scores was statistically significant at the .05 level to that of the control group.

Table 14 shows the result of this calculation.

Table 14. Paired T Test Between the Experimental and Control Groups with Reading Grade Levels at or Near 7.5.

Statistic	Experimental Gain-Posttest Over Pretest n = 5	Control Gain-Posttest Over Pretest n = 5	T value* 4 d.f.
mean	12.2000	2.0000	2.8032
standard deviation	2.4900	8.0312	
maximum	14.0000	13.0000	
minimum	8.0000	-5.0000	

*T value for the .05 significance level with 4 degrees of freedom = 2.7764.

The paired t test indicated that there was a statistically significant difference at the .05 level between the gain of the experimental and control groups having reading grade levels at or near 7.5.

A paired t test was calculated between those experimental group students receiving the 9.5 level texts and their matched mates in the control group who received the 11.5 level texts to determine if the gain of the experimental students on the posttest scores over pretest scores was statistically significant at the .05 level to that of the control group.

Table 15 shows the results of this calculation.

Table 15. Paired T Test Between the Experimental and Control Groups with Reading Grade Levels at or Near 9.5.

Statistic	Experimental Gain-Posttest Over Pretest n = 9	Control Gain-Posttest Over Pretest n = 9	T value* 8 d.f.
mean	9.5556	8.2222	.3885
standard deviation	5.5927	8.4967	
maximum	18.0000	23.0000	
minimum	1.0000	-5.0000	

*T value for the .05 significance level with 8 degrees of freedom = 2.3060.

The paired t test indicated that there was no statistically significant difference at the .05 level between the gain of the experimental and control groups having reading grade levels at or near 9.5.

No paired t test between the experimental and control groups with reading grade levels at or near 11.5 was calculated since both groups used the same level of text and were treated identically.

A paired t test was calculated between those experimental group students receiving the 13.5 or college-level texts and their matched mates in the control group who received the 11.5 level texts to determine if the gain of the experimental students on posttest scores over pretest scores was statistically significant at the .05 level to that of the control group.

Table 16 shows the results of this calculation.

Table 16. Paired T Test Between the Experimental and Control Groups with Reading Grade Levels at or Near 13.5.

Statistic	Experimental Gain-Posttest Over Pretest n = 24	Control Gain-Posttest Over Pretest n = 24	T value* 23 d.f.
mean	10.3750	10.3333	.0336
standard deviation	5.9257	6.3634	
maximum	21.0000	24.0000	
minimum	0.0000	-7.0000	

*T value for the .05 significance level with 23 degrees of freedom = 2.0687.

The paired t test indicated that there was no statistically significant difference at the .05 level between the gain of the experimental and control groups having reading grade levels at or near 13.5.

Reading Grade Level Statistics

A tally was compiled of the reading grade levels of those students in the control, experimental, dropped, and matchless categories. Table 17 shows that approximately 37 percent of the students were reading one or more reading grade levels below the middle of the eleventh grade, the grade level placement of the unit, and that approximately 44 percent of the students were reading one or more grade levels above the unit placement. Approximately 19 percent of the students were reading within plus or minus one reading grade level of the placement of the unit as shown in Table 17.

Table 17. Summarized Reading Grade Level Table for Students in the Classes Participating in the Experiment Based Upon the Results of the Nelson-Denny Reading Test, Form A.

Reading Grade Level	Deviation from Unit Placement (11.5)	Control n=48	Experimental n=48	Dropped n=12	Matchless n=16	Total n=124	Percent of Total	Percent of Students Falling Below the Upper Boundary of a Category
12.6-14.0+	+ 1 or more	24	24	2	5	55	44.35%	100.00%
10.6-12.5	± 1	10	10	0	3	23	18.55%	55.65%
8.6-10.5	- 1-3	9	9	8	3	29	23.39%	37.10%
-7.0-8.5	- 3 or more	5	5	2	5	17	13.71%	13.71%
		48	48	12	16	124	100.00%	

For a more detailed analysis of this data, refer to Table 18 which shows that the dispersion of reading grade levels was from above the sophomore year in college to below the seventh grade. The range of reading grade levels was approximately eight reading grade levels. The mean reading grade levels for the groups varied from tenth grade, fifth month,to eleventh grade, eighth month, with the grand mean reading grade level being almost eleventh grade, fifth month.

Reading Rate Statistics

A tally was also compiled of the reading rates of the students in the control, experimental, dropped, and matchless categories. Table 19 shows that approximately 4 percent of the students were reading 100 words per minute or less, 21 percent were reading 101-200 words per minute, 35 percent were reading 201-300 words per minute, 25 percent were reading 301-400 words per minute, 10 percent were reading 401-500 words per minute, and 5 percent were reading 501-600 words per minute.

For a more detailed analysis of this data, refer to Table 20, which shows that the dispersion of reading rates was from the 576-600 words per minute category to the 51-75 words per minute category. The range of reading rates was approximately 525 words per minute. The mean reading rates for the groups varied from 264 words per

Table 18. Detailed Reading Grade Level Table for Students in the Classes Participating in the Experiment Based Upon the Results of the Nelson-Denny Reading Test, Form A.

Reading Grade	Deviation from Unit Placement (11.5)	Control n=48	Experimental n=48	Dropped n=12	Matchless n=16	Total n=124	Percent of Total	Percent of Students Falling Below the Upper Boundary of a Category
14.0+	+2 1/2	8	12	0	2	22	17.73%	100.00%
13.6 - 14.0	+2 1/2	4	1	0	1	6	4.84%	82.27%
13.1 - 13.5	+2	5	5	2	0	12	9.68%	77.43%
12.6 - 13.0	+1 1/2	7	6	0	2	15	12.10%	67.75%
12.1 - 12.5	+ 1	5	3	0	2	10	8.06%	55.65%
11.6 - 12.0	+1/2	2	3	0	0	5	4.03%	47.59%
11.1 - 11.5	-1/2	0	1	0	0	1	.81%	43.56%
10.6 - 11.0	-1	3	3	0	1	7	5.65%	42.75%
10.1 - 10.5	-1 1/2	3	2	3	1	9	7.26%	37.10%
9.6 - 10.0	-2	3	2	1	0	6	4.84%	29.84%
9.1 - 9.5	-2 1/2	1	1	3	1	6	4.84%	25.00%
8.6 - 9.0	-3	2	4	1	1	8	6.45%	20.16%
8.1 - 8.5	-3 1/2	3	4	1	1	9	7.26%	13.71%
7.6 - 8.0	-4	0	0	1	1	2	1.61%	6.45%
7.1 - 7.5	-4 1/2	1	0	0	1	2	1.61%	4.84%
7.0	-4 1/2	0	0	0	1	1	.81%	3.33%
-7.0	-4 1/2	1	1	0	1	3	2.42%	2.42%
		48	48	12	16	124	100.00%	
mean		11.8521		10.0083				
			11.8125		10.5438			
grand mean						11.4895		

Table 19. Summarized Reading Rate Table for Students in the Classes Participating in the Experiment Based Upon the Results of the Nelson-Denny Reading Test, Form A.

Reading Rate (words per minute)	Control n=48	Experimental n = 48	Dropped n = 12	Matchless n = 16	Total n = 124	Percent of Total	Percent of Students Falling Below the Upper Boundary of a Category
601-650	0	0	0	0	0	0.00%	100.00%
501-600	2	2	0	2	6	4.84%	100.00%
401-500	7	3	1	1	12	9.69%	95.16%
301-400	15	9	6	2	32	25.81%	85.47%
201-300	15	19	2	7	43	34.66%	59.66%
101-200	8	14	2	2	26	20.96%	25.00%
0-100	1	1	1	2	5	4.04%	4.04%
	48	48	12	16	124	100.00%	

Table 20. Detailed Reading Rate Table for Students in the Classes Participating in the Experiment Based Upon the Results of the Nelson-Denny Reading Test, Form A.

Reading Rate (words per minute)	Control n = 48	Experimental n = 48	Dropped n = 12	Matchless n = 16	Total n = 124	Percent of Total	Percent of Students Falling Below the Upper Boundary of a Category
626 - 650	0	0	0	0	0	0.00%	100.00%
601 - 625	0	0	0	0	0	0.00%	100.00%
576 - 600	1	0	0	1	2	1.61%	100.00%
551 - 575	0	1	0	1	2	1.61%	98.39%
526 - 550	1	0	0	0	1	.81%	96.78%
501 - 525	0	1	0	0	1	.81%	95.97%
476 - 500	0	1	0	0	1	.81%	95.16%
451 - 475	1	0	0	0	1	.81%	94.35%
426 - 450	3	2	0	1	6	4.84%	93.54%
401 - 425	3	0	1	0	4	3.23%	88.70%
376 - 400	3	4	1	1	9	7.26%	85.47%
351 - 375	7	1	1	0	9	7.26%	78.21%
326 - 350	2	1	1	0	4	3.23%	70.95%
301 - 325	3	3	3	1	10	8.06%	67.72%
276 - 300	2	3	0	0	5	4.03%	59.66%
251 - 275	6	3	1	0	10	8.06%	55.63%
226 - 250	5	9	1	3	18	14.51%	47.57%
201 - 225	2	4	0	4	10	8.06%	33.06%
176 - 200	3	6	2	1	12	9.67%	25.00%
151 - 175	1	4	0	0	5	4.03%	15.33%
126 - 150	3	3	0	1	7	5.65%	11.30%
101 - 125	1	1	0	0	2	1.61%	5.65%
76 - 100	1	1	1	1	4	3.23%	4.04%
51 - 75	0	0	0	1	1	.81%	.81%
26 - 50	0	0	0	0	0	0.00%	0.00%
0 - 25	0	0	0	0	0	0.00%	0.00%
	48	48	12	16	124	100.00%	
mean	306.1458	264.7917	283.2500	271.2500			
grand mean					283.4194		

minute to 306 words per minute, with the grand mean reading rate being 283 words per minute.

The norms for the Nelson-Denny Reading Test, Form A, indicated that the average tenth-grade student should have scored a reading rate near 216-226 words per minute; the average eleventh-grade student should have scored a reading rate near 226-238 words per minute; the average twelfth-grade student should have scored a reading rate near 238-250 words per minute. Most reading authorities have estimated that the average high school student should have a reading rate of approximately 200-250 words per minute, with the reading rate depending on the type of material being read.

Review of Findings

The chi-square tests on the matching factors indicated that there was a significant difference between those excluded from the experiment and those included in the experiment in terms of intelligence and pretest scores. This indicated that those groups included in the experiment proper were not exactly representative of the entire student population exposed to the multilevel materials; although in numerical terms, they adequately represented 108 students out of 124 students, or 87 percent of the students.

If one assumed that the populations were the same for practical purposes, the unpaired t test showed that there was a significant

difference at the .05 level in the gain of posttest scores over pretest scores for the experimental group over the control and matchless groups; whereas, the combined paired *t* test did not detect a significant difference.

Paired *t* tests on the individual levels of the text showed varied results. A statistically significant difference at the .05 level in posttest scores over pretest scores was found at the 7.5 reading grade level, with the experimental group having the 7.5 level texts outscoring their matched mates with the 11.5 level texts. There was no statistically significant difference at the .05 level for those with reading grade levels at or near 9.5 and 13.5 although the experimental group always made more gain than the control group and hence a positive *t* value resulted. The *t* value decreased regularly as reading grade levels increased and yet remained positive.

The reading grade level statistics indicated that approximately 37 percent of the students were reading one or more reading grade levels below the middle eleventh-grade placement of the unit and that approximately 44 percent of the students were reading one or more grade levels above the unit placement. Approximately 19 percent of the students were reading within plus or minus one reading grade level of the placement of the unit. The dispersion of reading grade levels was from above the sophomore year in college to below the seventh grade. The range of reading grade levels was approximately

eight reading grade levels. The grand mean reading grade level was almost eleventh grade, fifth month, for the students whose classes participated in the study.

