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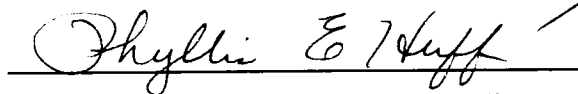
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Date May 1992

AN EVALUATION OF THE READABILITY OF
SEVENTH AND EIGHTH GRADE READING TEXTBOOKS

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Mary Jo H. Thomas

May 1992

DEDICATION

This thesis is dedicated to
Mrs. Florence B. Hoffmeier, my Mother
who has given me invaluable educational opportunities

and

in memory of
Mr. John E. Hoffmeier, my Father
who taught me to strive for excellence.

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Thank you everyone.

Mary Jo H. Thomas

ABSTRACT

The purpose of this study was to investigate the comprehensive evaluation including readability levels and reinforcement of vocabulary words of five series of seventh and eight grade reading textbooks. The data were collected using two instruments:

The Harris-Jacobson Wide Range Readability Formula (Harris & Sipay, 1985) was used to compute the readability score for five passages from each of the ten textbooks. The Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991) was additionally used to compute the percentage of reinforcement of vocabulary words emphasized in the student workbook for each particular story that was used for the readability passages.

The results of the comprehensive evaluation revealed that all of the investigated textbooks are above the grade levels stated by the publishers. All of the textbooks have intertext inconsistencies. The samples researched do not progress from easier selections at the beginning to harder ones at the end of the textbook. Only five percent of the investigated vocabulary words were reinforced an appropriate number of times (five or more). Since reading is one of the ways children learn in school and very important in combating illiteracy, this study suggested implications for publishers, teachers and further research that may benefit students.

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CHAPTER I

INTRODUCTION

Being literate modifies the way people think; reading fulfills educational, emotional, and spiritual needs (Harris & Sipay, 1980). With all the encouragement we have to read through regular school programs, special adult reading programs, literacy campaigns, public libraries and the varied opportunities for high school drop-outs to get their G.E.D.s, there are still fifty million adults who are functionally illiterate in the United States (Alexander & Heathington, 1988).

The lack of literacy begins in our public schools. Here reading has a major emphasis and is also a major problem for many children. These children are at risk of being labelled reading disabled in school and as an adult being labelled functionally illiterate. The incidence of reading disabilities occurs in ten to twelve percent in the middle class United States. Numerous disadvantaged areas register 50 to 100 percent of their students as reading disabled (Alexander & Heathington, 1988). Two discouraging aspects of these facts are that increasing numbers of students are unable to read required textbooks, and that these students will spend another school year struggling with textbooks and facing daily failure (Wood & Wooley, 1986).

The difficulty students have in reading textbooks in school is an increasing problem (Hargis, 1982; Wood & Wooley, 1986). Hargis (1982) states there are two main factors that contribute to this difficulty. One factor is the complexity of the problem, mainly textbook inconsistencies. Specifically, there are inconsistencies within the publisher's grade level readers. Some of the selections within a reader are more difficult for children on grade level to read and some paragraphs within a specific selection are hard to read (Hargis, 1982). Indeed, Harris and Sipay (1980) found 70

percent of the stories in middle school basals are above the grade levels designated by publishers. They also found some selections with high readability scores. These selections contained large numbers of unknown words and/or complex sentence structures.

The second factor cited by Hargis as contributing to reading difficulty is that these inconsistencies are in numerous reading series, not just a few. Spache, 1976 (cited in Hargis, 1982), found that among 20 reading series, the range of difficulty was more than one grade level between the easiest and most difficult first grade reader, about two years difference in second, third, and fourth grade readers and one and a half years difference in fifth and sixth grade readers compared to publisher's stated grade levels.

These two factors must be considered in relation to what is known about illiteracy and learning disabilities today. As a result, there is a definite need for research on the readability levels of materials in classrooms.

The purpose of this investigation is to determine the reading level of textbooks and vocabulary reinforcement so teachers might find the appropriate match of student to text. Klare (1976) reported that research subjects chose reading materials that were more readable with lower readability scores. The less readable versions with higher readability scores were rejected. Even when improvements in readability were made, comprehension was not necessarily improved but other measures, such as preferences and judgements, were positively affected. This is important in real-life situations. Teachers must make rational decisions about which materials they should use from the vast array of materials available. The use of readability formulas help teachers choose these materials by predicting the level of difficulty and indicating which materials need modifications. Publisher's stated grade levels do not appear trustworthy (Spache 1976; Harris & Sipay, 1980; Hargis, 1982; O'Connor, 1991).

Readability is determined by a readability formula which predicts the difficulty of reading materials. In turn, grade levels are assigned to the different difficulty levels. Not all formulas agree on the same grade level designation, but they do agree on the rank ordering of the textbooks from easier to harder (Harris & Sipay, 1980; Dreyer, 1984).

There is much research on the topic of readability as seen in educational journals since the 1930's (Danielson, 1987; Dreyer, 1984; Klare, 1974, 1976; Kulp, 1974; Schwimmer, 1971). There have been several studies conducted on classroom textbooks (Armbruster & Anderson, 1988; Alverman, 1981; Wood & Wooley, 1986; Perry & Sagen, 1989; McCracken, 1959). Ten theses and one doctoral dissertation from the University of Tennessee, Knoxville have been completed on the comparison of actual readability of classroom textbooks to publisher's grade level designations. However, no research is available on seventh and eighth grade basal reading programs comparing actual readability levels and publisher's stated grade levels and tabulating vocabulary reinforcement.

The seventh and eighth grade reading textbooks are the important link between elementary and high school reading programs. If children do not succeed in this stage because of difficulties with the text itself, their high school reading progress will most likely be unsuccessful. High school for some is the final stage toward being a literate adult. If the seventh and eighth grade students are to succeed in this stage of education, they must find success with their reading textbooks.

BACKGROUND

Textbooks are a predominate element in American schools. Choosing classroom textbooks with the appropriate reading level for the students is an important task. The

Educational Products Information Exchange in 1974 (Armbruster & Anderson, 1988), found students spend 75 percent of their class time and 90 percent of their homework time using textbooks and related materials. Muther's study in 1985 (cited in Armbruster & Anderson, 1988), showed 70 to 90 percent of classroom educational and curriculum decisions were based on textbooks.

Students of the middle school age are at a difficult time in their personal lives and have an enormous need for success in school, particularly in reading. However, there is very little research found in the area of readability in middle school materials. The amount of reading in the middle school is a dramatic increase above the amount required in elementary schools. Reading in the middle school is not a separate subject. Most of the basal reading programs published in recent years, are literature anthologies taught by English teachers. These anthologies emphasize quality literature, rather than vocabulary acquisition and development. The curriculum assumes students have ample reading skills and strategies mastered from the elementary grades. The curriculum also assumes an adequate reading vocabulary has been acquired by students for comprehension of the middle school textbooks.

Harris & Sipay (1980) think it is a misconception that students have ample reading skills, strategies, and vocabularies. They believe that direct teaching of reading is still necessary. Not all middle school students have mastered the elementary reading skills and strategies for acquiring adequate reading vocabularies and so find reading grade level textbooks difficult. Alverman's (1981) study on basal textbooks strongly suggests that eighth grade basals are suitable materials for ninth and tenth graders who are reading below grade level. These basals could be appropriate for even lower readers, in that the readability of some selections in the eighth grade textbooks were fourth, fifth, and sixth grade levels, but teachers would need to match selections on individual children's needs and few stories can be used with all the students.

Familiar words make reading less difficult. For words to be familiar, they must be incorporated in the student's memory by repetition and reinforcement. This reinforcement is gained through reading and emphasized through the student workbook. Kingsley (1965) recommends five repetitions in the introduction of a new word within a story. Harris & Sipay (1985) recommend the direct teaching of five words with five repetitions in a story for storage in short term memory. Hargis, Terhaar-Yonkers, Williams, and Reed (1988) in their study found that the most important factor in teaching reading is adequate vocabulary repetition reinforcement in context. Reading disabled students require more vocabulary repetition to achieve success in reading. The Worksheet for the Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991) provides guidelines for tabulating the number of reinforcements in a selection of a textbook in order to aid in the evaluation of materials. This tool provides essential information which should be used in conjunction with readability measures when matching texts with students.

Klare (1974) suggests three possible solutions to evaluate the grade level of reading textbooks. The first is to guess. Teachers experienced with materials and feedback from students, often make estimates of readability with much skill and accuracy. The second is to test readability for each piece of material with a comprehension test which must be built and refined, administered to students, and evaluated. Individual Reading Inventories and cloze procedure tests are two subjective examples of this solution. With the large quantity of materials today, this solution is complicated and time consuming. The third solution is the use of standard readability predictors such as the Harris-Jacobson Wide Range Readability Formula, the Dale-Chall Scale, or the Spache Formula. These formulas attempt to estimate reading levels more objectively and systematically.

