To the Graduate Council:

I am submitting herewith a thesis written by Teresa L. Mullens entitled "An Experimental Study to Adapt Reading Text In Specific Subjects in The Middle School." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Special Education.

Laurence J. Coleman

Laurence J. Coleman, Major Professor

We have read this thesis
and recommend its acceptance:

Roger Frey

Charles H. Hargis

L. Evans Roth

Accepted for the Council:

A

Vice Chancellor
Graduate Studies and Research

AN EXPERIMENTAL STUDY TO ADAPT READING TEXT IN SPECIFIC SUBJECTS IN THE MIDDLE SCHOOL

A Thesis

Presented for the

Master of Science

Degree

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Teresa L. Mullens

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ABSTRACT

The purpose of this study was to determine if textbooks rewritten with a technique which uses the known vocabulary of students made the subject matter more comprehensible than the standard version of the text.

The subjects of this study were seventeen regular students and eighteen educationally handicapped students from three different Social Studies teacher's classes in a Knoxville City Middle School. Two sets of passages were chosen from each of the three texts and adapted with a general vocabulary list. Two of the six passages were also individually adapted for the educationally handicapped students. Cloze tests were developed for each version of the texts.

An analysis of variance was computed to determine if there was a significant difference in Cloze scores across the three versions. The Cloze scores for each educationally handicapped student and each regular student were calculated to see how many reached instructional reading level for the three versions of the passages. Adaptation has inconsequential

effects for the normal students. None of the educationally handicapped students found the original passages to be at their instructional reading level. Twenty-four percent found the adapted passages and 44 percent found the individually adapted passages to be at their instructional reading level. The results suggest that the closer the adapted material was to the student's own vocabulary the better he did on the Cloze tests. This justifies this method of adaptation and supports the need for further research.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Standard school texts are written at readability levels that are frustrating for most educationally handicapped students. Many educationally handicapped students do not understand these materials, are afraid to say so, and in many cases cannot complete the assignments. When the student repeatedly hands in incomplete or incorrect assignments, his/her teachers become irritated. This in turn may cause the student to stop trying or to stop attending school.

Regular class teachers who have educationally handicapped students in their classes are beginning to deal with these children's handicaps so that the student can attain basic competency in regular class content areas such as science and social studies. Some of these teachers realize that the students are further handicapped by their limited vocabularies. These teachers are attending workshops in order to learn how to rewrite materials for the educationally handicapped students' vocabularies (Craig 1977).

The purpose of this study was to determine if textbooks rewritten using the known vocabulary of the educationally

handicapped student made the subject matter more comprehensible to the student than the standard version of the text.

Definition of Terms

Adapted Text

"Adapted text" refers to published materials which have been rewritten so the handicapped child can better understand them.

Individual adapted materials refer to materials that have been adapted using the known vocabulary of a specific child.

General adapted materials refer to materials that have been adapted for an entire class using the known vocabulary of the lowest functioning student.

Educationally Handicapped Student

"Educationally Handicapped Student" refers to a child who has been identified and certified as Learning Disabled, Mentally Retarded or Behavior Disordered by procedures described in the "Administrative Guide" of the Knoxville City Schools and has been placed in a resource room for one or more subject areas.

Known Vocabulary

"Known Vocabulary" refers to all the words a student can read aloud from a standard list of words compiled by the investigator.

Readability

"Readability" refers to the reading ease or difficulty of a passage as determined by the Fog Index (Dulin 1976).

Standard Text

"Standard Text" refers to published texts (such as science, Tennessee history, geography) used by the educationally handicapped students in the Knoxville City Schools when in regular classes.

Instructional Level

"Instructional Level" refers to the level at which a student can identify words with 90 percent accuracy and at which he has 75 percent or better comprehension (Betts 1957).

Importance of the Study

Few texts have been developed at the reading level of the educationally handicapped students in the content areas of science, social studies, arts, and industrial arts. If the educationally handicapped student is to

understand the material, something must be done. The special education teacher is responsible for addressing the obvious problem of how to help the student who cannot understand the existent instructional materials and how to help teachers who have mainstreamed students (Coleman 1977). One solution is to rewrite textbooks to be on a student's reading level.

When the reading material is adapted for the educationally handicapped student, teachers and students experience more success. Teachers will feel more successful because they will spend less time reviewing the same material and have more time to develop student understanding of the concepts. Eductionally handicapped students will experience more success because they will be able to read the material. Educationally handicapped students will be more willing to try and fewer would drop out of school. These educationally handicapped students, by graduation, would have been able to acquire more information to enable them to function in society with more success.

Even though it is obvious that the educationally handicapped students need materials written at their reading level and that publishers statements of readability are unreliable (Lavely, Lowe, and Follman 1975), the adaptation methods needed for specific subject areas are not clear. For example, in science

and social studies the concepts and organization of material to be presented are very important. If the sentence length is shortened and the vocabulary is changed in a haphazard manner, these concepts may be totally altered. In rewriting these materials it is important to use a method which will keep key concepts intact. If a usable method could be developed to keep concepts intact and lower the readability level, the subject area teachers would be able to adapt standard texts as well as their own materials. Their efforts in this endeavor would be rewarded by increased comprehension on the student's part and his success in that particular subject area (Coleman 1979).

A review of the literature shows that attempts to develop methods for teachers to efficiently and effectively adapt materials for the educationally handicapped student have not been validated. This study investigates the utility of one method of adaptation which used a student's known vocabulary to rewrite standard texts in different subject areas.