Wide dispersion was also noted in the reading rate statistics. A range of approximately 525 words per minute was found. Approximately 4 percent of the students were reading 100 words per minute or less, 21 percent were reading 101-200 words per minute, 35 percent were reading 201-300 words per minute, 25 percent were reading 301-400 words per minute, 10 percent were reading 401-500 words per minute, and 5 percent were reading 501-600 words per minute. The grand mean reading rate of the students whose classes participated in the study was 283 words per minute.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Statement of the Problem

This study was designed to determine whether or not the use of multilevel materials would influence to a statistically significant degree posttest scores on a comprehensive objective test. The high school basic business multilevel materials on business organizational structure were compared with materials having a reading grade level of 11.5. This was also the grade level placement of the general business classes in which the unit was taught. In addition, information was collected concerning the range of students' reading grade levels and reading rates.

Description of Procedures

After developing the multilevel materials and the comprehensive pretest and posttest, the students were equated into matched pairs based upon four matching factors. These factors were reading grade level, intelligence, social class, and pretest scores. Those students in the experimental groups were given materials with reading grades which were closely correlated to their individual reading grade levels as determined by the Nelson-Denny Reading Test, Form A, while those students in the control groups were given materials with a reading grade level equal to the grade level placement of the general

business classes in which the unit was taught--in this case a reading grade level of 11.5. Each teacher involved in the experiment taught the unit as he thought it could best be taught. A comprehensive unit posttest was administered to all students. The results of the experimental and control groups were computed, and various statistical tests were calculated to determine if the findings were statistically significant at the .05 significance level. Data concerning reading grade levels and reading rates were tabulated.

Findings

The chi-square tests indicated that there was a significant difference between those excluded from the experiment and those included in the experiment in terms of the matching factors of intelligence and pretest scores. This indicated that the results of the *t* test calculations might be fallible since those included from the experiment were not necessarily from the same population as those excluded from the experiment. An unpaired *t* test showed that there was a significant difference at the .05 level in the gain of posttest scores over pretest scores for the experimental group over the control and matchless groups; whereas, the paired *t* test did not detect a significant difference.

The evidence, however, indicated that students with reading grade levels at or below 8.5 made higher gains to a statistically

significant degree (.05 level) when they were given reading materials which were closely correlated to their individual reading grade levels rather than materials with a reading grade level of 11.5, the grade level placement of the general business classes in which the unit was taught. Students with reading grade levels at or above 8.6 tended to make higher gains if their reading materials were closely correlated to their individual reading grade levels rather than having a reading grade level of 11.5, the grade level placement of the general business classes in which the unit was taught; although the gain decreased as the students' reading grade levels increased. The gain was not to a statistically significant degree. Simply stated, providing for individual differences in reading abilities improved student performance.

A tabulation of the students' reading grade levels showed that approximately 37 percent of the students were reading one or more reading grade levels below the middle eleventh-grade placement of the unit and that approximately 44 percent of the students were reading one or more grade levels above the unit placement. About 19 percent of the students were reading within plus or minus one reading grade level of the placement of the unit. The dispersion of reading grade levels was from above the sophomore year in college to below the seventh grade. The range of reading grade levels was approximately eight reading grade levels. The grand mean reading grade level was almost eleventh grade, fifth month.

The tabulation of the students' reading rates indicated that approximately 4 percent of the students were reading 100 words per minute or less, 21 percent were reading 101-200 words per minute, 35 percent were reading 201-300 words per minute, 25 percent were reading 301-400 words per minute, 10 percent were reading 401-500 words per minute, and 5 percent were reading 501-600 words per minute. The grand mean reading rate was 283 words per minute. The range of reading rates was approximately 525 words per minute.

Conclusions

The following conclusions were drawn, based on, and supported by the data presented in this study:

1. High school basic business students make greater gains in learning when they use reading materials which are closely correlated to their individual reading grade levels rather than reading materials with an arbitrarily chosen 11.5 reading grade level which was also the grade level placement of the general business classes in which the unit was taught. The gain is statistically significant at the .05 level when the reading grade level is 8.5 or less.

2. As reading grade levels increase, the accompanying gain from the use of multilevel materials which are closely correlated with the individuals' reading grade levels tends to decrease and yet to remain positive.

3. Reading grade levels of students within a high school basic business class vary considerably. A range of approximately eight reading grade levels appears to be an accurate estimate of the dispersion of reading grade levels within a class.

4. Approximately 20 percent of all high school basic business students read within plus or minus one reading grade level of the middle eleventh-grade placement of the unit. About 35 percent of the basic business students read one or more reading grade levels below the grade level placement of the unit. Approximately 45 percent of the students read one or more reading grade levels above the grade level placement of the unit.

5. The typical high school basic business student has a reading grade level of approximately eleventh grade, fifth month, if he is selected from tenth-, eleventh-, or twelfth-grade students.

6. Reading rates of high school basic business students vary considerably. A range of approximately 525 words per minute appears to be an accurate estimate of the dispersion of reading rates within a class.

7. Approximately 4 percent of all high school basic business students have reading rates of 100 words per minute or less. Roughly 21 percent of the students have reading rates of 101-200 words per minute, while about 35 percent of the students read 201-300 words per minute. Approximately 25 percent of the students have reading

rates of 301-400 words per minute. About 10 percent of the students have reading rates of 401-500 words per minute, while 5 percent of the students have reading rates of 501-600 words per minute.

8. The typical high school basic business student has a reading rate of approximately 250-300 words per minute.

Recommendations for Basic Business Teachers

This study suggests that one way to improve performance of basic business students is to provide them with reading materials which are closely correlated to their individual reading grade levels. It is rather obvious that no one textbook can closely correlate to the reading grade levels of each student within a class. If we are to provide for individual differences in reading abilities, then we should use multilevel materials written on several reading grade levels. Since no published multilevel materials are now known to be available in the basic business area, teachers should develop their own materials and/or use several textbooks with similar topic coverage and varying reading grade levels. The use of supplementary materials from the teacher's resource file is another step in the right direction, and these materials may be suitable texts for certain students within the class. Teachers should prevail upon publishers of basic business materials to develop materials that do meet the needs of basic business students in terms of the wide dispersion of reading grade levels and reading

rates. The reading grade levels of the new materials should be carefully controlled so that there are few fluctuations in the readability level from one paragraph to another. Too many books now on the market have an average readability level that may appear to be suitable for some students, but a careful examination of the readability level of selected paragraphs indicates variations of plus or minus three to six reading grade levels from the quoted average. This makes a considerable number of paragraphs from the material either too easy or too difficult for many students. Simply stated, there is no consistency in the readability level from one paragraph to another in most materials now available.

Teachers should become aware of the unrealistic nature of across-the-board reading assignments. They should become aware of the range of reading rates within their classes. Individualized assignments should be made to compensate for the wide range of reading rates among students. Teachers should assign specific sections of materials to slow readers rather than entire chapters. Materials that demand less reading time should be identified and used by students with reading rates of less than approximately 225 words per minute.

Only if teachers realize the importance of each student's reading grade level and reading rate to his success in basic business classes, can they take the necessary steps to provide him with suitable reading

assignments in terms of reading grade level and reading rate which in turn will lead him to the mastery of basic business materials.

Recommendations for Further Study

The following recommendations for further study are made:

1. Replicating the experiment using random-sampling techniques rather than the matched-pair technique could provide various results, especially under the following conditions:

   a. a different locality

   b. different sized schools

   c. schools of different socio-economic levels.

2. Varying the time spent in working through the research design could allow the multilevel materials to show their merits to a more significant degree.

3. Measuring the retention of the different levels of reading materials after a time lapse of several months could provide various results.

4. Increasing the number of participants in the study would provide a larger sample and hence the results would be more generalizable.

5. Rewriting the multilevel materials on the same or different reading grade levels could cause various results from the study.

Perhaps the use of multilevel materials on reading grade levels other than those used in this study would cause a more significant gain.

6. Selecting a different unit or a number of different units for study could provide various results.

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APPENDICES

APPENDIX A

Questions and Answers About the Experiment

Should the students be told they are participating in an experiment?

No. Tell the students as little as possible about the preliminary testing and about the use of the multilevel experimental unit. If students are told that they are participating in an experiment, they may bias the results. Answer questions they ask about the testing and unit, but do not volunteer additional information that might cause them to ask more questions.

How do I answer student's questions about why they are taking so many tests?

Students are taking the tests because:

1. They are required as part of the class work.
2. They will help the teacher to gather more information about each student and hence to improve teaching and learning by more accurately meeting individual needs.
3. They help to prepare for and improve performance on similar tests that are used for screening enrollment in schools and colleges and for selecting and hiring employees in businesses.

Who will score the tests used in the experiment?

Teachers will not score standardized tests for the following reasons:

1. To avoid excessive work caused by participating in the experiment.
2. To insure consistancy in test scoring.

3. To avoid access to information that might prejudice or bias the experiment and the students involved.

Teachers will score the unit posttest, Form B. Later these papers will be rechecked by the researcher to insure uniform scoring procedures.

How will make-up tests be handled?

Each student will make up missed tests on the first day that he returns to school after the test has been administered to the group.

Should I keep attendance records during the experiment?

Yes. Please use the form that is provided.

How may I teach this unit?

You are free to teach this unit in any manner that you see fit. Since the pretest and posttest are based upon the basic content of the multilevel text booklets, you will no doubt want each student to read his text booklet very carefully.

Will I be required to keep detailed lesson plans?

Since each teacher will use his own method in covering the unit, a brief paragraph summary of each days activities would be appreciated.

What do I do with the materials at the conclusion of the experiment?

All experiment materials are property of the researcher and must be returned to him. This includes:

1. standardized tests
2. pretests and answer forms
3. multilevel text booklets (student copies)
4. posttests and answer forms
5. student evaluations of the unit

Teachers may keep one set of the multilevel texts for their files if they wish to do so.

Where can I get my other questions about the multilevel experiment answered?

Bring your questions to the group meeting for all teachers involved in the experiment. The meeting will be at Boise High School, room 215, at 3:30 p. m. on Tuesday, February 22.

If I need help during the experiment, whom do I contact?

Paul Werner is the experiment coordinator. Since he worked through the experimental design last spring, he will be able to help you. He may be reached by telephone at the following numbers:

Boise High School	Home
344-6595	342-2858

APPENDIX B

Two-Factor Index of Social Position and Student Questionnaire

I. Introduction

The Two-Factor Index of Social Position was developed to meet the need for an objective, easily applicable procedure to estimate the positions individuals occupy in the status structure of our society. Its development was dependent both upon detailed knowledge of the social structure and procedures social scientists have used to delineate class position. It is premised upon three assumptions: (1) the existence of a status structure in the society; (2) positions in this structure are determined mainly by a few commonly accepted symbolic characteristics; and (3) the characteristics symbolic of status may be scaled and combined by the use of statistical procedures so that a researcher can quickly, reliably, and meaningfully stratify the population under study.

Occupation and education are the two factors utilized to determine social position. Occupation is presumed to reflect the skill and power individuals possess as they perform the many maintenance functions in the society. Education is believed to reflect not only knowledge, but also cultural tastes. The proper combination of these factors by the use of statistical techniques enables a researcher to

determine within approximate limits the social position an individual occupies in the status structure of our society.

II. The Scale Scores

To determine the social position of an individual or of a household two items are essential: (1) the precise occupational role the head of the household performs in the economy; and (2) the amount of formal schooling he has received. Each of these factors are then scaled according to the following system of scores.

A. The Occupational Scale

1. Higher Executives, Proprietors of Large Concerns, and Major Professionals.

a. Higher Executives

Bank Presidents; Vice-Presidents
Judges (Superior Courts)
Large Business, e.g., Directors, Presidents, Vice-Presidents, Assistant Vice-Presidents, Executive Secretary, Treasurer
Military, Commissioned Officers, Major and above, Officials of the Executive Branch of Government, Federal, State, Local, e.g., Mayor, City Manager, City Plan Director, Internal Revenue Directors
Research Directors, Large Firms

b. Large Proprietors (Value over $100,000[1]).

Brokers
Contractors
Dairy Owners
Lumber Dealers

c. Major Professionals

Accountants (C. P. A.)
Actuaries
Agronomists
Architects
Artists, Portrait
Astronomers
Auditors
Bacteriologists
Chemical Engineers
Chemists
Clergyman (Professionally Trained)
Dentists
Economists
Engineers (College Grad.)
Foresters
Geologists
Lawyers
Metallurgists

---

[1]The value of businesses is based upon the rating of financial strength in Dun and Bradstreet's Manual.