Perhaps the best solution is the use of the comprehensive evaluation of reading

materials. The comprehensive evaluation technique involves three aspects: (a) computing the actual readability of each selected sample in a textbook using a readability formula, (b) determining the mean readability score of each textbook, and (c) tabulating the number of reinforcements of vocabulary words from each sample in each textbook. These three aspects of the comprehensive evaluation have a direct effect on the actual grade level of the textbooks in each reading series.

The results of the comprehensive evaluation from a readability formula and the worksheet of word reinforcement counts "can help the classroom and special education teacher create a learning environment in which the learner's capabilities, the material's complexity, and the lessons' objectives can meet in a way that results in student learning and teacher satisfaction" (Hargis, 1982, p. 229).

Statement of the Problem

This chapter presented the need to address reading problems through a better process for matching textbooks to students. Middle school reading textbooks are a crucial part of education and as yet, there is no research on seventh and eighth grade reading textbooks. The purposes of this study are as follows:

1. To determine if there are differences in the publishers' stated grade levels and the actual readability grade levels of seventh and eighth grade reading textbooks using the Harris-Jacobson Wide Range Readability Formula.
2. To determine the range of intertext readability in the investigated samples from the seventh and eighth grade reading textbooks compared to the publishers' stated grade levels.

3. To determine if the range of intertext readability for the investigated samples is progressively higher from earlier to later passages.

4. To determine the degree of frequency of reinforcement of the indicated vocabulary words.

Definition of Terms

1. Comprehensive evaluation is defined as the technique to evaluate written materials for specific grade levels using a readability formula and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991).

2. Reading is the interpretation of printed symbols to gain meaning. It is the extension of oral language which builds on listening and speaking skills. An adequate speaking vocabulary is a pre-requisite for reading, but the discovery that the printed words are "talk" is the first step. Chall (1981) defines the success in reading as the extent to which a person understands the written material, reads it at a reasonable speed, and find it interesting.

3. Readability is the measure of reading success in concrete terms. It encompasses all the factors of reading in determining the ease or difficulty of a piece of written material.

A. Actual readability is the grade level derived from the scores calculated by a readability formula on reading materials.

B. Estimated readability is the grade level assigned to reading materials by the publisher.

C. Comprehensive readability is the difficulty level derived from the combination of readability formula scores and the number of reinforcements in a selection.

4. Readability formulas are the instruments used to measure the probable success a reader will have with written materials. Klare (1976) defines readability formulas as counts of language factors in a piece of writing in order to provide an index of probable difficulty for readers. No actual participation by readers is needed. They are developed by finding numerical measures of surface features that are the same as the scores obtained by actual readers. Each formula can be used only for testing the kinds of materials on which it was standardized.

5. Comprehension is the interpretation to gain meaning and understanding during the act of reading, not just word recognition, although that is a pre-requisite. There are many factors which affect comprehension: The mental ability to follow adequately the reasoning presented; the organization of material into meaningful thought units; the governing of one's rate of reading, that is to read fast enough to catch the flow of ideas, but not so fast as to miss too many details; and the drawing of inferences from words and context. The two most important elements are vocabulary and sentence length.

6. Basal reading programs are fundamental reading programs appropriate for children who are on grade level from which they form a reading skills base. Basal programs include textbooks, teacher's manuals, and supplementary kits and materials. Basals are supposed to control vocabulary, word introduction rates, and skill and word reinforcements.

7. Instructional reading level is defined as the level at which a student reads 95 percent of the words correctly and has 75 percent comprehension of the written

material. At this level, the teacher working with the student will achieve a higher comprehension rate.

8. Reinforcement is the frequency of vocabulary words in a story after the word's introduction. The recommended number of reinforcements of new vocabulary words is five in a single story (Kingsley, 1965).

9. Word lists include the pre-primer through the second grade words as root words and all their inflected forms totaling almost three thousand words. These word lists are used to count "hard words" in a sample. This count is then applied in readability formulas.

10. Hard words are defined as those words in a passage that are not included on a word list that accompanies a readability formula. They do not include proper nouns, numerals, or symbols.

11. Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised is the worksheet on which new words can be listed and the frequency of reinforcements can be tabulated (Schindler, 1991).

Research Questions

The purpose of this study is to determine the following:

1. Is there a difference between the publishers' stated grade levels and the actual readability grade levels for seventh and eighth grade basal reading textbooks using the Harris-Jacobson Wide Range Readability Formula?

2. What is the range of intertext readability in the investigated samples from the seventh and eighth grade reading textbooks compared to the publishers' stated grade levels?

3. Is the range of intertext readability for the investigated samples progressively higher from earlier to later passages?
4. What is the degree of frequency of reinforcement of the indicated vocabulary words?

Summary

This chapter has discussed the importance and problems associated with reading, the prevalence of illiteracy and reading disabilities, the need for readability research on middle school basal reading programs, problems with publishers' stated grade levels, the purpose of this study, definitions of key terms used throughout this thesis, and the research questions to be answered in the following chapters.

CHAPTER II

RELATED LITERATURE

This chapter will summarize the research collected related to the area of readability, readability formulas, reading, and word reinforcement. It is divided into four parts:

Part I is concerned with the aspects of readability;

Part II is concerned with readability formulas and their limitations or misuse;

Part III is concerned with the reading process in relation to readability; and

Part IV is concerned with the word repetition and reinforcement.

The Aspects of Readability

It appears that readability has long been a concern of writers dating back to the early centuries of writing. Readability is an ever increasing issue in this century. This concern is shown by all the various literature written on this topic. Tefki (1987) stated that the classic definition of readability is perhaps the one formulated by Dale and Chall in 1948. Their definition is as follows:

In the broadest sense, readability is the sum total (including interactions) of all the elements with a given piece of printed material that affects the success which a group of readers have with it. The success is the extent to which they understand it, read it at optimum speed and find it interesting (Tefki, 1987, p. 262).

Tefki (1987) drew the following conclusions about the main functions about readability: (a) to investigate legibility of the printed material as well as its typography and layout; (b) to investigate the ease of reading which is due either to the interest value or the aesthetics of the writing; and (c) to investigate understanding and comprehension due to the style of writing.

Klare (1976) has described the readability of materials as one of five major factors influencing reader performance. Readability is not isolated in that it interacts with four other factors: the test situation, reader motivation, content considerations and variables, and reader competence. Figure 2.1 illustrates this relationship.

Readability is measured by concrete terms. The difficulty of a text is viewed as a characteristic of the text itself. This difficulty in the text, usually referred to as readability, remains constant no matter how much ability the individual, who is actually reading the text, has (Tamor, 1981).

Numerous methods are used to determine the readability of materials. They fall into two categories: subjective and objective methods.

The subjective method to determine text difficulty is necessary because individual readers vary in their abilities, background knowledge, and the size of their reading vocabularies. This analysis requires the actual participation of individuals. Subjective methods include comprehension tests, vocabulary tests, and cloze procedures.

The objective method of testing text difficulty measures the complexity of sentence structure, types of contextual clues, the writer's assumed prior knowledge of the reader, and the frequency of words included in the text. Objective analysis appears to be the most widely used method because individual subject participation is not required. Readability formulas and scales have been developed to objectively describe and rank order texts, according to reading difficulty.

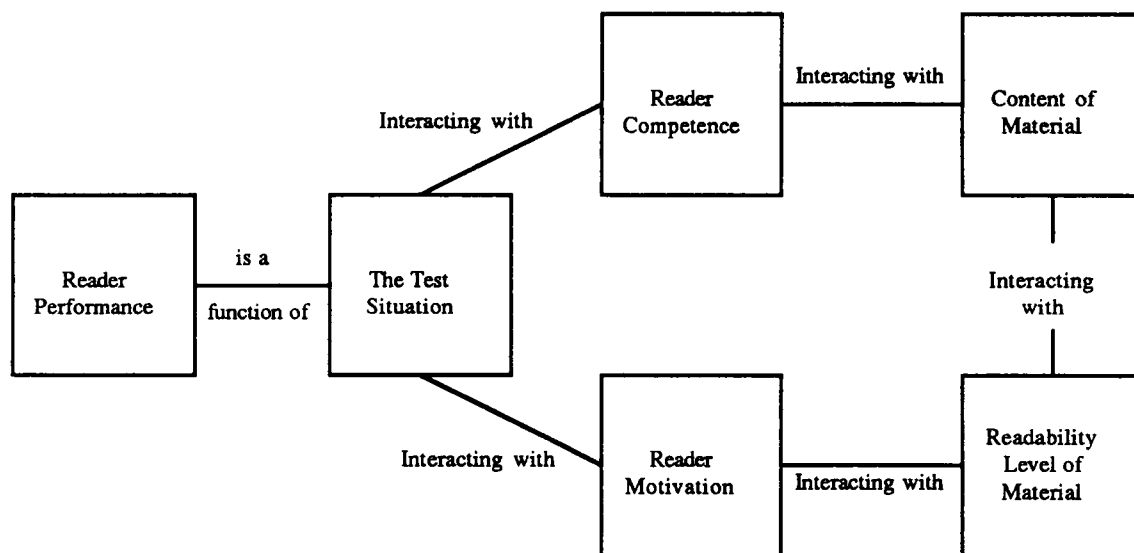


Figure 2.1 Some major factors interacting with readability measures in validity studies. Readability of materials is one of five factors influencing reader performance. It is not isolated because it interacts with the other four.