Hypotheses

Standard texts in three subject areas were rewritten using individual students' known vocabulary. Individual versions of selections were prepared as well as a generalized version. Changes in comprehensibility

were examined to determine whether this method of adapting materials was an effective technique to use with educationally handicapped students regardless of subject areas. A series of hypotheses were generated to answer this general question. The hypotheses are divided into three general categories: individualized version hypotheses, general adapted version hypotheses, and effectiveness of technique.

Individualized Version Hypotheses

1. Do the educationally handicapped students find less than 70 percent of the original passages, regardless of version, to not be at their instructional levels?

2. Do the educationally handicapped students find 70 percent of the individually adapted passages, regardless of version, to be at their instructional levels?

General Adapted Version Hypotheses

3. Do the regular students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

4. Do the educationally handicapped students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

Effectiveness of Technique

5. Are there significant differences between original version, generally adapted version, and individually adapted version for educationally handicapped students as a group?

6. Does individual adaptation for the educationally handicapped students lead to higher Cloze scores?

Limitations of the Study

The study was conducted with the following limitations:

1. Only social studies materials used in grades six and seven were adapted. Other subject areas were not studied.

2. Samples for adaptation were taken from that part of the text that was not studied before but was to be covered when this study was conducted. Other texts could yield different results.

3. The students in the study were from existent groups in a single school system, which limits generalization.

4. Readability was controlled only by the vocabulary. No systematic attempt was made to alter sentence length.

5. The time between familiarization with the readings and the adapted readings was not controlled.

Design

The sample was comprised of two groups. Each group contained randomly selected students, who were willing to cooperate, from three different social studies teachers' classes. Group one consisted of thirteen seventh grade educationally handicapped students and six sixth grade educationally handicapped students. Group two consisted of twelve seventh grade regular students and six sixth grade regular students.

Six 300-word samples were obtained from standard texts. Two were taken from Your Tennessee by Jesse Burt (Steck-Vaughn), Our World by Grace S. Dawson (Ginn and Company), and Our World and Its People by Edward R. Kolevzon and John A. Heine (Allyn and Bacon, Inc.). The passages to be adapted were randomly chosen from units that were to be covered when this study took place. Each of the six passages was rewritten as a generally adapted version for each child to read. Two of the passages were individually adapted for each educationally handicapped student, making a total of thirty-six adaptations. Readabilities for both the original and the general adapted texts were calculated using the Fog Index. Comparisons were made of the

students' comprehension of both sets of materials using the Cloze Procedure.

Organization

Chapter I includes a statement of the problem, definition of terms, importance, limitations, and design of the study. Chapter II reviews the literature which focuses on previous attempts to adapt materials for educationally handicapped students using readability formulas. Chapter III includes the procedures used to implement the study. Chapter IV presents the results of the study. Chapter V includes a summary, conclusions drawn from the study, and recommendations for further investigation.

CHAPTER II

REVIEW OF RELATED LITERATURE

Chapter II contains a review of published literature concerning the use of readability formulas to rewrite materials. Included also is a summary of studies that have led to the study in this thesis.

Survey of the Literature

Surveying the literature, the researcher found that students' inability to comprehend the standard texts was a major concern. Dulin (1976) felt that a problem for every secondary student is the matching of reading materials to the reading abilities of that particular individual. He suggested teachers determine the readability of materials before asking a student to read the materials. To determine readability the teacher must use one of the standard readability formulas. These formulas employ some measures of sentence length and word difficulty to determine a grade level for the material.

Craig (1977) felt that rewiting materials was of the highest importance. She gave instructions on the basic tools and methods used to rewrite texts.

Further research uncovered other methods being used in the field. Coleman (1980) described a technique for simplifying the verbs when adapting materials. This technique uses a combination of forty words for the verbs in the English language. It assumes that the meaning is expressed through the interaction of the word with the context of the sentence, rather than the meaning of the word in isolation. The technique stems from his ongoing work trying to implement the theories expressed in the "Basic English System " (Ogden 1934).

"Project Model" of the Knoxville City Schools attempted to help Educationally Handicapped students by rewriting portions of the text using the Fog Index. No experimentation was conducted to see if this would actually raise comprehension levels. The bases for the adaptation were the assumptions made by the regular and resource teachers involved.

Readability Formulas

A "readability formula" is a mathematical measure of the reading ease or difficulty of a passage expressed as a grade level equivalent. Readabilities can be tested with or without a student present. The following are used when students are not present (Coleman 1977).

1.) The Fry technique uses the number of sentences and the number of syllables per 100 words. This technique is a fast way of obtaining readability but it does not accurately measure the difficulty of advanced words with few syllables or difficult syntax.

2.) Dale-Chall uses word difficulty and sentence length. It is accepted as reliable and uses a vocabulary list to determine word difficulty. However, it is a time consuming method because it compares passage words to the word list and uses a formula to determine grade level. It was designed to be used with adult readers at above fourth grade reading level.

3.) Spache uses word difficulty and sentence length. Its advantages are the use of a word list and its use for material at grade level 3.9 or below. Its disadvantage is that it is complex and time consuming.

4.) Harris-Jacobsen uses vocabulary and sentence length. It uses word lists based on basal readers so it is easy to determine difficult words. It is difficult to calculate, time consuming, and pays little attention to syntax.