Physicians
Physicists, Research
Phychologists, Practicing
Symphony Conductor
Teachers, University, College
Veterinarians (Veterinary Surgeons)

2. Business Managers, Proprietors of Medium-Sized Businesses, and Lesser Professionals.

a. Business Managers in Large Concerns

Advertising Directors
Branch Managers
Brokerage Salesmen
District Managers
Executive Assistants
Executive Managers, Gvt. Officials, minor, e.g., Internal Revenue Agents
Farm Managers
Office Managers
Personnel Managers
Police Chief; Sheriff
Postmaster
Production Managers
Sales Engineers
Sales Managers, National Concerns
Sales Managers (Over $100,000)

b. Proprietors of Medium Businesses (Value $35,000-$100,000)

Advertising Owners (-$100,000)
Clothing Store Owners (-$100,000)
Contractors (-$100,000)
Express Company Owners (-$100,000)
Fruits, Wholesale (-$100,000)
Furniture Business (-$100,000)
Jewelers (-$100,000)
Labor Relations Consultants
Manufacturer's Representatives
Poultry Business (-$100,000)
Purchasing Managers
Real Estate Brokers (-$100,000)
Rug Business (-$100,000)
Store Owners (-$100,000)
Theater Owners (-$100,000)

c. Lesser Professionals

Accountants (Not C. P. A.)
Chiropodists
Chiropractors
Correction Officers
Director of Community House
Engineers (Not College Grad.)
Finance Writers
Health Educators
Librarians
Military, Commissioned Officers, Lts., Captains
Musicians (Symphony Orchestra)
Nurses
Opticians
Pharmacists
Public Health Officers (M. P. H.)
Research Assistants, University (Full-time)
Social Workers
Teachers (Elementary and High)

3. Administrative Personnel, Small Independent Businesses, and Minor Professionals.

a. Administrative Personnel

Adjusters, Insurance
Advertising Agents
Chief Clerks
Credit Managers
Insurance Agents
Managers, Department Stores
Passenger Agents--R. R.
Private Secretaries
Purchasing Agents
Sales Representatives
Section Heads, Federal, State, and Local Government Offices
Section Heads, Large Businesses and Industries
Service Managers
Shop Managers
Store Managers (Chain)
Traffic Managers

b. Small Business Owners ($6,000-$35,000)

Art Gallery
Auto Accessories
Awnings
Bakery
Beauty Shop
Boatyard
Brokerage, Insurance
Car Dealers
Cattle Dealers
Feed
Finance Co., Local
Fire Extinguishers
5 & 10
Florist
Food Equipment
Food Products
Foundry
Funeral Directors
Furniture
Garage
Gas Station
Glassware
Grocery, General
Hotel Proprietors
Inst. of Music
Jewelry
Machinery Brokers
Manufacturing
Cigarette Machines
Cleaning Shops
Clothing
Coal Businesses
Convalescent Homes
Decorating
Dog Supplies
Dry Goods
Engraving Business
Monuments
Package Store (Liquor)
Painting Contracting
Plumbing
Poultry Producers
Publicity & Public Relations
Real Estate
Records and Radios
Restaurant
Roofing Contractor
Shoe
Shoe Repairs
Signs
Tavern
Taxi Company
Tire Shop
Trucking
Trucks and Tractors
Upholstery
Wholesale Outlets
Window Shades

c. Semi-Professionals

Actors and Showmen
Army M/Sgt; Navy C. P. O.
Artists, Commercial
Appraisers (Estimators)
Clergymen (Not professionally) trained)
Concern Managers
Deputy Sheriffs
Dispatchers, R. R. Train
I. B. M. Programmers
Interior Decorators
Interpreters, Court
Laboratory Assistants
Landscape Planners
Morticians
Oral Hygienists
Photographers
Physio-therapists
Piano Teachers
Radio, T. V. Announcers
Reporters, Court
Reporters, Newspaper
Surveyors
Title Searchers
Tool Designers
Travel Agents
Yard Masters, R. R.

d. Farmers

Farm Owners ($25,000-35,000)

4. Clerical and Sales Workers, Technicians, and Owners of Little Businesses. (value under $6,000)

a. Clerical and Sales Workers

Bank Clerks and Tellers
Bill Collectors
Bookkeepers
Business Machine Operators, Offices
Claims Examiners
Clerical or Stenographic
Conductors, R. R.
Employment Interviewers
Factory Storekeeper
Factory Supervisor
Post Office Clerks
Route Managers (Salesmen)
Sales Clerks
Shipping Clerks
Supervisors, Utilities, Factories
Toll Station Supervisors
Warehouse Clerks

b. Technicians

Camp Counselors
Dental Technicians
Draftsmen
Driving Teachers
Expeditor, Factory
Experimental Tester
Instructors, Telephone Co., Factory
Inspectors , Weights, Sanitary Inspectors, R. R., Factory
Investigators
Laboratory Technicians
Locomotive Engineers
Operators, P. B. X.
Proofreaders
Safety Supervisors
Supervisors of Maintenance
Technical Assistants
Telephone Co. Supervisors
Timekeepers
Tower Operators, R. R.
Truck Dispatchers
Window Trimmers (Store)

c. Owners of Little Businesses

Flower Shop ($3,000-$6,000)
Newstand ($3,000-$6,000)
Tailor Shop ($3,000-$6,000)

d. Farmers

Owners ($10,000-$20,000)

5. Skilled Manual Employees.

Adjusters, Typewriter
Auto Body Repairers
Bakers
Barbers
Blacksmiths
Bookbinders
Boilermakers
Brakemen, R. R.
Brewers
Bulldozer Operators
Butchers
Cabinet Makers
Carpenters
Casters (Founders)
Cement Finishers
Cheese Makers
Chefs
Compositors
Diemakers
Diesel Engine Repair & Maintenance (Trained)
Diesel Shovel Operators
Electricians
Electrotypists
Engravers
Exterminators
Fitters, Gas, Steam
Firemen, City
Firemen, R. R.
Foremen, Construction, Dairy
Gardeners, Landscape (Trained)
Glassblowers
Glaziers
Gunsmiths
Gauge Makers
Hair Stylists
Heat Treaters
Horticulturists
Lineman, Utility
Linoleum Layers (Trained)
Linotype Operators
Lithographers
Locksmiths
Loom Fixers
Lumberjacks
Machinists (Trained)
Maintenance Foremen
Installers, Electrical Appliances
Masons
Masseurs
Mechanics (Trained)
Millwrights
Moulders (Trained)
Painters
Paperhangers
Patrolmen, R. R.
Pattern and Model Makers
Piano Builders
Piano Tuners
Plumbers
Policemen, City
Postmen
Printers
Radio, T. V., Maintenance
Repairmen, Home Appliances
Riggers
Rope Splicers
Sheetmetal Workers, (Trained)
Shipsmiths
Shoe Repairmen (Trained)
Stationary Engineers (Licensed)
Stewards, Club

Switchmen, R.R.
Tailors, (Trained)
Teletype Operators
Toolmakers
Track Supervisors, R.R.
Tractor-Trailer Trans.
Typographers
Upholsterers (Trained)
Watchmakers
Weavers
Welders
Yard Supervisors, R.R.

Small Farmers

Owners (under $10,000)
Tenants who own farm equipment

6. Machine Operators and Semi-Skilled Employees.

Aides, Hospital
Apprentices, Electricians, Printers, Steamfitters, Toolmakers
Assembly Line Workers
Bartenders
Bingo Tenders
Building Superintendents (Cust.)
Bus Drivers
Checkers
Clay Cutters
Coin Machine Fillers
Cooks, Short Order
Delivery Men
Dressmakers, Machine
Drill Press Operators
Duplicator Machine Operators
Elevator Operators
Enlisted Men, Military Services
Filers, Benders, Buffers
Foundry Workers
Garage and Gas Station Assistants
Greenhouse Workers
Guards, Doorkeepers, Watchmen
Hairdressers
Housekeepers
Meat Cutters and Packers
Meter Readers
Operators, Factory Machines
Oiler, R.R.
Paper Rolling Machine Operators
Photostat Machine Operators
Practical Nurses
Pressers, Clothing
Pump Operators
Receivers and Checkers
Roofers
Set-up Men, Factories
Shapers
Signalmen, R.R.
Solderers, Factories
Sprayers, Paint
Steelworkers (Not Skilled)
Stranders, Wire Machines
Strippers, Rubber Factory
Taxi Drivers
Testers
Timers
Tire Moulders
Trainmen, R.R.
Truck Drivers, General
Waiters-Waitresses ("Better Places")
Weighers
Welders, Spot
Winders, Machine
Wiredrawers, Machine
Wine Bottlers
Wood Workers, Machine
Wrappers, Stores and Factories

Farmers
Smaller Tenants who own little equipment

7. Unskilled Employees.

Amusement Park Workers (Bowling Alleys, Pool Rooms)
Ash Removers
Attendants, Parking Lots
Cafeteria Workers
Car Cleaners, R.R.
Car Helpers, R.R.
Carriers, Coal
Countermen
Dairy Workers
Deck Hands
Domestics
Farm Helpers
Fishermen (Clam Diggers)
Freight Handlers
Garbage Collectors
Grave Diggers
Hod Carriers
Hog Killers
Hospital Workers, Unspecified
Hostlers, R.R.
Janitors, Sweepers
Laborers, Construction
Laborers, Unspecified
Laundry Workers
Messengers
Platform Men, R.R.
Peddlers
Porters
Roofer's Helpers
Shirt Folders
Shoe Shiners
Sorters, Rag and Salvage
Stagehands
Stevedores
Stock Handlers
Street Cleaners
Unskilled Factory Workers
Truckmen, R.R.
Waitresses ("Hash Houses")
Washers, Cars
Window Cleaners
Woodchoppers

Relief, Public, Private

Unemployed (No Occupation)

Farmers

Share Croppers

This scale is premised upon the assumption that occupations have different values attached to them by the members of our society. The hierarchy ranges from the low evaluation of unskilled physical labor toward the more prestigious use of skill, through the creative talents of ideas, and the manipulation of men. The ranking of

occupational functions implies that some men exercise control over the occupational pursuits of other men. Normally, a person who possesses highly trained skills has control over several other people. This is exemplified in a highly developed form by an executive in a large business enterprise who may be responsible for decisions affecting thousands of employees.

B. The Educational Scale

The educational scale is premised upon the assumption that men and women who possess similar educations will tend to have similar tastes and similar attitudes, and they will also tend to exhibit similar behavior patterns. The educational scale is divided into seven positions: (1) Graduate Professional Training. (Persons who complete a recognized professional course leading to a graduate degree are given scores of 1.) (2) Standard College or University Graduation. (All individuals who complete a four-year college or university course leading to a recognized college degree are assigned the same scores. No differentiation is made between state universities or private colleges.) (3) Partial College Training. (Individuals who complete at least one year but not a full college course are assigned this position. Most individuals in this category complete from one to three years of college.) (4) High School Graduates. (All secondary school graduates, whether from a private preparatory school, a public high school, a trade school, or a parochial high

school, are assigned the same scale value.) (5) Partial High School. (Individuals who complete the tenth grade or the eleventh grades but do not complete high school are given this score.) (6) Junior High School. (Individuals who complete the seventh grade through the ninth grade are given this position.) (7) Less Than Seven Years of School. (Individuals who do not complete the seventh grade are given the same scores irrespective of the amount of education they receive.)

III. Integration of Two Factors

The factors of Occupation and Education are combined by weighing the individual scores obtained from the scale positions. The weights for each factor were determined by multiple correlation techniques. The weight for each factor is:

Factor	Factor Weight
Education	4
Occupation	7

To calculate the Index of Social Position score for an individual the scale value for Occupation is multiplied by the factor weight for Occupation, and the scale value for Education is multiplied by the factor weight for Education. For example, John Smith is the manager of a chain supermarket. He completed high school and one year of business college. His Index of Social Position score is computed as follows:

Factor	Scale Score	Factor Weight	Score X Weight
Occupation	3	7	21
Education	3	4	12
	Index of Social Position Score		33

IV. Index of Social Position Scores

The Two-Factor Index of Social Position Scores may be arranged on a continuum or divided into groups of scores. The range of scores of a continuum is from a low of 11 to a high of 77. For some purposes a researcher may desire to work with a continuum of scores. For other purposes he may desire to break the continuum into a hierarchy of score groups.