Source: Klare, G.R. (1976). A second look at the validity of readability formulas. *Journal of Reading Behavior*, 8, 137.

The purpose of readability research is to determine the difficulty of reading materials so that teachers might find the appropriate match of reader and text to facilitate comprehension of the text. There are a variety of factors that influence readability, but most research concentrates on linguistic factors, namely sentence length and word length. These factors are considered the most significant elements in predicting the difficulties encountered by the reader (Tefki, 1987).

Long sentences usually have complex syntactic structures which put a strain on the reader's mind. Complex syntactic structures force the reader to remember several different parts of an idea before he can integrate them into one meaningful whole (Tefki, 1987). The measurement of sentence length indirectly measures sentence complexity, which indirectly measures sentence abstraction (Flesch, 1948).

Beginning readers usually learn short words first because they are the most frequently used words in speaking and reading vocabularies. Longer words are learned as the reader gains reading skill. Longer words, then, are usually an indication of a more advanced vocabulary. The measurement of word length is indirectly a measure of word complexity; word complexity is an indirect measurement of abstraction (Flesch, 1948). The reader will need a higher reading level for the more complex vocabulary and structure of the text and for the increased abstraction of the text (Wood & Wooley, 1986).

There are several ways to estimate readability. Judgements by experienced professionals are clearly useful, but Klare (1974) wrote that as the task becomes more complex, reliability and validity are seriously questioned. Comprehension tests provide evidence of reliability and validity in their scores, but the time and effort the user must devote to test writing and development are important factors to consider. To most teachers developing a comprehension test over the amount of materials used in class to determine its readability is not practical. This test method also involves using readers.

Readability formulas seem to be the most popular form of predicting readability for they are objective, they don't require the use of actual readers, and untrained professionals can use them with confidence. Computer technology has made them easier to use (Koenke, 1987; Kennedy, 1985). The developers of over thirty formulas recognized that content, format, and organization affect readability. They also felt that only style could be quantified and tested objectively (Spiegel & Campbell, 1985). The user of readability formulas must remember that formulas are not perfect. They are only estimates of difficulty, in that they measure only two of many factors involved in readability. Klare (1974) states that research evidence is conclusive--readability formulas are good predictors.

Many promising directions are being explored in readability. Publishers, textbook adoption committees, and school personnel seem to rely heavily on formula scores in making decisions about the suitability of reading materials for specific student populations (Dreyer, 1984).

Readability Formulas and their Limitations

Readability Formulas

A readability formula is usually a numerical equation that relates comprehension test scores of a reader to the linguistic characteristics of a specific passage. Readability formulas are not the ultimate instruments in measuring texts for grade levels. They do not have the precision of chemical and mathematical equations. Fitzgerald (cited in Dreyer, 1984) concluded: a passage placed on the third grade level by one formula may be placed on a fourth grade level by another formula and on a fifth

grade level by still another formula. A single book may contain passages which vary several grade levels using just one formula. Linn (1989) found that the samples, in the geography books she investigated, were on a variety of levels ranging from below grade level to above grade level.

Readability formulas are the usual way to determine grade level appropriateness of textbooks. More than 50 readability formulas have been developed (Harris & Sipay, 1980). Chall (1981) states that each formula can be used only for testing the kinds of materials upon which it was standardized. Klare (1974) suggests considering these five points when choosing a formula: "(1) special versus general needs; (2) manual versus machine application; (3) simple versus complex formulas; (4) word length versus word list formulas, and (5) sentence length versus sentence complexity" (p. 62).

Researchers have found 250 factors that influence reading success (Harris & Sipay, 1980). To simplify the task of determining readability, researchers focused on the linguistic elements of text thought to contribute most to the ease of comprehension. Formulas do not define readability, but they do use counts of language variables to provide an index of probable difficulty for readers (Dreyer, 1984). The linguistic elements found, through research, to correlate most significantly with difficulty are sentence length and word length or percentage of "unfamiliar" words. These two factors do not cause the difficulty. Klare (1974) stated that a simple two variable formula is sufficient to use, compared to a complex formula usually used in research. Variables, other than word or sentence variables, add very little to the validity of the results.

The word variable is consistently more highly predictive than the sentence variable, when each are considered separately (Klare, 1976). Harris and Sipay (1985) found word difficulty more important in middle grade materials. Using a word list of

familiar words is more accurately predictive than counting word length. Most studies consider a word "known" if one meaning is correctly chosen on a multiple choice vocabulary test. Word lists do not need to be long, as 68 words make up approximately 50 percent of the words used in general reading passages (Hargis, 1982). McCracken (1959) concluded in his study that pupils tended to judge passage difficulty according to the number of words they determined as difficult, compared to how well they comprehended the passage itself.

The second variable in a readability formula is sentence length. Klare (1974) states that the sentence variable is an important part of formulas and a count of the number of words in a sentence is sufficient. Sentence complexity is the real cause of difficulty and length correlates with complexity. Long sentences contain dependent clauses, embedded phrases and clauses, plural subjects and/or predicates, changes of normal word order and other constrictions that complicate understanding (Harris & Sipay, 1980). Schwimmer (1971) reported that L. A. Sherman analyzed the average sentence length used by writers. Sherman found an increase in the use of simple sentences included in writing. The use of simple sentences has a remarkable consistency in the pattern of sentence lengths used by writers. Then it is possible to analyze samples instead of entire works as readability formulas do.

Different researchers recommend different numbers of samples for their formulas. The Harris-Jacobson Wide Range Readability Formula was chosen for research in this thesis because it is simple to use, has no special rules accompanying its word list, and uses five samples for a reliability rate of .978. Three samples produced a reliability rate of .898 to .964. So five samples, when taken randomly throughout the whole text, is enough to be representative of the total textbook (Harris and Sipay, 1985). Fitzgerald (1981) found that the standard error of a formula decreases as the sample size increases.

This researcher concludes from documented research that readability formulas using simple word and sentence counts provide satisfactory predictions of reading difficulty. Additional study indicates that five samples are adequate for reliability.

Limitations of Readability Formulas

Based on the review of literature for this study, it appears that many researchers and professionals have criticized the use of readability formulas under the assumption that the formulas are not adequate for analyzing prose that is meaningful. The formulas do not address meaning or comprehension. Some think a readability formula will give an unskilled writer expertise and a publisher the perfect grade level, while acting as a guide from which to write readable material. Formulas measure only two aspects of already written material: difficulty of the vocabulary and sentence length. There are four main points critics mention repeatedly.

First, readability formulas are not "theory based." Instead, formulas are based on statistical research. They use numbers in the formula that correspond with actual comprehension tests on reading materials taken by children. By the amount of literature on readability, formulas have been well researched and have proven to be valuable tools.

Second, McCracken (1959) found that readability formulas are used as writing guides, which is a misuse of the formulas. Readability formulas are not developed for this purpose, but some publishers require writers to "write to" the formula and revise their writing according to the formula, if the grade levels are too high (Dreyer, 1984). When the word lists are used to increase or decrease readability, an artificial or contrived readability level is the result. This manipulation may not increase or decrease

the actual readability level. Some authors, using short words to fit the formula, are actually using more advanced words with more complex meanings. Some write sentences so concise or short that sentences become choppy incoherent prose and so, are more difficult to comprehend (Koenke, 1987). Perera (Danielson, 1987) found that readability formulas, used as guides, produced low readability levels on short nonsense sentences. Formulas have claimed only to be predictors of the difficulty of already written material rather than to set standards for writing selections with predetermined readability levels (McCracken, 1959). Readability formulas appear to accomplish what they are intended to do.

Third, the word lists used with readability formulas are not up-to-date with the vocabulary young people use today. Critics say these word lists create an artificial language for student reading. Common speaking vocabulary words like "television" and "zoo" are not included in formula word lists. The new word lists based on the vocabulary used in most modern basal readers appear to be up to date. The Dale list (Klare, 1974) of 3000 words contains the general words known to 80 percent of the children in fourth grade. Even though the average middle school student will know about fifty thousand words including the variations of words, a word list of approximately 3000 words with all their inflections appears to be an appropriate size for this group of students also.

Fourth, readability formulas may detract from textbook quality. They overlook text and reader characteristics that affect comprehension. Formulas do not take into consideration many other factors of reading such as reader background and motivation. These factors must be accounted for to be reliable sources of readability. Schwimmer (1971) stated in his research that readability studies consistently show that unless content is interesting and relevant and/or a "learning set" is established, materials will

seldom be read regardless of its readability. Content is not the only concern, because formulas do not touch on organization, word order, format or imagery in writing. Readability formulas do not take into account the different purposes, maturity and intelligence of the readers nor human interest. The formula uses only two of the many factors of reading to indicate difficulty levels. Dale and Chall (Dreyer, 1984) made no claim that their formula is infallible, but said that it is a short cut to judge difficulties. Lorge (Dryer, 1984) claimed his formula was an over-all estimate, not a definitive measure to be used blindly.