The above formulas all use some measure of word difficulty and sentence length to determine the reading level of a passage. With the one exception of the Fry technique, they are all time consuming to perform. None pay attention to syntax.

The following three readability procedures are used when a student is present.

1.) The word list method has the advantage that the teacher can determine a percentage of words a student recognizes by sight. The disadvantages are that word lists are cumbersome and time consuming to construct. They can only be used with one student at a time and tend to be unreliable because the technique pays little attention to variables of readability except for vocabulary.

2.) The Informal Reading Inventory consists of several 100-word passages that are selected from a text, for which comprehension questions are written. The student reads the passage and answers the questions. The advantages are widespread use, adaptability to many materials, and test results which provide data about how a child reads. The disadvantage is that it can only be used with a carefully graded reading series.

3.) The Cloze Procedure is a mathematical formula. It examines the influences of context and complexity of language on the reading ability of the student. A 200- to 250-word passage is selected and retyped omitting every fifth word. The student fills in the blanks by guessing. Correctness is determined by exactness of response words. Its advantages are the absence of a formula or word list. It can be used with any

materials. It is highly reliable and can be used with a group or an individual. Its disadvantage is that it is time consuming to prepare and does not lend itself well to supplying diagnostic data.

These three techniques are time consuming to prepare. They are adaptable to many materials and provide some form of data about how well a child reads. The materials can be used with only one student at a time.

The Fog Index is an easy and reliable formula for secondary materials. Several 100-word passages from a book are chosen. The total number of words in the passage is divided by the total number of sentences for the average sentence length. A count is made of the number of three-syllable words excluding compounds, proper nouns, or verbs which are three-syllables because of the addition of suffixes. The number of three-syllable words is then divided by the number of words in the sample to find the percentage of "hard words." The average sentence length is added to the percentage of "hard words" and multiplied by 0.4 to get the grade placement score (Dulin 1976).

There are some limitations in readability formulas. Generally they do not consider such variables as levels of abstraction, complexity of concepts, figurative or poetic language, multiple meanings,

technical and scientific vocabulary, variations in format and organization, and a host of other factors related to the comprehensibility of subject area materials (Nelson 1976).

Adapting Materials

The use of readability formulas makes rewriting materials for the student easier. Coleman (1979) describes a readability technique for adapting instructional materials. The rationale for specfic decisions about vocabulary and sentence structure was presented. This rationale was that decisions about adapting materials should center on the question "What are the students supposed to learn from the instructional materials?" The question assumes that the concepts in the materials be organized on a continuum, from most central to least central. This rationale was based on readability formulas done by Williams (1972) and Safier (1959). No other studies were found which actually used materials adapted with the use of readability formulas; nor were studies found using other techniques for adapting materials. However, Craig (1977) states the idea of learning to rewrite materials seems to be very popular with teachers who have students reading below grade level. These teachers are asking

for inservice to learn how to use readability to rewrite materials.

Related Studies

Although the use of readability formulas to rewrite materials has not been studied, there is some research which provides hints on how to rewrite materials in order to increase comprehension.

One study was conducted to show that the use of "conjunctions" interfere with comprehension. It found the conjunctions "when," "so," "but," "or," "where," "while," "how," "that," and "if" were difficult for most students to comprehend. Other conjunctions "and," "for," "who," and "as" were found to be easier to comprehend (Stoodt 1972). A similar study was conducted by Robertson (1968) in which clauses with words like "however," "thus," "which," "although," and "yet" were found to interfere with comprehension.

Summary

Although much research has been done to develop measures of readability, little research has been done on the use of readability information to adapt materials. Authors have given reasons why adapting materials could be of benefit, but none had reported

research demonstrating the effectiveness of adapting materials in teaching educationally handicapped students. The advantages and disadvantages of particular readability procedures were mentioned, as well as factors which could influence the success of adapting materials. Given these circumstances this study atempted to study one technique for adapting materials which uses a combination of readability data as a basis for rewriting texts.

Chapter III

PROCEDURE

This study was to determine if texts rewritten with the student's known vocabulary would be more comprehensible to the educationally handicapped student. This chapter presents a description of the group of students who participated in the study. It also includes a description of how the materials were adapted and statistical treatment of the data.

Subjects

Two different samples of social studies students were selected from a middle school in Knoxville, Tennessee. One group was composed of regular students and the other group was composed of educationally handicapped students.

Seventeen students (eleven boys and six girls) of average intelligence were selected from three social studies teachers classes. Six were in the sixth grade world history classes, five were in the seventh grade geography classes, and six were in the seventh grade Tennessee history classes. These students were the higher functioning students from each class.

Eighteen educationally handicapped students (twelve boys and six girls) who were in those same classes were chosen. Two resource students happened to be in each class, thereby, making selection simpler. The handicaps for these educationally handicapped students are as follows: thirteen were Learning Disabled, three were Educationally Mentally Retarded, two were Behavior Disordered. All had been identified by the Knoxville City Schools according to State guidelines. All the educationally handicapped students attend the same resource room and were reading at or below fourth grade level based on standardized tests.

Design of the Instrument

An individual vocabulary list was determined for each of the thirty-five students by asking them to pronounce all the words on the "Dale List of 3,000 Familiar Words". Once these thirty-five lists were obtained, the researcher typed each list into memory of a PDP-10 computer.