I have found the most meaningful breaks for the purpose of predicting the social class position of an individual or of a nuclear family is as follows:

Social Class	Range of Computed Scores
I Upper	11-17
II Upper-Middle	18-27
III Middle	28-43
IV Lower-Middle	44-60
V Lower	61-77

When the Two-Factor Index of Social Position is relied upon to determine class status, differences in individual scores within a specified range are ignored; and the scores within the range are treated as a unit. This procedure assumes there are meaningful differences between the score groups. Individuals and nuclear families with scores that fall into a given segment of the range of scores

assigned to a particular class are presumed to belong to the class the Two-Factor Index of Social Position score predicts for it.

The assumption of a meaningful correspondence between, and estimated class position of,individuals and their social behavior has been validated by the use of factor analysis.[2] The validation study demonstrated the existence of classes when mass communication data are used as criteria of social behavior.

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[2]See August B. Hollingshead and Frederick C. Redlich, Social Class and Mental Illness, John Wiley and Sons, New York, 1958, pp. 398-407.

Student Questionnaire

Name_____ Age_____

Address_____ Birth Date_____

School_____ Grade_____

Name of Head of Household_____

Occupation of Head_____

Employer of Head_____

Address of Employer_____

Circle below the highest educational level completed by head of household

1. graduate professional training
2. standard college or university graduate
3. partial college training
4. high school graduate
5. partial high school
6. junior high school
7. less than seven years of school

DO NOT WRITE IN THE SPACE BELOW
_____ X 7 = _____
_____ X 4 = _____
_____
_____
_____
_____
_____

List the business courses you have taken. Examples: General Business, Typing, Bookkeeping.

_____

Are you employed outside of school hours? Yes_____ No_____
If employed, what do you do? _____
Type of work_____
By whom are you employed?_____

What other types of work have you done? (Include summer jobs and part-time jobs)

_____

_____

What do you plan to do when you finish school? _____

_____

Circle the statement/s that is/are most likely to apply to you immediately after high school graduation:

1. I will enter one of the armed forces.
2. I will receive no training after high school graduation.
3. I will attend a community (junior) college or a trade or vocational school.
4. I will attend a college or university.
5. None of the above apply. I will _____

_____

APPENDIX C

Directions for the Administration of Form A, Pretest; Form A, Pretest; Answer Sheet; Key

At the beginning of the testing session, see that each pupil is provided with a writing instrument, preferably a pencil, and an eraser for making corrections.

When the desks are cleared of all other materials, say:

I shall distribute a test booklet and answer sheet to you. Do not open them until you are told to do so.

The test and answer sheets should be distributed with the cover facing up. When the distribution has been completed, say:

Check to see that both your test booklet and answer sheet are marked Form A. You will find the form marked at the top of the test booklet and at the bottom of the information section on the answer sheet.

Allow the students time to check the form and then say:

Be absolutely certain that you have a Form A test booklet and a Form A answer sheet. In the blanks provided on the answer sheet, please print your name legibly and all other information that is requested. You will find today's date written on the board.

Allow the students ample time to complete the heading on the answer sheet before proceeding. Then say:

You will begin a pretest of our next unit, business organizational structure, in a few moments. The purpose of the pretest is to determine what you already know about business organizational structure. When I know this, I can teach this unit more effectively to you. Since many of you do not know a great deal about this topic, you may find that you will not be able to answer many of the questions. Do not be alarmed by the fact that you cannot answer many of the questions. This is to be expected since you have not studied this unit. Answer as many questions as you can to the best of your ability.

Read the directions for taking Form A silently while I read them to you.

This is a timed test. You will be given 20 minutes of working time to complete as many questions as possible. Read each question carefully. If you cannot answer a question immediately, leave it blank and proceed on to the next test item. Come back to it later after you have worked through the entire test. It is to your advantage to answer as many test questions as possible.

Your responses to test items are not to be recorded in your test booklet. Make no marks in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided.

Let's look at the answer sheet for a moment. Notice that it is divided into sections and that there are five types of questions in the test. Be sure that you record your answer carefully in the appropriate section of the answer sheet. Notice, for example, that there is a separate column for the true responses and a separate column for the false responses in the true and false section. Notice that there are three columns for recording your answers in the classification section. Be very careful that you record your answers in the column or columns that you choose. A sample question has been recorded for you for each type of question. You will find the sample question at the top of each section of the test. You will use the same method in marking your response. Are there any questions?

Answer any questions that the students may have.

Remember that this is a timed test. You will be given 20 minutes working time. Your responses to test items are not to be recorded in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided. It is to your advantage to answer as many test questions as possible. Work through the entire test before coming back to reconsider questions that you left blank.

You have 20 minutes to complete the pretest. Begin immediately.

Record the beginning time and complete the following chart:

Starting time: _____

Add : 20 min. working time

Stop at : _____

When the 20-minute span of working time has elapsed, say:

Stop! Close your test booklet and turn it face down on your desk. Twenty minutes of working time has elapsed.

Collect the answer sheets for Form A.

Collect the test booklets for Form A.

Form A, Pretest

General Directions:

This is a timed test. You will be given 20 minutes of working time to complete as many questions as possible. Read each question carefully. If you cannot answer the question immediately, leave it blank and proceed on to the next test item. Come back to it later after you have worked through the entire test. It is to your advantage to answer as many test questions as possible.

Your responses to test items are not to be recorded in your test booklet. Make no marks in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided.

True and False: If the statement is true, mark it with an X in the true column; if the statement is false, mark it with an X in the false column.

Sample: 0. One person may form a proprietorship. (True--X marked in true column)

1. Everyday items that are produced in large quantities usually have a relatively low purchase price.

2. A partnership is a legal entity separate from its owners.

3. Corporate profits are always subject to double taxation.

4. About 50 percent of the American businesses are proprietorships.

5. A partnership may be formed by twelve persons.

6. Corporations produce roughly five times as much as proprietorships do.

7. Corporate profits are almost never taxed twice.

8. About 60 percent of the American businesses are proprietorships.

9. Corporations are more numerous in the United States than are partnerships.

10. The terms stocks and bonds are not alike; stock evidences ownership while bonds evidence debt.

11. A corporation's efforts to obtain money for much-needed expansion may be hampered by its owners having poor credit ratings.

12. As soon as Articles of Incorporation are filed with the state government, the corporation may legally begin business.

13. A proprietorship is required to file a business income tax return.

14. Partners are required by law to divide profits according to each partner's percentage of ownership.

Fill in: Fill in an appropriate response for each statement on the answer sheet.

Sample: 0. An item that is produced in a large quantity is said to be _____ produced. (Mass written on the line on the answer sheet)

1. A business that has one owner/manager is called a/an_____.

2. The major type of business organization that does not involve the possibility of losses for owner beyond the amount of investment is the _____.

3. A corporation where stock is not available for sale to the public is said to be a/an _____ corporation.

4. A corporation whose stock is available for sale to the public is said to be a/an _____ corporation.

5. The document granting a corporation the right to function within the state is called the _____.

6. If not stated, the life of a corporation is assumed to be _____.

7. The type of management that has each partner overseeing the area in which he is most knowledgeable is called _____ management.

8. The type of organizational structure in which a member is an owner of stock is the _____.

Classification: Mark an X in the appropriate column(s) if the statement is true for that type of organization; there may be more than one X for any statement.

Sample: 0: has one owner/manager (X placed in Proprietorship column)

1. profits are not shared

2. management is separated from the owners

3. management duties are equally shared unless otherwise stated

4. death of owner(s) does not affect business

5. expansion efforts can almost always be easily financed

6. state authorities must grant the business the right to operate within the state

7. the lifetime of the business is uncertain

8. is relatively easy to organize

9. ended by death, incapacity, or option of owner(s)

Matching: Match the appropriate item from column 1 to the statement in column 2. No item from column 1 will be used more than once.

Sample: 0. Present U. S. population figure (W written on answer sheet)

Column 1 (listed alphabetically)	Column 2
a. America	1. Assigns to another the right to vote one's shares of stock
b. Articles of Copartnership	2. Number of businesses in 1964
c. Articles of Incorporation	3. Number of nonfarm businesses in 1864
d. Charter	4. Corporations are a dominant type of business here
e. Cooperative	5. Names of subscribers are listed in this document
f. Corporation	6. Cooperatives are most popular here
g. Credit	7. Percent of businesses that are partnerships
h. Europe	8. Organized not to make a profit
i. Five million (5,000,000)	9. Percent of businesses that are cooperatives
j. Four (4)	
k. Fourteen percent (14%)	
l. General agency powers	
m. Nine percent (9%)	
n. One hundred eighty million (180,000,000)	
o. Patronage refund	
p. Partnership	
q. Proxy	
r. Ten percent (10%)	
s. Three (3)	
t. Three hundred fifty thousand (350,000)	
u. Two (2)	
v. Two percent (2%)	
w. Two hundred million (200,000,000)	
x. Two hundred twenty million (220,000,000)	

Multiple Choice: Choose the response that is most nearly correct.

Sample: 0. Which of the following events is most likely to end the life of a proprietorship? (C recorded on answer sheet)

a. the death of a key employee
b. the proprietor's taking a vacation of six weeks
c. the proprietor's suffering a serious stroke
d. the retirement of a key employee
e. the death of a part-time employee
f. the key employee is taking a six-week vacation

1. Which statement is true:
   a. The terms stocks and bonds have the same meaning.
   b. A bondholder is a creditor; a stockholder is an owner.
   c. Stock represents debt owed by the corporation.
   d. A stockholder is a creditor and a bondholder is an owner.
   e. A corporation cannot issue both stocks and bonds.
   f. None of the above statements is true.

2. Which of the following items is least likely to be found in the Articles of Copartnership?
   a. the date of the agreement
   b. the date of termination
   c. the names of the partners
   d. the name of the partnership
   e. the investment of each partner
   f. the percentage of profit belonging to each partner

3. Having business property as well as personal property seized and sold by the courts to satisfy a business' unpaid debts is an example of the legal concept of:
   a. agency powers
   b. unlimited liability
   c. entity
   d. caveat emptor
   e. seizure
   f. preemptive rights

4. Doctors Smith and Jones are partners. Dr. Smith signs a contract with Mr. Black to purchase land for new office facilities. Which statement is true of Dr. Jones' position?
   a. He is bound by the contract signed by Dr. Smith.
   b. He is not bound by general agency powers.
   c. He is bound by the contract only if both he and Dr. Smith sign it.

d. He is bound by the contract only if he approves it.
e. He is bound by the contract only if all three of them sign it.
f. He is not bound by the contract because it was made without his prior consent.

5. Jay Ralphs owns ten shares of stock that entitle him to cast one vote in the election for the board of directors. Mr. Ralphs is most likely to be a:
   a. shareowner
   b. stockholder
   c. bondholder
   d. shareholder
   e. bondowner
   f. member

Name _____

Date _____

School _____

Period of day _____

Form A

QUESTION NUMBER	TRUE AND	FALSE	FILL IN	CLASSIFICATION	PROPRIETORSHIP	PARTNERSHIP	CORPORATION	MATCHING	MULTIPLE CHOICE	QUESTION NUMBER
0	X		Mass		X			w	c	0
1										1
2										2
3										3
4										4
5										5
6										6
7										7
8										8
9										9
10										10
11										11
12										12
13										13
14										14

Name _____

Date _____

School _____

Period of day _____

Form A

QUESTION NUMBER	TRUE AND	FALSE	FILL IN synonyms accepted	CLASSIFICATION	PROPRIETORSHIP	PARTNERSHIP	CORPORATION	MATCHING	MULTIPLE CHOICE	QUESTION NUMBER
0	X		mass		X			w	c	0
1	X		proprietorship		X			q	b	1
2		X	corporation				X	i	b	2
3		X	closed			X		t	b	3
4		X	open				X	a	a	4
5	X		charter				X	c	f	5
6	X		forever-perpetual				X	h		6
7		X	specialized		X	X		r		7
8		X	cooperative		X	X		e		8
9		X			X	X	X	v		9
10	X									10
11		X								11
12		X								12
13		X								13
14		X								14

APPENDIX D

Flesch Reading Ease Formula

How to Test Readability

I. FULL TEST OR SAMPLING?

If your piece of writing is reasonably short, or if you want to be as exact as possible in your readability estimate, apply the readability test to all the material. Otherwise it is more practical to take samples.