Fifth, average readability levels ignore wide variations within texts and between scales. The shortened sentences and simplified vocabulary used to conform texts to formulas may sacrifice precision and connectedness and may reduce comprehension.

Klare, Lorge, Dale, Chall, Harris, and Jacobson all agree that readability formulas are predictive devices, not actual measurements of difficulty. Chall (1981) summed up the issue on misuse: Readability formula results are tests of reading materials and need to be understood for what they are and what they can and cannot do. They cannot be substituted for professional judgements. Most formulas measure only two factors. This is a limitation, but formulas have not claimed measurement beyond these factors. Readability formulas are the most useful tools for predicting the difficulty of instructional materials. Readability scores, when coupled with judgement and common sense, predict comprehension difficulty of text remarkably well.

Aspects of the Reading Process in Relation to Readability

It is a fact that children who do not like to read find other activities to occupy their time, even during school time. When children love to read, they will make time to read no matter what the competing activities are (Chall, 1957). The process of learning to read includes an organized reading program, word recognition and comprehension skills.

Reading is defined as the meaningful interpretation of written or printed verbal symbols. It is an extension of oral communication that builds on listening and speaking skills. The discovery that printed words are talk is the first step in learning to read (Chall, 1957). Success in reading is the extent in which the text is understood, the reasonable speed with which the text is read, and the amount of interest the reader finds in the text (Chall, 1981).

Zintz (1973) defined reading as a process of thinking, evaluation, judging, imagining, reasoning, and problem solving. For the elementary school child, reading is more like problem solving rather than simple association or adding to background knowledge. This is especially true when concepts are presented for which children do not have background knowledge. As a student progresses on to the middle school, reading becomes a thought process generating complex organizations of patterns of higher thinking. Reading, then, touches a whole array of techniques. Reading in the middle school increases in amount and difficulty and is no longer taught as a separate subject in the curriculum. Harris and Sipay (1980) states there is a definite need for continued guidance in and teaching of reading in middle school.

Gray (Zintz, 1973) identified four steps in the development of reading. (a) perception--the ability to pronounce words in meaningful units. (b) comprehension--

the ability to establish words into meaningful, useful concepts. (c) reaction--the judgmental action that allows the reader to feel what the author is trying to portray. (d) integration--the ability to weave new ideas/concepts into personal background knowledge. Basal programs are centered around these developmental reading steps. They are based on the concept of developmental stages, not the age factor. They use rigid instructional sequences that present hierarchical subskills to the students. Basals are as high as ninety percent of the reading programs across the country (Zintz, 1973). These programs are usually anthologies of literary selections.

The Harvard Report (Zintz, 1973) on reading listed three concerns worthy of mentioning here: First, children learn to read in a variety of ways and a variety of approaches should be utilized in a reading program. Second, there is a lack of sequential, organized skill development. Most basals give time to word identification and beginning comprehension, but not to higher reading abilities needed in the upper grades. To become a mature reader, students must be critical, creative readers. They must be challenged to understand beyond the literal meaning in passages. Third, basals are misused; the program's supplemental materials are usually left out. These materials provide necessary background knowledge and eliminate the limits of the basic basal program.

In the ever expanding methods of teaching reading, the basal program falls between the two extremes of regimented-basics and all-out experimental programs. Stewart (1957) states 87 percent of schools consider the skills contained in the basal program adequate. The basal is a tool and must be used as such. Publishers employ many professionals to produce a basal series. The complete basal program provides teacher's manuals, texts, kits, supplemental material's lists and training workshops to promote the best use of the material in their program. Stewart (1957) also states that

the publishers agree with reading experts on objectives and purposes and promise effective results, if used competently.

Zintz (1973) has determined several strengths of basals for teachers and students. For teachers, all the directions, lesson plans, and resource materials are provided. This gives the teacher a sense of security and improves his/her confidence. As the year develops and students begin to vary in their progress, the teacher has access to supplemental materials to meet those student's needs. There is integration and coordination of materials and skills within the program. For the student, there is a sequential, systematic development of reading and learning skills with repetition horizontally, through the year, and vertically, through the grade levels. Vocabulary and word analysis skills are introduced gradually.

Stewart (1957) claims basals are carried to an extreme, in that they limit rather than guide the teacher. There is a loss of freedom that stifles teacher initiative. The program lessons are so preplanned that the teacher can bring very little of his/her personal experience or collegiate knowledge into the program. Continuity is often hampered by students who are unable to perform in the instructional patterns of the program. The supplemental materials suggested/required by the publisher to make the program all-round complete, do not take into account budgets for the library, resource department, or individual teacher. It appears that the essential part of the program that provides reinforcement of skills, opportunities for generalization into other subject areas, and additions to background knowledge, is eliminated by economics.

Zintz (1973) also sighted several weaknesses for students. The stories have too much vocabulary control making them dull, shallow, repetitive and uninteresting. The typical middle class is depicted in the stories, making it difficult for students in other

social classes to relate to the stories. Sentence patterns appear haphazardly without repetition or mastery, making reading more difficult. Often, the book presentations do not do enough to stimulate student curiosity. Many stories, based on history, famous people, and important events and ideas, are often dry and uninteresting.

There are no general standards that have been established for the optimal growth and development of reading abilities (Chall, 1981). Harris and Sipay (1980) reported that 70 percent of the stories in the middle grade basals were written above the publisher's designated grade levels. The problem got more complex as they investigated the selections within a basal text. These selections varied widely in grade levels and did not systematically increase in difficulty from the beginning to the end of the text. In addition, Harris and Sipay reported that the readers' patterns of error and strategies changed with the difficulty of reading materials. The more difficult the material, the less likely the student was to use semantic and syntactic clues or to correct miscues that disrupt meaning. Tamor (1977) found similar results. Some of the children slowed down their reading considerably, began reading very carefully, and sounded out words. These children claimed they had only a general idea of what the text was about. Other children seemed to "fall apart." They could not read the difficult words or even the familiar words. This second group substituted and omitted many words and mispronounced others.

An explanation for the difficulty students have in reading is offered by Tamour (1981). She believes the reading process is the same for all readers. The acquisition rate is the factor that makes individual reading abilities differ. All readers, at a given level of development, will have a similar acquisition rate. Poor readers are then classified as students who find reading on grade level difficult. Basal reading programs are based on the concept of grade level.

The poorer readers, on the middle school level, are reading at various elementary levels. The middle school "reading" teacher, who is usually the English teacher, needs to be familiar with and understand methods of teaching elementary reading. They have to be able to evaluate materials for students on a variety of levels. Two skills necessary to increase reading skills are word recognition and comprehension (Harris & Sipay, 1980).

Most basal programs teach word recognition through the whole-word approach, so children learn printed words with spoken words. As words are repeatedly encountered in print, they become sight words -- words instantly recognized. This permits a quick introduction to meaningful sentences and stories. When teaching sight words, Alexander and Heatherington (1988) suggested the use of four principles. (a) High imagery words recall picture clues in the reader's mind. These words are the easiest to learn. Harris and Sipay (1980) also support this first principle. (b) Word families with their suffixes, prefixes, and compound words make words easier to learn. (c) Word games, for repetition and reinforcement, are a change of pace. Many times they are part of the basal supplemental materials. (d) Word cards can be used to match, add, or produce word combinations such as: rhyming words, sentences, new words with suffixes and prefixes, and so on.

Research results indicate several basic principles of reading. First, the sight words being learned should already be in the student's speaking vocabulary and heard frequently in his/her environment. Sight words establish a base for word recognition. This base produces reading fluent enough and at an adequate pace to gain meaning and understanding of the text. It allows students to see reading as purposeful. Generalizations can be made about words, as to common features and similar meanings.

Second, Ryder and Slater's study (1988) found a strong relationship between word recognition and word frequency when word families were utilized. They suggested teachers concentrate on word families to increase word recognition, and noted the inability of basals to control vocabulary or regulate vocabulary instruction.

Third, word recognition is usually more accurate and faster in context than in isolation. Harris and Sipay (1980) found words on a word list, introduced in a particular basal series, may appear only once or at best a few times in the series of selections and may not appear at all in other printed material of the same level. Webster (1991) and Linn (1989) also found insufficient word repetition to be a fact in their research studies. This does not seem to coincide with the goals of basal programs. Harris & Sipay (1980) also stated that all the primary grade level word lists should be well known by children in the upper grades.

In addition, reading disabled secondary students demonstrated superior sight word recognition abilities compared to phonic and context abilities because of three reasons found in a study conducted by Lindsey, Cheek, and Frith (1988). First, reading disabled students had the majority of their reading success using sight words. Second, because they fell behind in reading, they attended remedial classes that emphasized the sight word approach. Third, sight word recognition procedures fit their learning style of impulsivity and short attention spans.