Three social studies teachers helped the researcher select a chapter from the text that corresponded to their classes. The three books were Your Tennessee, Our World, and Our World and Its People. Two passages of approximately 300-words were selected from each. The result was two passages in Tennessee history, two in

geography, and two in world history which were stored in the computer until it was time to adapt them. No subject had read a passage before it was adapted.

A general adaptation for any passage was created by choosing the educationally handicapped student with the lowest list of known words. This list became the list of known words for the generalized versions. The computer was programmed to read the passages from its memory and compare each word against the list of known words. Any word in the passage that was not on the list of known words was flagged. The researcher read all the flagged words and developed a master substitution list which was typed into the computer. Again a program was written to read each passage and to substitute an accepted word or group of words for each flagged word in the six different original passages. The researcher read the general adapted versions of each of the six passages to see if the substitutions made sense and were consistent with the passage. If any changes were needed, they were made by hand by the researcher. Since the substitutions were made from the word list of the student with the least known words sometimes the sentence structure became more difficult to follow. The three social studies teachers reread the adapted versions to be sure they were consistent with the content of the course. The six general adapted versions

of the passages were stored in computer memory.

This same process was repeated thirty-four times to develop individual passages for each educationally handicapped student participating in this study. When all thirty-six individual adaptations and the six general adaptations were finished, they were printed. Readability was calculated, using the Fog Index, on the original and each general adapted version to see if changing only the vocabulary lowered readability. The average readability of the original passages was 10.48. For the general adapted versions it was 7.90. Therefore, adaptation by this method did lower the readability an average of 2.58. See appendix A for a comparison of readability where the Fog Index of Readability was used.

The individual passages were modified using the Cloze Procedure following a technique suggested by Bormuth (1968). Each passage was retyped omitting every fifth word. The passages were retyped with the same size blanks for each omission. Copies were given to the student with the instructions to fill in the blanks by guessing. Each student was to write the omitted word from the passage exactly. No similar words or incorrect forms of the correct word were accepted. Spelling did not have to be correct. A Cloze score of 44 percent equals instructional reading level.

Three booklets were asembled for each subject. All type was standard size. Only one side of a sheet of paper was used. Booklet number one contained two originals and two general adapted version passages for each student. Booklet number two contained two original Cloze passsages, two general adapted Cloze passages, and two individual adapted passages. Booklet three, only for the educationally handicapped students, contained two individual adapted Cloze passages. The passages in every booklet were ordered in a random fashion to lower the possibility of students reading two of the same content passages in order. This also prevented the practice effect since students could not remember an answer from the previous page.

During the last two weeks of school the thirty-five students were broken up into three groups. Group one was the sixth grade world history students. Group two was the seventh grade geography students, and group three was the seventh grade Tennessee history students. Each of the thirty-five students was given a version of Booklet One which corresponded to their subject area. They were told to be sure that each booklet contained two different versions of passsage one labeled 1.1 and 1.2 after the title and two different versions of passage two labeled 2.1 and 2.2 after the title. They were then asked to read all the passages carefully.

Arrangements were made for each student to take the Cloze tests in their own homes during the early part of summer vacation. Care was taken not to interfere with the students' summer plans and activities. All home visits were done by the researcher at the convenience of the students and their parents. Three weeks into summer vacation the regular students were given Booklet Two to complete the Cloze tests. The only instructions given were to "fill in the blanks the best you can." The educationally handicapped students were given the same booklets. The instructions were to "fill in the blanks the best you can and read the next two passages carefully."

One week later the educationally handicapped students were given Booklet Three with the same set of instructions. The researcher did not speak to any student as they took the tests or read the materials. Whenever possible the researcher stayed in a different room than the students.

In sum, the booklets yielded scores for each regular student on two versions of original passages and two versions of general adapted passages. For the educationally handicapped students the booklets yielded scores for two versions of original passages, two versions of general adapted passages, and two versions of individually adapted passages.

Analysis of Data

The hypotheses were developed to find out whether this method of adaptation is an effective technique. Accordingly, analyses were conducted by making comparisons between versions of the text, i.e. original, general adapted, and individual adapted while disregarding content areas. Frequency and percentage scores were chosen as appropriate statistics.

The six hypotheses are presented below. The appropriate statistical technique and the rationale for the procedure are presented. The hypotheses assumed that teachers prefer to use techniques that are effective with at least 70 percent of their students. Ability to read a passage was based on Cloze scores. If a child completed Cloze tests with 44 percent or above correct, it was assumed that the passage was at his instructional level (Bormuth 1968).

Individualized Version Hypotheses

Hypothesis 1: Do the educationally handicapped students find less than 70 percent of the original passages, regardless of version, to be at their instructional levels?

Hypothesis 2: Do the educationally handicapped students find 70 percent of the individually adapted

passages, regardless of version, to be at their instructional levels?

If less than 70 percent of the educationally handicapped students could read the original passsages, then there would be justification to adapt materials. On the other hand, if 70 percent of the educationally handicapped students can read the individual adapted versions but could not read the general adapted versions, then this would suggest that individual adaptation is a usable technique.

These hypotheses were tested by obtaining a percentage of subjects able to read each version at instructional level. The percentage was compared to the criterion.

General Adapted Version Hypotheses

Hypothesis 3: Do the regular students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

If 70 percent of the regular students can read the original passages and the general adapted versions, then it means one version could be used with regular and educationally handicapped students. But if 70 percent of the regular students can read the original passages and not the general adapted versions, then it would suggest that adaptation, when done by this method, makes the material more difficult to read for the regular

students and the teacher will need at least two versions of materials, one for the regular students and one for the educationally handicapped students.