II. HOW TO PICK SAMPLES

If you take samples, be sure to take enough for a fair test. Ordinarily, three to five samples of an article and twenty-five to thirty of a book will do.

Don't try to pick "good" or "typical" samples; take them at random. It is best to go by a strictly numerical scheme. For instance, take every third paragraph of a short article or every other page of a longer piece. But don't use the introductory paragraphs of your piece as samples; usually they are not typical of the style of the whole piece. If you want to test the readability of the introduction, test it separately.

Take samples of 100 words each. Start each sample at the beginning of a paragraph.

III. HOW TO COUNT WORDS

Count each word in your piece of writing. If you are using samples, take each sample and count each word in it up to 100. After the 100th word, put a pencil mark.

Count as a word all letters, numbers, or symbols, or groups of letters, numbers, or symbols, that are surrounded by white space. Count contractions and hyphenated words as one word. For example, count each of the following as one word: 1948, $19,892, e.g., C.O.D., wouldn't, week-end.

IV. HOW TO FIGURE THE AVERAGE SENTENCE LENGTH

As your next step, figure the average number of words in your sentences.

A. If you test a whole piece of writing, this means that you count all the sentences and then divide the number of words by the number of sentences, rounding off the result. For example, if you have 183 words and 9 sentences, the average sentence length is 20.

B. If you are using samples, count the number of sentences in each sample; then add the number of sentences in all samples and divide the number of words in all samples by the total number of sentences.

C. In a 100-word sample, the 100-word mark will usually fall in the middle of a sentence. Count such a sentence as one of those in your sample, if the 100-word mark falls after more than half of the words in it; otherwise disregard it. For example, the sentence "This was not the case" should be counted in if the 100-word mark falls after the word not, but disregarded if the 100-word mark falls before it.

If you had three 100-word samples, containing 3, 9, and 7 sentences, your average sentence length would be 300 divided by 19, or 16 words.

D. In counting sentences, count as a sentence each unit of thought that is grammatically independent of another sentence or clause, if its end is marked by a period, question mark, exclamation point, semicolon, or colon. Incomplete sentences or sentence fragments are also to be counted as sentences. For example, count as two sentences: What did the minister talk about? Sin. Count as two sentences: The Lord is my shepherd; I shall not want. Count as three sentences: There are two arguments against this plan: 1. It is too expensive. 2. It is impractical. Count as two sentences: Result: Nobody came. But count as one sentence only: He registered, but he did not vote. (Two independent clauses, combined into a compound sentence with only a comma.) Count as one sentence: There were three people present; Mary, Robert, and John. (The words after the colon are not a separate unit of thought.) Count as one sentence: This project is supposed to: (a) provide training; (b) stimulate suggestions. (No part of this is an independent clause. Count such material as one sentence even if it is paragraphed.)

E. In dialogue, count the words he said or other speech tags as part of the quoted sentence to which they are attached. For example, count as one sentence: He said: "I have to go." Count also as one sentence: "That's all very well," he replied, showing clearly that he didn't believe a word of what we said.

For more examples of how to count sentences, study the separation of sentences shown in the examples. They are marked in this book by /.

V. HOW TO FIGURE THE AVERAGE WORD LENGTH

As your next step, figure the average word length in syllables. To do that, count all syllables and divide the total number of syllables by the number of words. In the formula, this measure is expressed as the number of syllables per hundred words; therefore, multiply your result by 100.

If you use 100-word samples, count the total number of syllables in all your samples and divide by the number of samples.

Both ways you will get the number of syllables per hundred words.

Count syllables the way you pronounce the word; e.g., asked has one syllable, George's two, determined three, and pronunciation five. Count the number of syllables in symbols and figures according to the way they are normally read aloud, e.g. two for $ (dollars), three for R.F.D. ("are-eff-dee"), and four for 1916 ("nineteen sixteen"). However, if a passage contains lengthy figures or more than a few, your estimate will be more accurate if you leave these figures out of your syllable count; in a 100-word sample, be sure to add instead a corresponding number of words after the 100-word mark.

If in doubt about syllabication rules, use any good dictionary. Count the syllables in all the words, even if this may seem "unfair," e.g., in such words as vegetables or California. Otherwise, your estimate will not be comparable to statistical estimates of other materials.

As a practical shortcut, count all syllables except the first in all words of more than one syllable; then add the total to the number of words tested. It is also helpful to "read silently aloud" while counting.

VI. HOW TO FIND YOUR READING EASE SCORE

To find your Reading Ease Score, after you have found the average sentence length in words and the number of syllables per 100 words, use the chart on the next page.

You can also use this formula:

Multiply the average sentence length by 1.015	.....
Multiply the number of syllables per 100 words by .846	.....
Add	_____
Subtract this sum from	206.835
Your Reading Ease Score is:	.....

The Reading Ease Score will put your piece of writing on a scale between 0 (practically unreadable) and 100 (easy for any literate person).

Score Interpretations

Score	Grade Equivalent
90-100	5
80-89	6
70-79	7
65-69	8
60-64	9
57-59	10
54-56	11
50-53	12
45-49	13
40-44	14
35-39	15
30-34	16
0-29	College Graduate

Other Interpretations:

Score	Style Description		Number of Syllables	Length of Sentence
90-100	Very Easy	Comics	123 per 100	8 words
80-90	Easy	Pulp Fiction	131 per 100	11 words
70-80	Fairly Easy	Slick Fiction	139 per 100	14 words
60-70	Standard	Digests, Time	147 per 100	17 words
50-60	Fairly Difficult	Harper's	155 per 100	21 words
30-50	Difficult	Academic	167 per 100	25 words
0-30	Very Difficult	Scientific	192 per 100 or more	29 words or more

APPENDIX E

Samples of Multilevel Material

1. 7.5 Reading Grade Level
2. 9.5 Reading Grade Level
3. 11.5 Reading Grade Level
4. 13.5 Reading Grade Level (College)

Each sample covers the same topic on different reading grade levels.

THE PROPRIETORSHIP

WORD PREVIEW

proprietor	prə-prī′-ə-ter	person in business for himself
proprietorship	prə-prī′-ə-ter-ship	type of business with one owner/manager
unlimited liability	un-lim′-ə-tid lī′-ə-bil′-ə-ti	both business and personal items of worth may be seized and sold to satisfy debts
credit	kred′-it	ability to borrow
capital	kap′-ə-təl	what one owns
credit rating	kred′-it rāt′-ing	repayment record for paying back what has been borrowed

The number of businesses in the last century has grown. But a man can still start a business. He can start one for himself. A man in business for himself is called a proprietor. Other similar terms are individual proprietor and sole proprietor. A proprietorship is a business that has one owner. He also is the manager. Eighty percent of the American businesses are proprietorships. They are easy to form. They are easy to organize. There is no way that the business must be set up. This means that there will be few hard legal problems for the lawyers. This makes the business cheaper to start. Starting costs for a proprietorship are usually small.

Many men like to be their own bosses. The proprietor is his own boss. His job is making the management decisions. He makes them alone. He can make them quickly. This helps in emergency situations. This is not true for other types of businesses. The proprietor may have management difficulties, however. Often he does. He is expected to be a jack-of-all-trades and a master-of-none. He lacks skill and training in many areas of management. Once in a while he will make decisions that are not good for his business. This could cause it to fail. Many proprietorships fail each year because of poor management.

The proprietor's business is ended by his death. His inability to manage and operate it will also end it. So will his closing or selling the business. An example follows:

Mr. Brown is 63. He is the proprietor of a small shoe repair shop. He repairs shoes most of the time. Sometimes he sells shoes from his small stock. Last summer Mr. Brown had a serious heart attack. He was in the hospital for three weeks. Mr. Brown's doctor said he could not work for at least a year. The shoe repair shop had been closed three weeks. Mr. Brown had three possibilities for the shop:

1. Mr. Brown's new helper could try to run the business. Mr. Brown knew this would not work. The helper did not have any management training. He did not have any of Mr. Brown's experience either.

2. Mr. Brown could close his business until he was able to run it. That would be about a year. He would lose many customers. They would have to find a new place to get their shoes fixed. When he reopened, most of them would not return to his shop. He would not have enough customers.

3. Mr. Brown could try to sell his closed business but he would suffer a great loss. No one would buy a closed business for what it was worth. They would buy a business that was operating and making money.

The prospects for Mr. Brown's business were not good. This points out disadvantages of a proprietorship. Similar events would have been more favorable had the business been organized as either a partnership or corporation.

Unlimited liability is a great disadvantage of the proprietorship. All property can be seized and sold by the courts. This is done to pay business debts. It includes both business and personal property. This is a sobering fact. The business may fail. It may have debts. The owner may lose his business property. He may also lose his personal property. Some men have lost everything they owned but the clothes they were wearing. Would you like to be open to unlimited liability? The proprietor is.

The proprietorship is not all bad, however. The proprietor's profits are taxed at his own personal tax rate. All of the profits are his alone. They are not shared. Those of the partnership are shared. So are those of the corporation. There are no special taxes that are paid for the right to run a proprietorship. This is not true of the corporate form. Besides, the proprietor is under little or no regulation from the government. But the corporation faces much more regulation.

Credit is the ability to borrow. It may be limited for the proprietor. One reason could be the uncertain life of the business. Another could be his capital. Capital is what he owns. A low credit rating is another. It is his repayment record for what he has borrowed. The proprietor may not be able to expand his business when he wishes. Others may say he lacks capital or has a low credit rating. This can be frustrating. It can cause the business to fail.

PROPRIETORSHIP

If the statement is true mark it with a T; if it is false, mark it with an F and then correct it so that it is true.

1. A person in business for himself is called a proprietor.

2. The owner of a proprietorship is a management specialist.

3. The proprietorship is ended by death, inability to manage and operate the business, and by any serious illness.

4. Unlimited liability means that only business property may be used to satisfy business debts.

5. Two advantages of a proprietorship are from tax and regulation viewpoints.

6. Proprietorship profits are shared with other persons.

7. Credit is the ability to borrow.

8. Proprietorships have a fixed lifetime.

9. The proprietor's capital and credit rating have little affect on his ability to borrow.

10. Growth for the proprietorship is almost never limited.

THE PROPRIETORSHIP

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capital	kap′-ə-təl	what one owns
credit rating	kred′-it rāt′ing	repayment record for paying back what has been borrowed

The number of businesses in the last century has soared. But there are still many chances for a man to open a business. A man who is in business for himself is called a proprietor. Other similar terms are individual proprietor and sole proprietor. A proprietorship is a business that has one man as the owner and manager. Eighty percent of American businesses are proprietorships. This is because they are easy to form and to organize. There is no way that the business must be set up. This means that there will be few hard legal problems for the lawyer. This makes the business cheaper to start. Starting costs for a proprietorship are usually small.

Many people like to be their own bosses. The proprietor is his own boss. He is responsible for making all the management decisions. He makes the decisions by himself. They can be made very quickly in emergency situations. This is not true for other types of businesses. The proprietor may have management difficulties, however. Because he is the manager, he must be a jack-of-all-trades and a master-of-none. He lacks specialized training in many areas of management. Once in a while he will make decisions that are not good for his business. The lack of adequate management skills in all areas causes many proprietorships to fail each year.

The proprietor's business is ended by his death, by his inability to manage and operate the business, or by his option to close or sell the business. An example follows:

Mr. Brown is 63. He is the proprietor in a small shoe repair shop. In addition to repairing shoes, he occasionally sells a pair of shoes from his small stock. Last summer Mr. Brown had a serious heart attack. He was hospitalized for three weeks. Mr. Brown's doctor said he could not work for at least a year. The shoe repair shop had been closed three weeks. Mr. Brown had three possibilities for the shop:

1. Mr. Brown's new helper could try to operate the business. Mr. Brown was sure that this would be a failure. The helper did not have any management training. He did not have the experience Mr. Brown had.

2. Mr. Brown could close his business until he was able to operate it. But that would be about a year. He would lose many customers. They would have to look for a new place to have shoes repaired. When he reopened, most of them would not return to his shop. He would not have enough customers.

3. Mr. Brown could attempt to sell his closed business. But he would suffer a great loss. No one would buy the closed business for what it was worth. They would buy a business that was operating and making a profit.