Reading is not just word recognition, it is getting meaning from printed words. Comprehension includes many elements, although only the vocabulary factor will be discussed. A limited vocabulary can restrict the reader from following the story line and gaining meaning. A child, who likes to read, will increase his/her vocabulary through his/her continuous reading. The child, who has reading problems, usually dislikes reading, misses the easiest way to expand his/her vocabulary, and starts a cycle

of poor reading success (Harris & Sipay, 1980). Deighton (1959) and Hargis (1982) stated that only through repetition is vocabulary meaning gained through context. With infrequent reading, only partial meanings of words are gained. Then the development of vocabulary and concepts become a slow, gradual process. Poor comprehension has five causes according to Alexander and Heatherington (1988): (a) Inflexibility on the part of the reader occurs when s/he reads all passages word by word, (b) s/he does not read fluently or decode words adequately, (c) the reader forgets the beginning of long sentences before s/he gets to the end of the sentence when poor memory is a factor, (d) s/he does not realize reading should make sense if s/he has a poor concept of the reading process, and (e) the reader with inadequate prior experience has limited background knowledge which is so necessary for vocabulary development and comprehension.

According to Harris & Sipay (1985), limited vocabulary presents three problems for readers. First, comprehension becomes a problem. The story line cannot be carried by the reader because s/he has a restricted vocabulary. Second, the text uses indirect language and expressions, not normally used by the reader. This puts a burden on the child's reading and oral expression. Third, the story meaning doesn't come from the text itself. Meaning comes from picture clues, information given by the teacher, and the reader's background knowledge.

McGregor (1989) believes prior knowledge is the key to vocabulary development and comprehension. In her study on this topic with sixth grade students, she found that significant improvements in comprehension were achieved by varying the frequency of only 15 percent of the words in a passage. Children from deprived areas have very little prior knowledge and benefit by having a percentage of high frequency vocabulary in their reading stories. Student performance improved with

instruction in vocabulary knowledge and comprehension. Usually instruction in comprehension is noticeably lacking (Harris & Sipay, 1985). Many times familiar words used in new ways confuses children more than totally new words. Learning new meanings for old words is an important part of comprehension (Harris & Sipay, 1980).

In the middle school, difficulty in comprehension is reflected in the newness of ideas, the concept load, and the use of figurative language (Chall, 1981). There seems to be a vocabulary explosion in the materials written for middle school students. Blachowicz (1987) found 19 percent of reading time in the classroom was on vocabulary instruction. Forty-five percent of that time was spent on word meanings. Teachers know the popular strategies of clustering and mapping concepts and that vocabulary words should be repeated and/or related to those in the next selection. These tools of instruction are difficult to apply to the basal reading program because of the organization of the textbook and the guided instruction in the teacher's manual. Basal vocabulary does not conform to these grouping strategies.

Spache (1976) stated that with "proper" reading programs, teachers' attitudes and expectations rise with the success of their students. A readability formula can assure them of this success because scores from readability formulas can predict which materials will provide an adequate level of instruction for the students.

Word Repetition and Reinforcement

Repetition is the base for most of the popular learning strategies. It improves learning and retention. Repetition serves two main purposes: to place information in short term memory and to maintain information in long term memory (Hargis, Terhaar-Yonkers, Williams, & Reed, 1988). In the reading process, these two purposes are most

important for word recognition and vocabulary acquisition. Efficient reading occurs when almost all the words encountered in a reading passage are in long term memory (Hargis, et al., 1988).

Memory is enhanced when a word in context forms a unit with the word in memory. One of the determinants of this is repetition (Craik & Tulving, 1975). Nagy and Herman (cited in McKeown, 1987) in their research in word meanings, stated the most important factor in the continuum of no knowledge of word meaning to complete knowledge was repeated exposures to words in context. Kingsley (1965) advised five repetitions in the introduction of a new word within a story. Word recognition is important to comprehension, which is the main purpose of reading. Harris and Sipay (1985) recommend that the direct teaching of vocabulary should consist of five repetitions of five words for short term memory. Then these new words are reviewed five times at intervals from thirty minutes to seven days before they are mastered for long term memory. A well known study by Gates concluded that individuals differ in the rate that they develop familiarity of words in print. He recommends an average minimum number of systematic repetitions for word mastery according to I.Q. levels as seen in Table 2.1. These repetitions are averages of words in context, not in isolation and are not necessarily required of every word (Hargis, et al., 1988).

Table 2.1: Gates' (1930) study of the Number of Word Repetitions required by first graders according to I.Q. Levels.

I. Q.	Average Repetitions needed for Mastery
60-69	55
70-79	45
80-89	40
90-109	35
110-119	30
120-129	20

Source: Hargis, C.H., Terhaar-Yonkers, M., Williams, P.C., & Reed, M.T. (1988). Repetition requirements for word recognition. Journal of Reading, 31, 322.

Word recognition and word identification are often thought of as being interchangeable terms. Word recognition is the instant recognition of words, called sight words. Word identification is the process of identifying words, not sufficiently mastered to be in the sight vocabulary (Hargis, 1982). Phonetics and context clues often identify these words. Words are classified further as high versus low imagery words, concrete versus abstract or structure words, and words in isolation versus context. These groups require different numbers of repetitions as some are easier to learn than others. Hargis, et al. (1988), conducted a study on this topic with learning disabled readers, aged eight to thirteen years old. The results show that words in isolation need 12 percent more repetition than those in context; that low imagery words require 12 percent more repetition than high imagery words; and high imagery words lessen the need for those words being in context. When the number of repetitions necessary for mastery in long term memory were compared to individual reading

levels, the result was that the need for repetition decreased at higher reading levels. Therefore, the study drew two more conclusions: (a) Students with higher reading skills learn to recognize words more easily than students with fewer reading skills. (b) Students with poor reading skills require more word repetitions. These students read much less and do not get the necessary repetitions, so their mastery of sight words and acquisition of higher skills is inhibited. Table 2.2 shows the average number of repetitions required by reading levels of the students in this study.

Table 2.2: Mean Number of Repetitions Required by Reading Level of Learner. (Mastery was defined as recognition of each word in isolation on three successive days. Subjects were all learning disabled readers.) (Hargis, et al., 1988, p. 326)

Mean Repetitions for Mastery	Individual Reading Levels
76-74	1.5
64	1.6
60	1.8
59-57	2.0
58-39	2.5
41-35	3.0

Source: Hargis, C.H., Terhaar-Yonkers, M., Williams, P.C., & Reed, M.T. (1988). Repetition requirements for word recognition. Journal of Reading, 31, 326.

Tomasello, Mannle, and Werdenschlag (1988) did a study with two year olds on language acquisition. The results of the study are that children learned new words similar to known words and that repetitions are necessary or identification becomes very difficult. Repetitions also make comprehension better. There were four sessions of 15 to 20 minutes to model and to test learning of similar and dissimilar object names.

Each session had ten to 18 repetitions of the target words mixed with play. At the end of session one, there was no confusion over the similar object words and some over the similar words. Three children had to repeat session one. In sessions two, three, and four the similar object names were produced more than the dissimilar. Comprehension was not good until the third and fourth sessions. This study exemplifies the necessity of repeated repetitions.

Basal reading programs in the 1920's through 1950 had control over the introduction of unfamiliar words. The usual rate was one new word in 50 to 110 running words. New words were held at two to four percent for instructional reading. Once introduced, there was enough repetition to provide mastery (Hargis, 1982). Harris and Sipay (1985) reported that in recent years, the number of new words introduced, compared to running words, has increased and that the number of repetitions has decreased. Perry and Sagen (1989) in their study on the number of words introduced in basal readers seemed to agree with Harris and Sipay. They found average children are not learning all the words and below average students master even fewer words than the average children. Their study shows that in the 1960's, the average first grade vocabulary load was 324 words, with as few as 235 in one basal program. In the 1970's, the first grade vocabulary load increased 60 percent with as many as 707 words and as few as 358 words. In the 1980's, the first grade range was from 444 to 675 words. By third grade, in the 1980's, the vocabulary load ranged from 2023 to 4238. Perry and Sagen concluded that the vocabulary load becomes vocabulary "overload" which causes children to fall farther and farther behind at each successive level.

Many teachers have complained that basals do not provide enough repetition, are not consistent with the repetitions provided, and seldom meet the recommendations

set by Gates, Hargis, or Kingsley. Hargis (1982) reported that, in the primary levels of many basal programs, repetitions varied in range from one to 57 times within the same book. The higher repetition rates may be misleading in that 68 basic words (examples: this, in, and, it) make up 50 percent of the text. Words not on the Dolch list ranged from one to 49 repetitions. These repetitions were not consistent within the text. The repetitions could have been in the next sentence or the next chapter. Webster (1991) found similar results in six reading textbooks. Seventy-four to 100 percent of the investigated vocabulary were not reinforced adequately; only 19 to 26 percent were reinforced five times. Linn (1989) found that in 12 geography books 69 percent is not reinforced adequately and only 31 percent is reinforced five times. Both these studies are far below the recommendations of Hargis et al. and Gates. These facts may not concern the performance of some children, but they are critical to below average children.