The hypothesis was tested by obtaining the percentage of subjects able to read each version. The percentages were compared to the criterion.

Hypothesis 4: Do the educationally handicapped students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

If 70 percent of the educationally handicapped students cannot read the original passages but can read the adapted versions, then the general adapted method is effective.

This hypothesis was analyzed by calculating the percentage of students able to read both versions. The percentages were compared to the criterion.

Effectiveness of Technique Hypotheses

Hypothesis 5: Are there significant differences between original version, generally adapted version, and individually adapted version for educationally handicapped students as a group?

The data were analyzed using a one-way analysis of variance (ANOVA) which compared educationally handicapped students scores on all three versions. This test is made by using the sample means to estimate the

variance of the treatments. Using the F distribution, this estimate of the mean is compared to the scattering of the individual scores for each treatment to determine if the differences are significant. When a significant level of probability of less than .05 was found, the Duncan Multiple Range Test was computed.

Hypothesis 6: Does individual adaptation for the educationally handicapped students lead to higher Cloze scores?

If 70 percent of the educationally handicapped students exhibit a higher score on individual adaptation over general adaptation, this would suggest that individual adaptation, done by this method, makes it possible for the educationally handicapped students to read the materials better.

This hypothesis was tested by comparing scores of individual and general adaptive versions of Cloze tests to obtain a percentage of subjects that had higher scores on the individualized adaptation. The percentages were compared to the criterion.

Chapter IV

PRESENTATION AND ANALYSIS OF DATA

This was a study to determine if textbooks rewritten with the known vocabulary of the educationally handicapped student made the subject matter more comprehensible than the standard version of the text. It was designed to test the relationships between known vocabulary and comprehension across subject areas. The main concern is whether this method of adaptation is an effective technique.

A known vocabulary list was determined for each of the thirty-five students by noting each word a student could pronounce from the Dale List of 3,000 Familiar Words. Six passages were selected for adaptation. The individual child's vocabulary was used to rewrite the material. Seventeen regular students were given two original passages, two general adapted passages to read, and the corresponding Cloze tests to complete. The eighteen educationally handicapped students were given two individually adapted versions to read and Cloze tests to complete in addition to the other four passages.

Treatment of the Data

Each hypothesis is presented and relevent findings are discussed.

Hypothesis 1: Do the educationally handicapped students find less than 70 percent of the original passages, regardless of version, to be at their instructional levels?

The Cloze scores for each educationally handicapped student were calculated to see how many reached instructional level, (i.e. 44 percent). None (0/6) of the original passages were at instructional level for the educationally handicapped students. Zero percent meet the criterion of less than 70 percent, making it possible to accept this hypothesis.

Hypothesis 2: Do the educationally handicapped students find 70 percent of the individually adapted passages, regardless of version, to be at their instructional levels?

Cloze scores for the educationally handicapped students were calculated to see how many scored at the instructional level. Forty-four percent of the individual adapted passage versions were at instructional level. Since 44 percent did not meet the criterion of 70 percent, this hypothesis was rejected.

Hypothesis 3: Do the regular students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

The Cloze scores for the regular students were calculated to see how many fell into the 44 percent level. For 68 percent of the regular students the general passages were at instructional level. This was not within the criterion of 70 percent so the hypothesis was rejected.

Hypothesis 4: Do the educationally handicapped students find 70 percent of the general adapted passages, regardless of version, to be at their instructional levels?

Cloze scores for the educationally handicapped students were calculated to see how many reached the 44 percent level. For 24 percent of the educationally handicapped students the general adapted passage versions were at instructional level. Since 24 percent did not meet the criterion of 70 percent this hypothesis was rejected.

Hypothesis 5: Are there significant differences between original passage versions, general adapted passage versions, and individually adapted passage versions for educationally handicapped students as a group?

An Analysis of Variance is a statistical technique used to test the null hypothesis that a number of treatments all have the same mean. The anaylsis yielded significant differences between the version of the passages ($F=4.18$, $df=2, 105$, $p < .0179$.) The Duncan multiple range test was calculated to determine which versions were significantly different from each other. Table 1 reports the results.

Table 1

Duncan Multiple Range Test for Cloze Score FOR Educationally Handicapped Students*

Grouping	Version	Mean	N
A	Individual Adaptation	0.379722	36
B B	General Adaptation	0.270000	36
B	Original Passage	0.248056	36

*Means with the same letter are not significantly different ($p < .05$).

The scores for the individually adapted versions are significantly higher than either the original or general adapted passage Cloze scores. The individual

adapted passages mean was 0.379722 while the other means were 0.27000 and 0.248056 for the general adapted versions and the original passages respectively. The significant differences suggest that individual adaptation, using known vocabulary and no other modification of readability, is a usable technique for increasing the comprehensibility of materials for the educationally handicapped students.

Hypothesis 6: Does individual adaptation for the educationally handicapped students lead to higher Cloze scores?

Individual adaptation did lead to higher Cloze scores. A 44 percent gain was calculated between original passage versions and individual adapted versions. A 20 percent gain was calculated between general adapted versions and individual adaptation. The increase in Cloze scores suggests that this method of adaptation is usable and effective for the educationally handicapped students.