The prospects for Mr. Brown's business were not bright because of the type of business organization he had chosen. Similar circumstances would have been more favorable had the business been organized as either a partnership or a corporation.

Unlimited liability is a great disadvantage of the proprietorship. All property can be seized and sold by the courts to satisfy business debts. This includes both business and personal property. This is a sobering fact. If the business fails and has debts, the owner may lose his business property. He may also lose his personal property. Some men have lost everything they owned except the clothes they were wearing. Would you like to be subject to unlimited liability as the proprietor is?

The proprietorship is not all disadvantageous, though. The proprietor's profits are taxed at his personal tax rate. And the profits are his alone. They are not shared. Those of the partnership are shared. So are the corporation's. There are no special taxes that are levied for the right to run a proprietorship. This is not true of the corporate form. Besides, the proprietor is under little or no regulation from the state and Federal levels. The partnership is free from most regulations. But the corporation faces much more regulation.

Credit is the ability to borrow. It may be limited for the proprietor because of the uncertain lifetime of his business. It is also limited by his capital, what he owns. His credit rating is based on his record of repaying what he has borrowed. It is a factor too. The proprietor may not always be able to expand his business when he wishes to do so. Others may say he does not have adequate capital or a high enough credit rating. This can be frustrating. It can cause the business to fail.

PROPRIETORSHIP

If the statement is true mark it with a T; if it is false, mark it with an F and then correct it so that it is true.

1. A person in business for himself is called a proprietor.

2. The owner of a proprietorship is a management specialist.

3. The proprietorship is ended by death, inability to manage and operate the business, and by any serious illness.

4. Unlimited liability means that only business property may be used to satisfy business debts.

5. Two advantages of a proprietorship are from tax and regulation viewpoints.

6. Proprietorship profits are shared with other persons.

7. Credit is the ability to borrow.

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capital	kap′-ə-təl	what one owns
credit rating	kred′-it rāt′ing	repayment record for paying back what has been borrowed

There are many opportunities for a person to open a business today, even though the number of businesses in the past century has soared. A person in business for himself is called a proprietor. Other similar terms are individual proprietor and sole proprietor. A proprietorship is a business having a single person as owner/manager. One of the main reasons that about 80% of our American businesses are proprietorships is that a proprietorship is easy to form and organize. There is no way that the business must be organized. Hence few difficult legal problems are likely to arise. This means that the organizational cost for a proprietorship is very minimal.

Many people like to be their own bosses. The proprietor is his own boss. He is responsible for making all the management decisions. Because he makes the decisions himself, he can make them very quickly in emergency situations. This is not true for the other types of businesses. The proprietor may have management difficulties, however. Because he is the manager, he must be a jack-of-all-trades and a master-of-none. He lacks specialized training in many facets of management and will occasionally make decisions that are not in the best interest of the business. The lack of adequate management skills is one of the major causes for failures of proprietorships.

The proprietor's business is terminated by his death, by his inability to manage and operate the business, or by his option to close or sell the business. An example follows:

Mr. Brown is 63. He is the proprietor of a small shoe repair service. In addition to repairing shoes, he occasionally sells a pair of shoes from his limited stock. Last summer Mr. Brown had a serious heart attack. He was hospitalized for three weeks. His doctor said he would not be able to work for at least one year. Mr. Brown's business had already been closed for three weeks. He had three possibilities for his business:

1. Mr. Brown's inexperienced helper could try to operate the business. Mr. Brown was sure that this would be a failure. His business required sharp management skills that the helper didn't have.

2. Mr. Brown could close his business until he was able to operate it. But he knew that most of his customers would never return to the business once it had been closed for a month or two. Probably the business would fail because of lack of customers.

3. Mr. Brown could attempt to sell his closed business. But he knew that he would suffer a substantial loss. Who would want to buy a closed business for what it was worth when he could buy one that was operating and making a profit?

As you see, the prospects for Mr. Brown's business were doomed by the type of organization he had chosen for his business. Similar circumstances would have been more favorable had the business been organized as either a partnership or corporation.

Unlimited liability is a serious disadvantage of the proprietorship. Any property can be seized and sold by the courts to satisfy business debts. This applies to both business and personal property. This is a sobering fact. If the business fails and has debts, the owner may lose business property and he may also lose his personal property. Some men have lost everything they owned except the clothes they were wearing. Would you like to be subject to unlimited liability as the proprietor is?

The proprietorship is not all disadvantageous, though. The proprietor's profits are taxed at his personal tax rate. And the profits are his alone. They are not shared. Those of the partnership and the corporation are shared. There are no special taxes that are levied for the privilege of running a proprietorship. This is not true of the corporate form. Besides, the proprietor is under little or no detailed regulation from governmental units. The partnership is in the same position as the proprietorship. But the corporation faces much regulation.

Credit, the ability to borrow, may be limited for the proprietor because of the uncertain lifetime of his enterprise. It is also limited by the proprietor's capital, what he owns, and by his credit rating, his repayment record for what he has borrowed in the past. These factors mean that the proprietor may not always be able to expand his business when he wishes to do so. This can be frustrating to the proprietor. It can cause his business to fail.

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credit	kred′-it	ability to borrow
capital	kap′-ə-təl	what one owns
credit rating	kred′-it rāt′ing	repayment record for paying back what has been borrowed

There are many opportunities for a person to open a business today, even though the number of businesses in the past one hundred years has soared. A person in business for himself is called a proprietor; other synonomous terms are individual proprietor and sole proprietor. One of the main reasons that about 80% of our American businesses are proprietorships, businesses having a single person as owner/manager, is that a proprietorship is easy to form and organize. There is no way that the business must be organized, and hence few complicated legal problems are likely to arise. This means that the organizational cost for a proprietorship is very minimal.

Many people like to be their own bosses and enjoy being a proprietor. The proprietor is responsible for making all the management decisions. Because he makes the decisions himself, they can be made quickly in emergency situations. This is not true in other types of businesses. Nevertheless, the proprietor may have management difficulties because as the manager he must be a jack-of-all-trades and a master-of-none. He lacks specialized training in many facets of management and will occasionally make decisions that are not in the best interest of the proprietorship. The lack of adequate management skills is one of the major causes for failures of proprietorships.

The proprietor's business is terminated by his death, by his inability to manage and operate the business, or by his option to close or sell the business. An example follows:

Mr. Brown, age 63, is the proprietor of a small shoe repair service. In addition to repairing shoes, he occasionally sells a pair of shoes from his limited stock. Last summer Mr. Brown had a serious heart attack. He was hospitalized for three weeks and his doctor said he would be unable to return to work for at least one year. Mr. Brown had three possibilities for his business that had already been closed for three weeks:

1. Mr. Brown's inexperienced helper could try to operate the business. Mr. Brown was sure this would be a failure. His business required astute management skills that his helper did not possess.

2. Mr. Brown could close his business until he is able to return to it as owner/manager. But he knew that most of his customers would never return to his shop after it had been closed for a long period. Undoubtedly the business would fail because of lack of customers.

3. Mr. Brown could attempt to sell his closed business. But he knew that he would suffer a substantial loss--after all, why would anyone want to buy a closed business when he could buy one that was operating and making a profit?

As you see, the prospects for Mr. Brown's business were doomed by the type of business organization he had chosen. The same circumstances would have been more favorable if the business had been organized as either a partnership or as a corporation.

Another serious disadvantage of the proprietorship in that of unlimited liability. By this we mean that any property of the proprietor, both business and personal, may be seized and taken to satisfy the proprietor's business debts. This procedure is handled by the courts. A very sobering fact for those contemplating the organization of a proprietorship is that if the business fails and has unsatisfied debts, the proprietor may lose virtually everything he owns except the clothing he is wearing.

The proprietorship is not completely disadvantageous, however. The proprietor's profits are taxed at his individual tax rate. And the profits are his. They are not shared as are those of the partnership and the corporation. There are no special taxes that are levied for the privilege of operating a proprietorship. This is not true of the corporate form. In addition, the proprietor is under little or no specific regulation from governmental units. The partnership is in a similar situation as the proprietorship, but the corporation faces much regulation.

Credit, the ability to borrow, may be limited for the proprietor because of the uncertain lifetime of his enterprise. It is also limited by the proprietor's capital, what he owns, and by his credit rating, his repayment record for what he has borrowed on past occasions. These factors mean that the proprietor may not always be able to expand his business when he wishes to do so. This can be frustrating to the proprietor and can cause his business to fail.

PROPRIETORSHIP

If the statement is true mark it with a T; if it is false, mark it with an F and then correct it so that it is true.

1. A person in business for himself is called a proprietor.

2. The owner of a proprietorship is a management specialist.

3. The proprietorship is ended by death, inability to manage and operate the business, and by any serious illness.

4. Unlimited liability means that only business property may be used to satisfy business debts.

5. Two advantages of a proprietorship are from tax and regulation viewpoints.

6. Proprietorship profits are shared with other persons.

7. Credit is the ability to borrow.

8. Proprietorships have a fixed lifetime.

9. The proprietor's capital and credit rating have little affect on his ability to borrow.

10. Growth for the proprietorship is almost never limited.

APPENDIX F

Sample Transparency and Sample Student Comparison Chart

PROPRIETORSHIP

	Advantages	Disadvantages
Formation	Easy to organize--no special forms or complicated legal problems--minimal cost	
Management	Management rests entirely with owner--decisions can be made quickly	Proprietor cannot be a specialist in all fields of business operations
Lifetime		Terminated by death of proprietor or at his option
Liability		Liability extends to all property, both business and personal, of proprietor
Taxes	No special taxes for privilege of operating business--profits taxed at individual rates	
Regulation	No specific regulation	
Credit		May be hard to obtain because of uncertain lifetime of enterprises--limited by proprietor's capital and credit standing
Expansion		Limited by proprietor's capital and credit
Profits	Proprietor entitled to all profits	
Ownership	Entirely owned by proprietor	

Sample Student Comparison Chart

PROPRIETORSHIP

	Advantages	Disadvantages
Formation		
Management		
Lifetime		
Liability		
Taxes		
Regulation		
Credit		
Expansion		
Profits		
Ownership		
Miscellaneous		

APPENDIX G

Widgets Case

A, age 53, and B, age 48, have spent five years developing widgets, a very useful household item. It is likely that once widgets are on the market, every household will want to purchase at least one. The potential market for widgets is unlimited.

A and B have problems, however. A has assets including a choice industrial site and $25,000; A also has a good credit rating. B, on the other hand, spent more time developing widgets, has a fair credit rating, and assets of $20,000. A has general background in business but B does not. Often A and B argue about their product and how it should be manufactured and distributed.

Together A and B lack about $50,000 needed to begin production of widgets. Because of the usefulness of their product and because it will not become obsolete or outdated, A and B agree that their business venture should operate for a minimum of fifty years.

Should A and B operate their business as a proprietorship, a partnership, or as a corporation? Justify your answer, pointing out the advantages and disadvantages of the form you choose. Why couldn't the business operate as an example of the other two major types of businesses?

Write your answer in essay form on the remainder of this page and on the back side of the sheet. Use your best writing style. Remember that your answer will be <u>graded for quality</u> and <u>not for quantity</u>.

APPENDIX H

Directions for the Administration of Form B, Posttest; Form B, Posttest; Answer Sheet; Key

At the beginning of the testing session, see that each pupil is provided with a writing instrument, preferably a pencil, and an eraser for making corrections.

When the desks are cleared of all other materials, say:

I shall distribute a test booklet and answer sheet to you. Do not open them until you are told to do so.

The test and answer sheets should be distributed with the cover facing up. When the distribution has been completed, say:

Check to see that both your test booklet and answer sheet are marked Form B. You will find the form marked at the top of the test booklet and at the bottom of the information section on the answer sheet.

Allow the students time to check the form and then say:

Be absolutely certain that you have a Form B test booklet and a Form B answer sheet. In the blanks provided on the answer sheet, please print your name legibly and all other information that is requested. You will find today's date written on the board.

Allow the students ample time to complete the heading on the answer sheet before proceeding. Then say:

You will begin a posttest on our last unit, business organizational structure, in a few moments. The purpose of the posttest is to determine what you have learned about business organizational structure. Answer as many questions as you can to the best of your ability.

Read the directions for taking Form B silently while I read them to you.