Teachers find many problems with this situation of inadequate vocabulary knowledge. Many complain that their students seemed to know their vocabulary words one day, but not the next. Hargis (1982) stated this inconsistency was due to words not being introduced in meaningful context and to the fragmented exposure of reading skills and new words. Teachers must choose isolated-word learning activities as supplements. They often have problems choosing published materials with adequate vocabulary control in meaningful activities. Hargis (1982) suggests that the word list from readability formulas would make useful word study lists and can be a guide for writing and/or adapting materials.

Some students who have trouble with the usual introduction and repetition rates of basals are eventually referred for resource support as learning disabled readers. Hargis (1982) states these students are just too far out of synchronization with "normal"

rates. They need a slower introductory rate of new words and repetition within each story as well as from one story to the next as Kingsley recommended. Materials for these students need to be on their instructional level so they can comprehend the stories and benefit from word identification skills and context clues. Many times readability formulas help to select appropriate materials.

Summary

Chapter II has presented the research literature related to the readability of reading textbooks. The aspects of readability, readability formulas, the limitation/misuse of formulas, the reading process in relation to readability, and word repetition and reinforcement have been discussed.

CHAPTER III

DESIGN FOR EVALUATION OF READING TEXTBOOKS

This chapter will present the purpose of this study, the data collection procedures, the instruments used in collecting the data, and the procedures used to analyze the data.

Purpose

The purposes of this study are as follows:

1. To determine if there are differences in the publishers' stated grade levels of seventh and eighth grade reading textbooks and the actual readability grade levels determined by the Harris-Jacobson Wide Range Readability Formula.
2. To determine the range of intertext readability in the investigated samples from the seventh and eighth grade reading textbooks compared to the publisher's stated grade levels.
3. To determine if the range of intertext readability for the investigated samples is progressively higher from earlier to later passages.
4. To determine the degree of frequency of reinforcement of the indicated vocabulary words.

Data Collection Procedures

The researcher chose five series of seventh and eighth grade reading textbooks because they are used in the East Tennessee area school systems and are approved by the State of Tennessee Curriculum Committee. All the textbooks were copyrighted in 1989. As shown in Table 3.1 the following texts were chosen:

Table 3.1. Textbooks used in this study

Publisher	Grade Level	Title of the Text
D.C. Heath	7	Through the Starshine
	8	Roads Go Evere Ever On
Harcourt Brace Jovanovich	7	Patterns
	8	Panoramas
Houghton Mifflin	7	Pageants
	8	Triumphs
McGraw-Hill	7	Star to Star (Level O)
	8	Crystal Stair (Level P)
Silver Burdett & Ginn	7	Star Walk (Level 13)
	8	Worlds Beyond (Level 14)

Numerical grade levels were indicated on the back of each textbook or a level was indicated that corresponded to the seventh or eighth grade level. Each textbook had a corresponding student workbook of the same title, author, and publisher, that contained the emphasized vocabulary words for each selection in the reading textbook. Copies of the textbooks and workbooks were borrowed from the University of Tennessee, Knoxville, College of Education Curriculum Lab. Data were collected over

a nine month period solely by the researcher. By typing each selected story into Word Perfect 5.0, the search feature was used to count the reinforcement of the emphasized vocabulary words of the stories from each textbook.

Instrumentation

The researcher used two instruments in the collection of data: The Harris-Jacobson Wide Range Readability Formula (Harris & Sipay, 1985) and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991).

The Harris-Jacobson Wide Range Readability Formula uses two variables: V_1 is the percentage of hard words, and V_2 is the average sentence length. Hard words are words in the passage that are not on the Harris-Jacobson Readability Word List, with the exception of proper nouns, numerals, and symbols. Headings and subheadings count as sentences. The formula is used to determine the predicted raw score. The readability score is found on a table that shows corresponding predicted raw scores. Five randomly chosen samples are taken from different parts of each textbook. Each sample contains a passage of at least two hundred words starting at the beginning of a paragraph, but not the first two paragraphs of a story. These two paragraphs usually contain a high concentration of new vocabulary words or proper nouns. The readability scores for all the samples in one textbook are averaged by the rounded raw score to give the average readability level of the textbook. This is computed so that the readability formula scores can be compared to the publisher's stated grade levels. The appendix contains the formula worksheet and the readability scores table.

The Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991) was used to record the emphasized new vocabulary words for each story from which a readability passage had been chosen. The five stories from each textbook were put into the computer so that the Spell Check feature of the Word Perfect 5.0 Program could tally the number of reinforcements for each new vocabulary word within each story. This number was recorded next to the corresponding word on the worksheet. The appendix contains a sample worksheet.

Data Analysis

The data were analyzed by charting and graphing each reading textbook according to readability scores and frequency of vocabulary word reinforcements. For ease of comparison in readability, a ratio was calculated by placing the publisher's estimated grade level over the actual readability level of the Harris-Jacobson formula and then subtracted from one. The number derived from this calculation is an index number for each book. Index numbers were also calculated for each sample. A twenty percent confidence interval was utilized as the adequate tolerance for index numbers closest to 0, +.1 or -.1. A positive index value indicates that the actual readability is higher than the estimated readability, and a negative index value indicates that the actual readability is lower than the estimated readability. For this study, the readability scores that correspond to the acceptable confidence interval are 6.4 to 7.7 for seventh grade and 7.2 to 8.8 for eighth grade.

Each new vocabulary word, presented from the workbook for a sample story, was listed on the Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991). The reinforcements in that passage were

tallied for each new word and then classified into these three categories: Less than five, five, and more than five. Percentages were calculated for each sample and each category by placing the total number of words in that category over the total number of new vocabulary words from the five stories.

Summary

This chapter discussed the design for evaluation of seventh and eighth grade reading textbooks. The purpose of the study was stated, the textbooks and instruments used in the study were specified, and the procedures for data collection and analysis were discussed.

CHAPTER IV

RESULTS

Introduction

This chapter reports the data from the comprehensive evaluation of ten basal reading textbooks according to the Research Questions presented in Chapter I. The questions are as follows:

1. Is there a difference between the publishers' stated grade levels and the actual readability grade levels for seventh and eighth grade basal reading textbooks, using the Harris-Jacobson Wide Range Readability Formula?
2. What is the range of intertext readability in the investigated samples from the seventh and eighth grade reading textbooks compared to the publishers' stated grade levels?
3. Is the range of intertext readability for the investigated samples progressively higher from earlier to later passages?
4. What is the degree of frequency of reinforcement of the indicated vocabulary words?

These ten textbooks were all offered for adoption in the East Tennessee area school systems and approved by the State of Tennessee Curriculum Committee. They were all copyrighted in 1989. The textbooks were analyzed by applying the Harris-Jacobson Wide Range Readability Formula (Harris-Sipay, 1985) (Appendix A) and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991) (Appendix C).

The vocabulary words used in this study were acquired from the newly introduced vocabulary emphasized in the corresponding workbook for each text. There is a specific list for each story. The five randomly chosen samples used for the formula were also the stories used for the "worksheet." The results are presented in the following order: (a) individual analysis of the seventh grade textbooks; (b) comparative analysis of the seventh grade textbooks; (c) individual analysis of the eighth grade textbooks; and (d) comparative analysis of the eighth grade textbooks.

Individual Analysis of the Seventh Grade Textbooks

The five seventh grade textbooks are the following: Through the Starshine (1989) by Donna Alvermann and Connie Bridge, D.C. Heath and Company; Patterns (1989) by Bernice E. Cullinan and Roger C. Farr, Harcourt Brace Jovanovich, Publishers; Pageants (1989) by William K. Durr and John J. Pikulsi, Houghton Mifflin Company; Star to Star (1989) by Dr. Elizabeth Sulzby and Dr. James Hoffman, McGraw-Hill School Division; and Star Walk (1989) by P. David Pearson and Dale D. Johnson, Silver Burdett and Ginn. They will be discussed in the above-mentioned order and referred to by the publisher's name.

D.C. Heath and Company

Table 4.1 and Figure 4.1 illustrate the data to answer questions 1, 2, and 3.

Question 1: The actual readability of 9.6 indicates this textbook is more than two grade levels higher than estimated by the publisher. The mean index number of .27 is not within the confidence interval (-.1 through +.1) which is tolerable for this study. These data are shown in Table 4.1. Of the seventh grade books investigated, this one has the second highest actual readability score.