It was noted that educationally handicapped students were better able to supply missing words in individually adapted passage versions than in other versions. In the original passage they did not attempt to fill in a blank for a technical word, but in the individually adapted Cloze tests they attempted to fill in every blank.

Summary

The intent of this study was to determine if textbooks written with the known vocabulary of the educationally handicapped student, and no other modifications to readability, made the material more comprehensible than the standard texts. With this in mind, the results of this investigation are summarized below.

Seventy-six percent of the regular students and 0 percent of the educationally handicapped students found the original passages, regardless of version, to be at their instructional level. This finding supports the need for adapted materials. Sixty-eight percent of the regular students and 24 percent of the educationally handicapped students found the generally adapted passages, regardless of version, to be at their instructional level. This difference justified further adaptation for the educationally handicapped students. Individual adaptation for these students resulted in 44 percent finding the passages, regardless of version, to be at their instructional level. The results of the analysis of variance indicated that educationally handicapped students found the individual adaptation was significantly easier to comprehend.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

Restatement of the Problem

The purpose of this study was to determine if textbooks and materials rewritten with the known vocabulary of the educationally handicapped student made the subject matter more comprehensible than the standard version of the text. The study assumed a relationship exists between known vocabulary and comprehension of texts in specific subject areas. The main concern of the study was whether this method of adaptation is an effective technique.

Summary of Procedures

The subjects of this study were seventeen regular students and eighteen educationally handicapped students from three different social studies teachers' classes in a Knoxville City Middle School. Two sets of passages were chosen from each of the three texts and adapted with a general vocabulary list. Two of the six passages were also individually adapted for the educationally handicapped students. Cloze tests were developed for each version of the texts.

The data were obtained by comparing Cloze test scores to a criteria of 70 percent. The tests determined the percentage of students able to read each of the three versions: original, general adapted, and individually adapted passages. An analysis of variance was computed to determine if there was a significant difference in Cloze scores across the three versions of the passages.

Results, Conclusions, and Recommendations

The Cloze scores for each educationally handicapped student were calculated to see how many reached instructional reading level for the three versions of the passages. None found the original passages, regardless of version, to be at their instructional level. Twenty-four percent found the general adapted passages, regardless of version, to be at their instructional level. Forty-four percent found the individually adapted passages, regardless of version, to be at their instructional level. These results suggest that the closer the adapted material was to the students' own vocabulary the better he did on the Cloze tests, justifying this method of adaptation and supporting its need.

A one way analysis of variance (ANOVA) was computed to determine if there was a significant difference in

Cloze scores for the educationally handicapped students. The Duncan Multiple Range Test showed that individual adaptation was significantly different than either general adaptation or original passage scores. This supports the need for individual adaptation for the educationally handicapped students and suggests general adaptations cannot solve the basic instructional problem.

The researcher observed that for the original and general adapted Cloze tests the educationally handicapped students would not attempt to supply any answers for blanks referring to technical words. Yet on the individually adapted Cloze tests, they attempted to fill in every blank and tried to supply technical words. This observation supported the conclusion that individual adaptation gets closer to a student's usable vocabulary. Clearly general adaptation was not a effective technique, and individual adaptation was more effective. Individual adaptation did lead to higher Cloze scores, further supporting its effectiveness.

Although individual adaptation did not meet the criteria of 70 percent, it did raise the Cloze scores for the educationally handicapped students. We, as educators responsible for the needs of all the students in our classes, must help the mainstreamed educationally handicapped students by providing materials within their

reading levels no matter what the subject area. Teachers must also lecture or write notes so the educationally handicapped students are able to comprehend them. The method of adaptation used in this study was effective in raising comprehension as indicated by Cloze scores. Results suggest that it is worth the teacher's time to adapt the material because it places material nearer the instructional level in order that the students can understand the concepts. This may result in less teacher time devoted to lengthy explanations and review of the concepts during actual instructional periods.

Cloze scores were calculated for the regular students to see how many reached instructional level. Eighty-three percent found the original passages, regardless of version, to be at their instructional level. Sixty-eight percent found the general adapted passages, regardless of version, to be at their instructional level. General adaptation lowered the Cloze scores for the regular students. This suggested that adaptation interfered with their ability to comprehend the text.

It was noted that the regular students seem to have puzzled expressions as they read the generally adapted passages. On the Cloze tests they seemed to ask grammatical questions and supply technical words for the

blanks even though the reading passage vocabulary was simplified. This supported the conclusion that adaptation made the material more difficult to read for the regular students. Therefore, adaptation using this approach was not appropriate for regular students.

As this study progressed, three thoughts came to light which would offer possible improvement for future studies.

The first would be whether other modifications to readability, used in conjunction with known vocabulary substitutions, could cause even higher Cloze scores for educationally handicapped students. Examples of other procedures to lower readability are to modify sentence length, to simplfy verbs, and to use simpler sentence structure.

A second change in this study would involve not allowing the students to read the passages before taking Cloze tests. Bormuth (1968) concluded that reading a passage before taking a Cloze test made no difference. Data from this study did not test Bormuth's conclusion. However, it is possible this affected the Cloze scores.

The third recommendation is to perform the study with a larger, more diversified group of subjects to see if the results obtained are as consistent and generalizable.

The data point to the need for individual adaptation by this method, for the educationally handicapped students, and no adaptation for the regular students. These data suggest that regular classroom teachers will need two types of materials -- one set of standard texts for the regular students and another set of individually adapted materials for each educationally handicapped student.