This is a timed test. You will be given 20 minutes of working time to complete as many questions as possible. Read each question carefully. If you cannot answer a question immediately, leave it blank and proceed on to the next test item. Come back to it later after you

have worked through the entire test. It is to your advantage to answer as many test questions as possible.

Your responses to test items are not to be recorded in your test booklet. Make no marks in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided.

Let's look at the answer sheet for a moment. Notice that it is divided into sections and that there are five types of questions in the test. Be sure that you record your answer carefully in the appropriate section of the answer sheet. Notice, for example, that there is a separate column for the true responses and a separate column for the false responses in the true and false section. Notice that there are three columns for recording your answers in the classification section. Be very careful that you record your answers in the column or columns that you choose. A sample question has been recorded for you for each type of question. You will find the sample question at the top of each section of the test. You will use the same method in marking your response. Are there any questions?

Answer any questions that the students may have.

Remember that this is a timed test. You will be given 20 minutes working time. Your responses to test items are not to be recorded in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided. It is to your advantage to answer as many test questions as possible. Work through the entire test before coming back to reconsider questions that you left blank.

You have 20 minutes to complete the posttest. Begin immediately.

Record the beginning time and complete the following chart:

Starting time: _____

Add : 20 min. working time

Stop at : _____

When the 20-minute span of working time has elapsed, say:

Stop! Close your test booklet and turn it face down on your desk. Twenty minutes of working time has elapsed.

Collect the answer sheets for Form B.

Collect the test booklets for Form B.

Form B, Posttest

General Directions:

This is a timed test. You will be given 20 minutes of working time to complete as many questions as possible. Read each question carefully. If you cannot answer the question immediately, leave it blank and proceed on to the next test item. Come back to it later after you have worked through the entire test. It is to your advantage to answer as many test questions as possible.

Your responses to test items are not to be recorded in your test booklet. Make no marks in your test booklet. Record all responses in the appropriate section of the answer sheet that is provided.

True and False: If the statement is true, mark it with an X in the true column; if the statement is false, mark it with an X in the false column.

Sample: 0. One person may form a proprietorship. (True--X marked in true column)

1. The Charter of XYZ Corporation gives it a stated life of twenty years. After a life of twenty years, the corporation must be ended.

2. In the United States there are more partnerships than corporations.

3. The death of a partner owning less than 5 percent of the partnership does not affect the life of the partnership.

4. A corporation exists separate from its owners.

5. Corporate profits are taxed twice in most instances.

6. Mr. Jones and Mr. Smith are partners. Mr. Jones' business dealings with you, one of his suppliers, are legally binding upon Mr. Smith.

7. John and Bill formed a partnership. John provided $8,000 of the capital while Bill provided $4,000. Given no other facts, the profits of the partnership must be divided 50-50.

8. Tax returns of partnerships are informational only.

9. A corporation bondholder may vote by proxy if he is unable to attend the stockholders' meeting.

10. The death of an owner does not affect the life of a corporation.

11. The managers of a corporation may declare a dividend whenever profits are earned.

12. Articles of Copartnership are required before a partnership can operate.

13. The managers of a corporation must declare a dividend whenever profits are earned.

14. An owner of a share of stock in a cooperative is called a stockholder.

Fill in: Fill in an appropriate response for each statement on the answer sheet.

Sample: 0. A business that has one owner/manager is called a/an _____. (Proprietorship is written on the line on the answer sheet.)

1. An item that is produced in a large quantity is said to be _____.

2. Management responsibilities in the proprietorship fall upon the _____.

3. A proprietorship can be terminated by _____.

4. A partnership can be terminated by _____.

5. The type of organizational structure that does not have unlimited liability is the _____.

6. A legal agreement that may or may not be signed by partners and that describes the operation of the business is called _____.

7. The legal document granted by the state to a corporation giving it the right to operate within the state is called the _____.

8. The owner of a share of stock in a cooperative is called a/an _____.

Classification: Mark an X in the appropriate column(s) if the statement is true for that type of organization; there may be more than one X for any statement.

Sample: 0. has one owner/manager (X placed in proprietorship column)

1. owner(s) has (have) no direct voice in management

2. profits are shared equally dollarwise by the owners unless specified otherwise

3. faces much regulation by state and federal governments

4. a written organizational agreement is recommended but not required

5. profits are usually subject to double taxation

6. management responsibilities are shared

7. unlimited liability unless organizational structure states differently

8. no special taxes for the privilege of operating the business

9. profits, when received, are taxed at individual's tax rate

Matching: Match the appropriate item from column 1 to the statement in column 2. No item from column 1 will be used more than once.

Sample: 0. Number of businesses in 1964 (i written on answer sheet)

Column 1 (listed alphabetically)	Column 2
a. America	1. requires at least two persons to organize
b. Articles of Copartnership	2. type that requires most legal work during formation
c. Articles of Incorporation	3. profits are distributed according to the amount of purchases from the businesses in this form
d. Charter	4. cooperatives are not a predominate type here
e. Cooperative	5. names of owners are listed in this document
f. Corporation	6. makes the actions of one partner with outsiders binding on all partners
g. Credit	7. percent of production for proprietorship
h. Europe	8. present U. S. population figure
i. Five million (5,000,000)	9. percent of production of partnerships
j. Four (4)	
k. Fourteen percent (14%)	
l. General agency powers	
m. Nine percent (9%)	
n. One hundred eighty million (180,000,000)	
o. Patronage refund	
p. Partnership	
q. Proxy	
r. Ten percent (10%)	
s. Three (3)	
t. Three hundred fifty thousand (350,000)	
u. Two (2)	
v. Two percent (2%)	
w. Two hundred million (200,000,000)	
x. Two hundred twenty million (220,000,000)	

Multiple Choice: Choose the response that is most nearly correct.

Sample: 0. Which statement is true? (b recorded on answer sheet)
a. The terms stocks and bonds have the same meaning.
b. A bondholder is a creditor; a stockholder is an owner.
c. Stock represents debt owed by the corporation.
d. A stockholder is a creditor and a bondholder is an owner.
e. A corporation cannot issue both stocks and bonds.
f. None of the above statements is true.

1. Which of the following events is most likely to end the life of a proprietorship?
a. the death of a key employee
b. the proprietor's taking a vacation of six weeks
c. the proprietor's suffering a serious stroke
d. the retirement of a key employee
e. the death of a part-time employee
f. the key employee is taking a six-week vacation

2. Which statement best summarizes the day-to-day management of a large corporation?
a. It is managed by its stockholders.
b. It is managed by its creditors.
c. It is managed by its bondholders.
d. It is managed by its board of directors.
e. It is managed by general agency powers.
f. It is managed by highly trained management specialists.

3. The size of most businesses is determined largely by:
a. the kinds of goods or services it produces
b. its type of organizational structure
c. governmental regulations
d. answers a and b
e. answers a and c
f. answers b and c

4. Which statement is not true of a partnership?
a. It generally can borrow money easier than a proprietorship.
b. It must file a partnership tax return.
c. Each partner reports his share of profit or loss on his individual tax return.
d. It must consist of two or more partners.
e. The profits or losses must be shared equally by all partners.
f. It is recommended that Articles of Copartnership be written.

5. Which statement is true of the closed corporation?
   a. It is closed because you cannot afford to buy into it.
   b. Its managers are not likely to be owners of the closed corporation.
   c. Most corporations are closed.
   d. Ford Motor Company was once a closed corporation.
   e. It must be closed by members of a family only.
   f. None of the above statements is true.

Name _____

Date _____

School _____

Period of Day _____

Form B

QUESTION NUMBER	TRUE AND	FALSE	FILL IN	CLASSIFICATION	PROPRIETORSHIP	PARTNERSHIP	CORPORATION	MATCHING	MULTIPLE CHOICE	QUESTION NUMBER
0	X		proprietorship		X			i	b	0
1										1
2										2
3										3
4										4
5										5
6										6
7										7
8										8
9										9
10										10
11										11
12										12
13										13
14										14

Name _____

Date _____

School _____

Period of Day _____

Form B

QUESTION NUMBER	TRUE AND	FALSE	FILL IN synonyms acceptable	CLASSIFICATION	PROPRIETORSHIP	PARTNERSHIP	CORPORATION	MATCHING	MULTIPLE CHOICE	QUESTION NUMBER
0	X		proprietorship		X			i	b	0
1		X	mass produced				X	p	c	1
2	X		owner/manager			X		f	f	2
3		X	*death, incapacity, option				X	o	d	3
4	X		*death, incapacity, option			X		a	e	4
5	X		corporation				X	b	d	5
6	X		articles of copartnership			X	X	l		6
7	X		charter			X		k		7
8	X		member		X	X		w		8
9		X			X	X	X	m		9
10	X									10
11		X								11
12		X								12
13		X								13
14		X								14

* Any one of these

APPENDIX I

Coding Sheet and Computer Print-out of Raw Data

Coding Sheet

item	limits/characteristics
number	computer number
sex	1 male 2 female
age	14.0-20.0 actual age to nearest quarter
grade	10 tenth grade 11 eleventh grade 12 twelfth grade
school	1 Boise High School 2 Borah High School 3 Capital High School
period	1-7 class period number
teacher	1 Kay Muter, Boise High School 2 Ada Griffin, Borah High School 3 Larry Jeppesen, Capital High School 4 Theresa Traxler/Kay Jewell, Capital High School
group	1 control 2 experimental
text	7.5 reading grade level of text 9.5 reading grade level of text 11.5 reading grade level of text 13.5 reading grade level of text (college)
reading rate	5-639 number of words read per minute
Nelson-Denny	-7.0-14.0+ reading grade level

item	limits/characteristics
Henmon-Nelson	66-166 intelligence quotient
Two-Factor	1 upper social class 2 upper-middle social class 3 middle social class 4 lower-middle social class 5 lower social class
pretest	1-49 pretest score
posttest	1-49 posttest score
gain	-10-40 posttest score minus pretest score
absences	0-8 number of days absent during the unit

```
JLIST,CONTROL
00001:001··1··16.75  11  1  2  1  1  11.5  309   13.8   103  4  23  37
   14  1
00002:002  1  16.50  11  1  2  1  1  11.5  396   12.2   100  1  23  26
    3  2
00003:003  1  18.00  12  1  2  1  1  11.5  195   13.1   106  4  21  30
    9  0
00004:004  1  18.00  12  1  2  1  1  11.5  384   13.5   110  2  24  30
    6  4
00005:005  2  16.75  11  1  2  1  1  11.5  446   14.0+  109  3  24  31
    7  2
00006:006  1  15.25  10  1  2  1  1  11.5  359   13.6   120  3  25  35
   10  0
00007:007  1  16.50  10  1  2  1  1  11.5  150   10.3    89  3  15  17
    2  0
00008:008  1  18.25  12  1  2  1  1  11.5  216    9.9    93  2  23  36
   13  1
00009:009  1  16.75  11  1  2  1  1  11.5  262    9.7   103  1  14  25
   11  1
00010:010  1  16.00  10  2  5  2  1  11.5  359   12.9   108  4  22  27
    5  1
00011:011  2  16.00  10  2  5  2  1  11.5  456   14.0+  111  4  12  22
   10  0
00012:012  2  16.25  11  2  5  2  1  11.5  407   14.0+  110  2  23  35
   12  0
00013:013  1  16.25  11  2  5  2  1  11.5  275   10.4    95  2  15  27
   12  2
00014:014  2  16.50  11  2  5  2  1  11.5  262   12.1   104  4  21  27
    6  0
00015:015  1  15.50  10  2  5  2  1  11.5  371   14.0+  133  4  32  47
   15  0
00016:016  1  17.00  11  2  5  2  1  11.5  262   12.8   108  3  13  26
   13  1
00017:017  1  16.75  11  2  5  2  1  11.5  359   13.5   107  4  22  32
   10  0
00018:018  1  18.00  11  2  5  2  1  11.5  407   14.0+   97  2  21  13
   -7  3
00019:019  2  17.00  11  2  5  2  1  11.5  309   14.0+  114  4  26  35
    9  0
00020:020  1  16.50  11  2  5  2  1  11.5  371   14.0+  118  1  31  37
    6  0
00021:021  2  15.50  10  2  6  2  1  11.5  359   14.0   114  3  18  27
    9  2
00022:022  2  16.25  10  2  6  2  1  11.5  250   14.0+  100  5  23  21
   -2  0
00023:023  2  16.00  10  2  6  2  1  11.5  262    8.3    90  4  11   9
   -2  0
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   17  0
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11	1														
00027:027	1	16.50	11	2	6	2	1	11.5	396	12.6	120	3	22	38	
16	1														
00028:028	1	15.75	10	2	6	2	1	11.5	591	13.0	117	3	18	36	
18	0														
00029:029	1	17.25	11	2	6	2	1	11.5	195	13.3	110	2	26	34	
8	2														
00030:030	2	15.50	10	3	3	3	1	11.5	115	8.5	101	1	7	20	
13	1														
00031:031	1	16.75	10	3	3	3	1	11.5	349	10.4	97	5	16	39	
23	0														
00032:032	1	16.50	11	3	3	3	1	11.5	446	10.9	102	3	22	27	
5	0														
00033:033	1	16.75	11	3	3	3	1	11.5	298	12.5	100	4	17	31	
14	1														
00034:034	1	15.25	10	3	3	3	1	11.5	537	12.9	103	3	14	30	
16	0														
00035:035	1	15.25	10	3	3	3	1	11.5	161	12.1	110	2	18	32	
14	2														
00036:036	1	16.50	11	3	3	3	1	11.5	436	13.9	120	4	31	46	
15	1														
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24	1														
00038:038	2	17.25	11	3	3	3	1	11.5	262	8.5	99	3	21	17	
-4	0														
00039:039	1	16.25	10	3	3	3	1	11.5	150	10.9	101	4	21	30	
9	0														
00040:040	2	16.50	10	3	6	4	1	11.5	150	-7.0	72	4	6	1	
-5	0														
00041:041	1	16.00	10	3	6	4	1	11.5	207	12.0	117	3	28	37	
9	0														
00042:042	2	16.50	11	3	6	4	1	11.5	371	13.0	113	3	20	34	
14	2														
00043:043	1	16.00	10	3	6	4	1	11.5	318	9.0	90	4	13	20	
7	0														
00044:044	2	16.00	10	3	6	4	1	11.5	250	8.9	104	3	18	17	
-1	0														
00045:045	2	15.75	10	3	6	4	1	11.5	250	10.9	104	3	22	33	
11	0														
00046:046	1	16.00	10	3	6	4	1	11.5	94	7.4	106	5	18	26	
8	0														
00047:047	2	16.00	10	3	6	4	1	11.5	250	9.5	105	3	19	14	
-5	1														
00048:048	2	16.00	10	3	6	4	1	11.5	338	12.6	111	3	17	22	
5	5														