Table 4.1 D.C. Heath and Company (1989) Readability Data - Seventh Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page #	62	230	247	363	547	-
Number of words in sample	243	200	209	203	206	-
Number of hard words	28	43	38	31	39	-
Number of sentences	15	20	13	14	12	-
Raw Score	6.1	7.5	7.7	6.7	8.0	-
Readability Score	7.5	10.3	10.7	8.7	11.3	9.6
Index Number	.07	.33	.35	.2	.38	.27

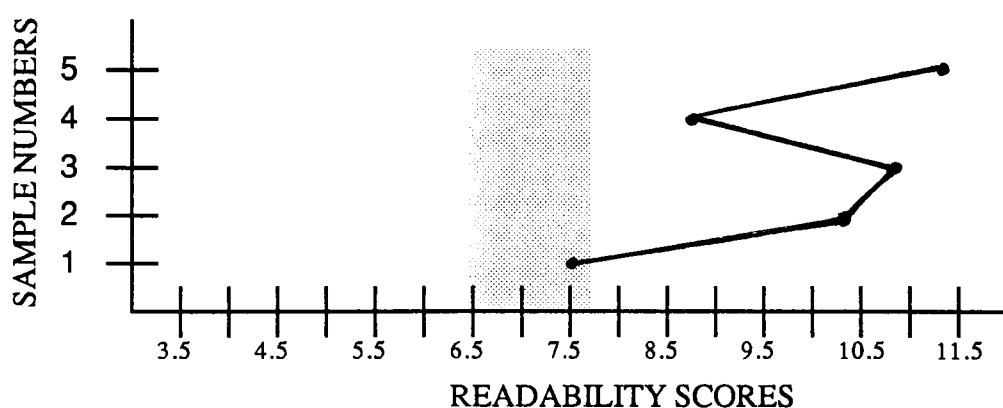


Figure 4.1 D.C. Heath and Company (1989) Readability Data - Seventh Grade (6.4 to 7.7 readability scores are acceptable in this study)

Question 2: Table 4.1 shows that the five selections are not all on the same grade level assigned by the publisher. Only Selection 1 is near grade level by being half a year higher. The index of .07 makes it acceptable for this study. The other four samples range in readability from 8.7 to 11.3 with index numbers that range from .2 to .38 which is not acceptable for seventh grade students.

Question 3: Figure 4.1 shows that the passages in the textbook do not progress from less difficult in the beginning to more difficult at the end of the text. The samples in order are: 7.5, 10.3, 10.7, 8.7, and 11.3. The fourth sample interrupts the upward progression by being two grade levels lower than the previous sample.

Question 4: Two words of the 29 vocabulary words emphasized by the workbook are reinforced more than five times. Both words appear in Story 3. One appears 35 times and the other seven times with its root word appearing three additional times. Twenty-two words are reinforced less than five times. These words were only introduced, not reinforced. Five words did not appear in the stories at all, but are included in the workbook to be learned. Only seven percent of the vocabulary words are reinforced five times as Kingsley (1965) recommended; 93 percent are *not* reinforced. Included in the 93 percent is 17 percent that never appear in the story (Table 4.2).

Table 4.2. D. C. Heath and Company (1989) Seventh Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	> 5
1	7	0	7	0	0
2	7	3	4	0	0
3	4	0	2	0	2
4	6	0	6	0	0
5	5	2	3	0	0
Total	29	5	22	0	2
Percent		17	76	0	7

Harcourt Brace Jovanovich, Publishers (HBJ)

Table 4.3 and Figure 4.2 summarize the data for questions 1, 2, and 3.

Question 1: The data indicate the actual readability to be 9.1+. the plus (+) signifies the fact that the raw score for at least one sample exceeded the highest raw score in the conversion table for the Harris-Jacobson formula. This means that the actual readability level is higher than the 11.3 indicated in the sample. The index number contains a plus (+) also for the same reason. The mean index number is .24+ and is not within the confidence interval which is tolerable in this study (Table 4.3).

Question 2: Table 4.3 shows that one of the samples is on the assumed grade level. Passages 1 and 5 are below grade level with 3.7 and 6.7 scores respectively and with index numbers of -.89 and -.04 respectively. Passage 5's index number of -.04 is within the confidence interval and so is acceptable. Passage 2 scores 9.4 with an index number of .26 and passages 3 and 5 with scores of 11.3+ and index numbers of .38+ exceeding the highest raw score on the conversion table.

Questions 3: Figure 4.2 illustrates that the samples do not progress from less difficult to more difficult at the end of the text. The samples in order are 3.7, 9.4, 11.3+, 6.7, and 11.3+. The progression starts far below grade level, jumps to two grade levels above, then to far above grade level. The one interruption is Sample 4, which is below grade level and three-fourths of the way into the book.

Question 4: Of the 43 vocabulary words, only one word in Story 4 is reinforced five times. No words are reinforced more than five times. Forty-two words are reinforced less than five times. Of these words, 40 are only introduced. One word in Story 1 and one word in Story 5 are reinforced once after introduction. In this text 98 percent of the vocabulary words are *not* adequately reinforced (Table 4.4).

Table 4.3 Harcourt Brace Jovanovich, Publishers (1989) Readability Data-Seventh Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page #	96	168	232	364	515	-
Number of words in sample	213	203	209	226	211	-
Number of hard words	10	42	37	23	45	-
Number of sentences	18	23	10	14	9	-
Raw Score	3.7	7.1	8.3*	5.7	9.6*	-
Readability Score	3.7	9.4	11.3+	6.7	11.3+	9.1+
Index Number	-.89	.26	.38+	-.04	.38+	.24+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

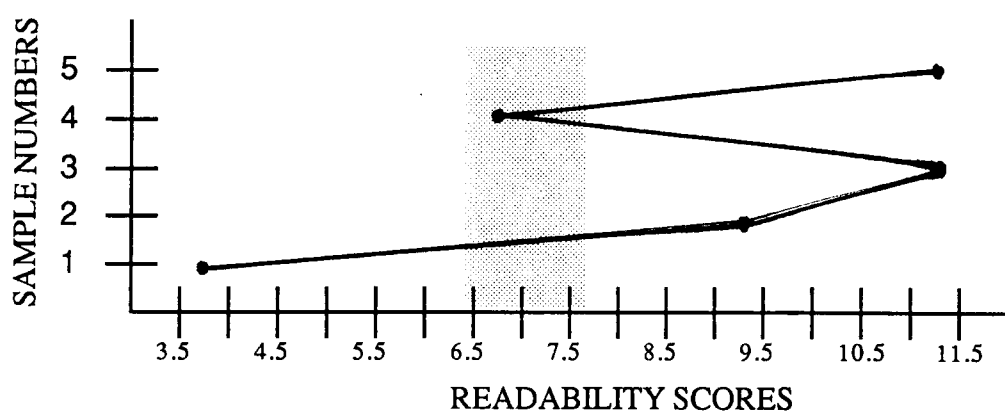


Figure 4.2 Harcourt Brace Jovanovich, Publishers (1989) Readability Data-Seventh Grade (6.4 to 7.7 readability scores are acceptable in this study)

Table 4.4. Harcourt Brace Jovanovich Publishers (1989) Seventh Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	9	0	9	0	0
2	8	0	8	0	0
3	8	0	8	0	0
4	8	0	7	1	0
5	10	0	10	0	0
Total	43	0	42	1	0
Percent		0	98	2	0

Houghton Mifflin Company

Table 4.5 and Figure 4.3 show the data results that answer Questions 1, 2, and 3.

Question 1: This textbook yields a score of 10.1+. It is the highest mean readability score of all the investigated textbooks on this grade level. It has one sample that is above the conversion chart scores. The mean index number is .31+ and is very far from the acceptable confidence interval. Refer to Table 4.5.

Question 2: Table 4.5 indicates that four passages are above the assumed grade level. Sample 3 is considered grade level with a score of 7.7 and an index of .1 which is within the tolerable confidence interval. Passages 2, 4, and 5 scores are 9.8, 8.5, and 10.1, respectively, with indexes of .29, .18, and .31 which are unacceptable. Sample 1 is greater than the highest raw score on the conversion table. Its index was .38+ which is far above the tolerable confidence interval.

Table 4.5 Houghton Mifflin, Company (1989) Readability Data- Seventh Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page #	32	108	211	377	520	-
Number of words in sample	220	200	201	208	210	-
Number of hard words	51	36	22	29	34	-
Number of sentences	11	14	11	13	12	-
Raw Score	9.5*	7.3	6.2	6.6	7.4	-
Readability Score	11.3	9.8	7.7	8.5	10.1	10.1+
Index Number	.38+	.29	.1	.18	.31	.31+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

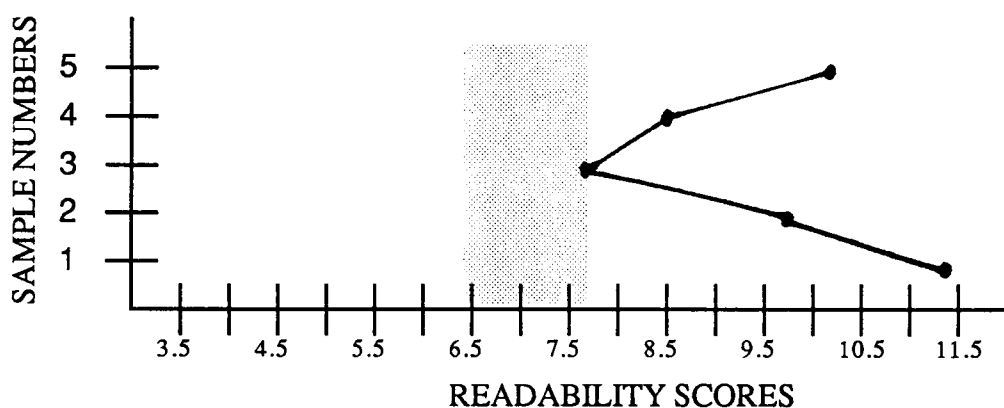


Figure 4.3 Houghton Mifflin, Company (1989) Readability Data- Seventh Grade (6.4 to 7.7 readability scores are acceptable in this study)

Question 3: The sample passages do not progress from easier to more difficult levels. The samples in order are: 11.3+, 9.8, 7.7, 8.5, and 10.1. Of the five samples, the one whose calculated score is highest is within the first thirty pages of the textbook. Sample 3, considered grade level, with an index of .1, is just before the middle of the textbook. Refer to Figure 4.3.