In conclusion the study did underscore the need for adapting texts for educationally handicapped students. This method of using known words was less effective than had been expected, i.e., did not reach the 70% criterion. However, the results point to the need for further research in this area. It is hoped that teachers through studies of this type will realize that educationally handicapped students can experience success when presented adapted materials.

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APPENDICES

Appendix A

Comparisons of Readability for Original and General Adapted Passages

	Original Passages	General Adapted Passages	Difference
Tn. Hist. I	12.48	8.71	3.77
Tn. Hist. II	11.60	10.20	1.40
Geog. I	9.53	6.71	2.82
Geog. II	6.58	5.80	.78
World Geog. I	9.20	8.15	1.05
World Geog. II	13.48	7.84	5.64
Average	10.48	7.90	2.58

Appendix B

Booklet Two

1.1

The state constitution stipulates ----- the judicial power of ----- state is to be ----- in one Supreme Court -----in such Circuit, Chancery, ----- other inferior courts as ----- Legislature shall from time ----- time, ordain and establish. ----- courts refer to the ----- courts from which cases ----- to the higher courts.

--- LOWER COURTS. The judicial ----- of the state consists ----- the courts with purely ----- jurisdiction (authority), such as ----- of peace courts, municipal -----, courts of general sessions, ----- county courts. It is -----to confuse the county ----- of quarterly sessions with ----- county court of monthly -----. The quarterly sessions court ----- the county. It has ----- legislative and administrative functions. ----- county court of monthly -----is a judicial agency ----- original jurisdiction in cases ----- wills, settlement of estates, ----- of children, and others. "-----" means the case begins ----- originates in this court.

----- county court of monthly ----- is presided over either ----- a county judge or ----- a county chairman. About ----- of the counties of ----- have county judges elected ----- a popular vote for ----- eight-year term. Where county -----preside over the courts ----- monthly sessions, the chairman ----- be chosen by popular ----- or by a justice ----- the peace.

The justice ----- the peace courts have ----- over civil cases involving ----- of money no larger ----- a stated sum, ranging ----- $50. to $2500., depending -----on the county and ----- case. These courts also ----- criminal cases where fines ----- not exceed $50. They ----- hold a preliminary examination -----of the suspected person ----- may order the person ----- stand trial before a ----- court.

Municipal and general ----- courts have similar jurisdiction. ----- judges often preside over ----- courts, but in small -----, the mayor or recorder ----- as judge. Since 1911 ----- acts of the general ----- have provided for special ----- to deal with specified ----- of cases. These courts ----- juvenile courts and domestic ----- courts.

1.2

The state law says ----- the court power of ----- state is to be ----- in one Higher Law ----- and in like nearby, -----, and other lower law ----- as the congress shall ----- time to time set -----. Lower law houses are ----- the lower law houses ----- which hearings go to ----- higher law houses.

THE ----- LAW HOUSES. The court ----- up of the state ----- made up of the ----- houses with only nearby -----, like the police head ----- peace law houses, town ----- houses, law houses of public -----, and county law houses. ----- is easy to mixup ----- county law house of ----- meetings with the county ----- house of once a ----- meetings. The four meetings ----- house governs the county. ----- has both to do ----- congress and officer jobs. ----- county law house of ----- a month meetings is ----- court group with first ----- power in hearings having ----- do with wills, selling ----- homes, taking over the ----- of children, and others. " ----- Time" is the hearings ------ in that law house.

----- county house of once ----- month meetings is looked ----- by a county judge ----- by a county leader. ------ two-thirds of the counties ----- Tennessee have county judges ----- by a peoples' poll ----- an eight-year term in -----. Where county officers look ----- the law houses of ----- a month meetings, the ----- may be chosen by ------ poll or by a ----- head of the peace.

----- police head of the ----- law houses have power ----- citizen hearings having to ----- with sums of money ----- a stated sum, going ----- $50 to $2500, differing ----- the county and the -----. The law houses can ----- law breaker hearings where ----- are not over $50. ----- can have a first ----- look of the person ----- may force the person ----- go to a hearing ----- a hearing law house.

----- and public sitting law ----- have the same power. ----- judges many times look ----- the law houses, but ----- small towns, the mayor ----- clerk works as judge. ----- 1911 only laws of ----- congress have turned out ----- only law houses to ----- with named hearings. The ----- houses are children law ----- and family problems law -----.

2.2

TOWN OR CITY LAW -----

The congress has made ----- group of law houses ----- first time power to ----- power to be judge ----- both citizen and law ----- hearings. The three kinds ----- town and city law ----- are town law houses, ----- breaker law houses, and ----- law houses. The state ----- cut into twenty-four towns ----- one or more judges ----- in the town law -----. The judges are polled ----- officers serving eight-year time ----- office. The power of ----- town law houses is ----- overlapping. The powers of ----- town law houses are ----- as switching the names ----- persons, give the right ----- to the taking care ----- children, letting people out ----- marriage agreement, and putting ----- judgements of payments.

Tennessee ----- on of six states ----- carry on chancery law ----- left from the past ----- the English law house -----. The law houses rule ----- hearings where some just ----- in question as in ----- new lesson of passed ----- made by Glen Campbell ----- put years after when ----- was great. Campbell's lawyers ----- that the goodness of ----- songs are bad to ----- new good name of ----- artist. Many years ago ----- star Gene Autry won ----- hearing in Chancery in ----- in which a Hollywood ----- company was needed to ----- the star part of ----- from work for showing ----- his old movies on -----. Chancery law houses may ----- hearings having to do ----- end disagreements and may ----- with county law houses ----- hearings having to do ----- persons who are sick ----- the head.