```
JLIST,EXPERIMENTALL
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   21  3
00002:002  1  18.00  12  1  2  1  2  11.5  226   11.6   92  2  26  20
   -6  0
00003:003  2  15.25  10  1  2  1  2  13.5  226   12.7  107  1  14  22
    8  2
00004:004  2  15.50  10  1  2  1  2  13.5  359   14.0+  111  3  25  38
   13  2
00005:005  2  17.75  12  1  2  1  2  13.5  250   14.0+  104  3  26  39
   13  0
00006:006  1  15.50  10  1  2  1  2  13.5  384   14.0+  151  2  31  37
    6  0
00007:007  2  17.25  11  1  2  1  2   9.5  318   10.3   93  4  13  20
    7  0
00008:008  1  15.75  10  1  2  1  2   9.5  250    9.9  103  4  23  29
    6  2
00009:009  1  15.50  10  1  2  1  2   9.5  195    9.0   93  1  19  29
   10  0
00010:010  2  16.75  11  2  5  2  2  13.5  165   12.7   98  2  21  30
    9  0
00011:011  1  16.75  11  2  5  2  2  13.5  238   14.0+  98  3  13  29
   16  1
00012:012  1  17.75  11  2  5  2  2  13.5  480   14.0+ 117  3  23  37
   14  0
00013:013  2  17.00  10  2  5  2  2   9.5  195   10.4   87  4  17  18
    1  0
00014:014  2  15.50  10  2  5  2  2  11.5  262   12.0  107  5  15  21
    6  0
00015:015  1  16.50  11  2  5  2  2  13.5  287   14.0+ 166  2  29  37
    8  0
00016:016  2  15.75  10  2  5  2  2  13.5  275   12.8  104  2  20  29
    9  1
00017:017  2  16.25  10  2  5  2  2  13.5  298   13.4   98  4  24  24
    0  0
00018:018  1  17.00  10  2  5  2  2  13.5  563   14.0+  92  2  18  19
    1  1
00019:019  2  16.00  10  2  5  2  2  13.5  161   14.0+ 100  5  20  20
    0  1
00020:020  1  16.25  10  2  5  2  2  13.5  396   14.0+ 108  4  31  39
    8  0
00021:021  2  16.00  10  2  6  2  2  13.5  309   14.0+ 112  2  21  33
   12  0
00022:022  2  16.50  10  2  6  2  2  13.5  161   14.0+  92  3  18  18
    0  0
00023:023  1  17.25  10  2  6  2  2   7.5  174    8.4   92  4  15  23
    8  1
00024:024  1  16.75  11  2  6  2  2  11.5  384   11.3  105  3  18  26
    8  1
```

00025:025	1	16.75	11	2	6	2	2	9.5	128	9.0	108	5	18	31	
13	0														
00026:026	1	16.00	10	2	6	2	2	13.5	216	12.7	109	4	16	31	
15	3														
00027:027	2	16.50	11	2	6	2	2	13.5	298	12.9	115	3	25	40	
15	0														
00028:028	1	16.75	11	2	6	2	2	13.5	318	13.1	108	3	23	36	
13	1														
00029:029	1	15.50	10	2	6	2	2	13.5	436	13.3	119	3	23	35	
12	0														
00030:030	1	18.50	11	3	3	3	2	7.5	104	8.2	89	4	13	25	
12	0														
00031:031	1	17.00	11	3	3	3	2	9.5	226	10.0	107	3	14	25	
11	0														
00032:032	1	16.00	11	3	3	3	2	11.5	207	11.0	107	3	18	21	
3	2														
00033:033	1	17.50	11	3	3	3	2	11.5	226	12.4	99	5	26	27	
1	0														
00034:034	2	16.75	11	3	3	3	2	13.5	250	12.8	103	2	22	43	
21	0														
00035:035	2	16.00	10	3	3	3	2	11.5	275	12.1	97	4	23	34	
11	3														
00036:036	2	16.50	11	3	3	3	2	13.5	426	14.0+	111	2	24	36	
12	0														
00037:037	2	17.25	11	3	3	3	2	13.5	384	14.0	103	4	21	30	
9	2														
00038:038	1	17.00	11	3	3	3	2	7.5	195	8.1	96	2	12	26	
14	0														
00039:039	1	16.00	10	3	3	3	2	11.5	195	10.7	105	5	14	31	
17	0														
00040:040	1	16.50	10	3	6	4	2	7.5	82	-7.0	95	3	12	25	
13	2														
00041:041	2	16.00	10	3	6	4	2	11.5	216	11.7	104	4	16	26	
10	1														
00042:042	2	15.50	10	3	6	4	2	13.5	501	13.2	115	3	18	32	
14	0														
00043:043	2	16.50	10	3	6	4	2	9.5	216	8.6	92	3	21	37	
16	1														
00044:044	1	16.00	10	3	6	4	2	9.5	161	9.0	106	3	17	35	
18	0														
00045:045	1	15.75	10	3	6	4	2	11.5	140	11.0	100	3	23	16	
-7	2														
00046:046	1	18.25	10	3	6	4	2	7.5	150	8.4	89	5	15	29	
14	1														
00047:047	2	15.75	10	3	6	4	2	9.5	185	9.5	105	4	26	30	
4	1														
00048:048	2	15.50	10	3	6	4	2	11.5	349	12.5	102	1	16	30	
14	3														

```
]LIST,DROPPED
00001:001  1  16.00  11  2  5  2  1  11.5  309   13.1   108  3  16   X
    X  X
00002:002  2  16.00  10  2  5  2  2  13.5  318   13.1   121  1  24  46
   22  0
00003:003  2  16.75  11  2  6  2  1  11.5  327   10.4    99  3  23  37
   14  3
00004:004  1  17.25  11  2  6  2  2   9.5  185   10.4    92  3  19   X
    X  1
00005:005  1  16.00  10  3  3  3  1  11.5  226    9.0    96  2  15  25
   10  1
00006:006  2  16.75  10  3  3  3  2   9.5  396    9.5    93  1  16   X
    X  4
00007:007  1  15.75  10  3  6  4  1  11.5  275    8.1    97  4  16  18
    2  0
00008:008  1  17.50  10  3  6  4  2   7.5  359    7.6    90  4  16   X
    X  2
00009:009  1  17.25  10  3  6  4  1  11.5  318    9.3    92  2  16   X
    X  1
00010:010  2  15.50  10  3  6  4  2   9.5  185    9.3   102  3  16   X
    X  X
00011:011  2  16.00  10  3  6  4  1  11.5  407    9.9    95  3  19  30
   11  1
00012:012  1  17.00  11  3  6  4  2   9.5   94   10.4    99  3  19   X
    X  X
```

```
LIST.MATCHLESS
00001:001  1  16.75  11  1  2  1  X  11.5  216   11.0    98  3  10  23
   13  0
00002:002  1  16.75  11  1  2  1  X  11.5   74   -7.0    90  4  12  26
   14  0
00003:003  1  16.25  10  2  5  2  X  11.5  384    8.5   106  3  19  23
    4  0
00004:004  1  15.00  10  2  5  2  X  11.5  250    7.1    87  4  15  14
   -1  2
00005:005  1  17.50  11  2  5  2  X  11.5  185    9.5    90  4  12  21
    9  0
00006:006  1  17.00  11  2  5  2  X  11.5  207   12.4   107  3  21  23
    2  0
00007:007  1  17.75  11  2  6  2  X  11.5  250    7.0    87  3  15  22
    7  0
00008:008  1  15.75  10  2  6  2  X  11.5  128    8.8    97  4   5  20
   15  1
00009:009  1  17.00  10  2  6  2  X  11.5  309   13.8    91  5   6  26
   20  0
00010:010  2  16.75  11  2  6  2  X  11.5  578   14.0+  157  1  28  42
   14  0
00011:011  1  16.25  11  2  6  2  X  11.5  216   12.9   101  1  11  16
    5  4
00012:012  1  17.25  11  3  3  3  X  11.5  571   10.2    93  5  17  31
   14  0
00013:013  2  17.25  11  3  3  3  X  11.5  216   12.0    97  3  14  22
    8  0
00014:014  2  16.25  10  3  3  3  X  11.5   94    7.8    90  3  10  15
    5  2
00015:015  1  16.50  11  3  6  4  X  11.5  226   12.7   149  4  24  38
   14  0
00016:016  2  16.00  10  3  6  4  X  11.5  436   14.0+  139  3  29  43
   14  0
```

```
JLIST,INCOMPLETES
00001:001  2  17.25  10  1  2  1  X  11.5   X     X     X  3  X  X
    X  X
00002:002  2  17.25  10  1  2  1  X  11.5   X     X     X  5  X  X
    X  X
00003:003  2      X   X  1  2  1  X  11.5   X     X     X  X  X  25
    X  X
00004:004  2      X   X  1  2  1  X  11.5   X     X     X  X  X  22
    X  X
00005:005  1      X   X  1  2  1  X  11.5   X     X     X  X  X  19
    X  X
00006:006  1  16.50  11  2  5  2  X  11.5   X     X   100  4  X  32
    X  X
00007:007  2  15.50  10  2  5  2  X  11.5   X     X    99  3  X  X
    X  X
00008:008  1  17.00  11  2  5  2  X  11.5   X     X    99  2  X  29
    X  X
00009:009  2  17.25  11  3  3  3  X  11.5   X     X    92  3  X  X
    X  X
00010:010  2  17.75  12  3  3  3  X  11.5   X     X    95  3  X  X
    X  X
00011:011  1  17.50  11  3  3  3  X  11.5 150   9.0    96  1  X  X
    X  X
00012:012  1  17.00  11  3  6  4  X  11.5   X     X   102  1  X  X
    X  X
00013:013  1  18.50  12  3  6  4  X  11.5   X     X     X  4  X  X
    X  X
```