Only law ----- law houses are set ----- by the congress in named ----- of the state where -----. The law houses help ----- town law houses to ----- citizen hearings.

Appellate Law -----.

Law houses of ask ----- turn out an additional ----- after the judgement of ----- lower law houses are -----. Tennessee's law houses of ----- again are set up ----- the congress to help -----crowded list of hearings -----be tried of the ----- higher law house. A ----- house of citizen trys ----- is made up of ----- judges polled by the ----- of the whole state ----- a time of eight -----. Not over three of ----- judges may live in ----- one of the grand ----- of Tennessee. Three may ----- in Jackson with the ----- numbers in Knoxville and ----- and hear hearings. They ----- sit as a whole. ----- law house of law ----- trys again was set ----- by the 1967 sittings ----- the people's congress and ----- in Jackson, Nashville and ----- at stated times. The ----- groups of three judges ----- added to by the -----

congress in 1969 to ----- groups from every grand -----
and one from the ----- at large.

2.1
REGIONAL AND DISTRICT COURTS.

----- legislature has created a ----- of courts of original ---- empowered to adjudcate (act ----- judge in) both civil ---- criminal cases in equity. ----- three types of regional ----- district courts are circuit -----, criminal courts, and chancery -----. The state is divided ----- twenty four circuits, and ----- or more judges sit ----- the circuit courts. These ----- are elected officials serving ----- terms. Although the juristiction ----- the regional courts is ----- overlapping, the powers of ----- circuit courts are designated ----- changing the names of -----. Authorizing the adoption of -----, granting divorces, and entering ----- of awards.

Tennessee is ----- of six states still ----- chancery courts, inherited from ----- English Court System. These ----- rule in matters where ----- ethical principle seems to ----- in question, as in ----- recent instance of early ------ made by Glen Campbell -----released years later when ----- was famous. Campbell's attorneys ----- that the quality of ----- recordings would be detrimental ----- the current prestige of ----- artist involved. Many years ----- cowboy star Gene Autry ----- a case in chancery ----- Nashville in which a ----- movie company was required ----- pay him royalties (shares ----- proceeds from work) for ----- of his old movies ----- television. Chancery courts may ----- try cases concerning boundry -----and may deal with ----- courts in matters concerning ----- of unsound mind.

Special ----- courts have been established ----- the legislature in specific ----- of the state where -----. These courts relieve the ----- courts to try civil -----.

APPELLATE COURTS

Courts of ----- provide an additional hearing ----- the decision of the ----- courts has been rendered. ----- courts of appeals were ----- by the legislature to ----- the crowded docket (lists ----- cases to be tried) ----- the state supreme court. ----- court of civil appeals ----- composed of nine judges ----- by the people of ----- entire state for a ----- of eight years. Not ----- three of the judges ----- reside in any one ----- the grand divisions of ------. Three may sit in -----,with equal numbers in ----- and Nashville, and hear -----. They may also sit ----- a whole. The court ----- criminal appeals was created ----- the 1967 session of ----- general assembly and meets ------ Jackson, Nashville, and Knoxville ----- stated times. The initial ----- of three judges was ----- by the

general assembly ----- 1969 to two members ----- each grand division and ----- from the state at -----.

3.2

The state law says that the court power of the state is to be held in one Higher Law house and in like nearby, Chancery, and other lower law houses as the congress shall from time to time set up. Lower law houses are to the lower law houses from which hearings go to the higher law houses.

THE LOWER LAW HOUSES. The court make up of the state is made up of the law houses with only nearby power, like the police head of peace law houses, town law houses, law houses of public meetings, and county law houses. It is easy to mixup the county law house of four meetings with the county law house of once a month meetings. The four meetings law house governs the county. It has both to do with congress and officer jobs. The county law house of once a month meetings is a court group with first time power in hearings having to do with wills, selling of homes, taking over the care of children, and others. " First Time" is the hearings starts in that law house.

The county house of once a month meetings is looked over by a county judge or by a county leader. About two-thirds of the counties of Tennessee have county judges chosen by a peoples' poll for an eight-year term in office. Where county officers look over the law houses of once a month meetings, the leader may be chosen by peoples' poll or by a police head of the peace.

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general assembly in 1969 to two members from each grand division and one from the state at large.

VITA

Teresa L. Mullens was born April 22, 1955, in Queens, New York. For twenty-three years she lived in Franklin Square, New York. She attended St. Catherine of Sienna Grade School and graduated from H. Frank Carey High School in June 1973. In the fall of 1973 she entered Bowling Green State University of Ohio. While there she was a member of and held offices in SCEC and ACLD student chapters. Teresa graduated from Bowling Green State University in June 1977 with a Bachelor of Science Degree in Education.

Professional experience since then has included Special Education Teacher for the Sewanhaka Central School District in New York and counselor for the Gifted at Fiedel Summer School. She presently teaches in the resource program for the Knoxville City Schools. In the Summer of 1979, Teresa entered the Univesity of Tennessee as a graduate student.

She is married to James A. Mullens, formerly of Hicksville, Ohio. The couple lives in Knoxville, Tennesssee.