Question 4: Of 37 vocabulary words emphasized, two, one each in Stories 2 and 3, were reinforced more than five times; that is 26 and 13 times respectively. One word, in Story 2, is reinforced five times. Thirty-four words are reinforced less than five times. Nineteen of these words are introduced only and six are not introduced at all. Nine words are repeated two or three times. This results in 92 percent of the emphasized vocabulary words *not* being reinforced adequately by the textbook. Included in the 92 percent is 16 percent that are *not* used in the stories (Table 4.6).

Table 4.6. Houghton Mifflin, Company (1989) Seventh Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	9	0	9	0	0
2	5	0	3	1	1
3	8	0	7	0	1
4	5	1	4	0	0
5	10	5	5	0	0
Total	37	6	28	1	2
Percent		16	76	3	5

McGraw-Hill School Division

Table 4.7 and Figure 4.4 illustrate the results of data collected to answer questions 1, 2, and 3.

Question 1: The actual readability computed for this textbook is 9.2. This score indicates the stories in this text are on the average, two grade levels higher than estimated by the publisher. The index number of .24 is not within the tolerable confidence interval (Table 4.7).

Question 2: All of the selected passages are above grade level as shown in Table 4.7. Passages 1, 2, and 4 are on eighth grade level with index numbers of .14, .14, and .17 which are not within the confidence interval tolerated by this study. Passages 3 and 5 have readability scores of 10.3 and 11.3 and index numbers of .33 and .38 respectively, which far exceeds the acceptable interval.

Question 3: This textbook comes closest to progressing from easy to harder in difficulty than the others investigated. The passages in order are 8.1, 8.1, 10.3, 8.3, and 11.3. Half way into the text is a tenth grade level story and then the graph dips back to eighth grade, returning to an eleventh grade story on the end. The samples do not progress from easy to harder smoothly.

Question 4: Of the 33 investigated vocabulary words emphasized in the workbook, all but one word is reinforced less than five times. That word, in Story 4, does not appear in the story. Two words in Story 2 and one word in Story 5 appeared twice. The other 29 were only introduced. One hundred percent of the investigated vocabulary in this text is *not* reinforced. Table 4.8 summarizes these results.

Table 4.7 McGraw-Hill School Division (1989) Readability Data - Seventh Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	7.0	7.0	7.0	7.0	7.0	-
Page #	92	172	300	477	515-6	-
Number of words in sample	200	200	214	210	200	-
Number of hard words	21	25	30	35	31	-
Number of sentences	10	12	10	19	9	-
Raw Score	6.4	6.4	7.5	6.5	8.0	-
Readability Score	8.1	8.1	10.3	8.3	11.3	9.2
Index Number	.14	.14	.33	.17	.38	.24

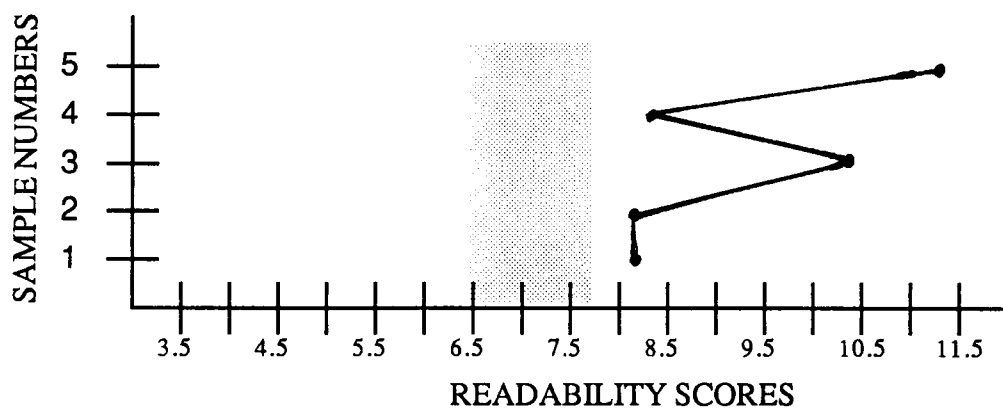


Figure 4.4 McGraw-Hill School Division (1989) Readability Data - Seventh Grade
(6.4 to 7.7 readability scores are acceptable in this study)

Table 4.8. McGraw Hill School Division (1989) Seventh Grade Vocabulary Word Reinforcement Analysis

Story Number	Number of Vocabulary Words	Number of Vocabulary words not appearing in the story	Number of Words reinforced		
			< 5	5	>5
1	5	0	5	0	0
2	8	0	8	0	0
3	5	0	5	0	0
4	10	1	9	0	0
5	5	0	5	0	0
Total	33	1	32	0	0
Percent		3	97	0	0

Silver Burdett and Ginn

Table 4.9 and Figure 4.5 summarize the data for questions 1, 2, and 3.

Question 1: This textbook yields an actual readability score of 9.1+. This text is a little more than two grade levels higher than the publisher's estimate. The index number of .24+ is far from the tolerable confidence interval (Table 4.9).

Question 2: Of the five passages, Passage 1 is on grade level with a readability score of 7.1 and an index number of .02 which is acceptable. Passages 3 and 4 are below grade level, 6.2 and 6.0. Their index numbers are -.12 and -.16 respectively, which are not within the confidence interval. Passage 2 has a score of 11.3+ and an index number of .38+ which means it is far above the eleventh grade level. Passage 5 is more than three grade levels higher with 10.7 readability and .35 index. Table 4.9 summarizes these findings.

Table 4.9 Silver Burdett and Ginn (1989) Readability Data - Seventh Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page #	128	242	377	445	494	-
Number of words in sample	206	233	200	201	207	-
Number of hard words	24	34	17	27	32	-
Number of sentences	14	6	12	23	10	-
Raw Score	5.9	10.4*	5.4	5.3	7.7	-
Readability Score	7.1	11.3+	6.2	6.0	10.7	9.1+
Index Number	.02	.38+	-.12	-.16	.35	.24+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

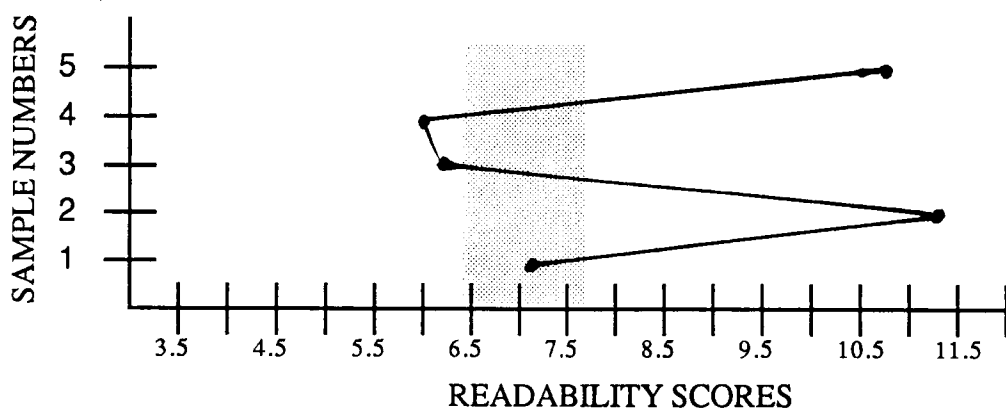


Figure 4.5 Silver Burdett and Ginn (1989) Readability Data - Seventh Grade
(6.4 to 7.7 readability scores are acceptable in this study)

Question 3: The sampled passages do not progress from easier to harder levels. The passages in order are 7.1, 11.3+, 6.2, 6.0, and 10.7. The two passages that were below grade level are in the second half of the textbook. The most difficult passage is in the second quarter of the textbook. Figure 4.5 shows the relationship of the passages.

Question 4: Of the 37 listed vocabulary words, one word in Story 5 is reinforced 15 times. Two words, one each in stories 1 and 3, are reinforced five times. Thirty-three of the 37 words listed in the workbook are not reinforced five times. Thirty-two of these 33 words are only introduced. One word, in Story 4, never appeared in that story. Eight percent of the vocabulary words are reinforced five or more time; 92 percent are *not* reinforced. Table 4.10 illustrates the results.

Table 4.10. Silver Burdett and Ginn (1989) Seventh Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	8	0	7	1	0
2	8	0	8	0	0
3	7	0	6	1	0
4	8	1	7	0	0
5	6	0	5	0	1
Total	37	1	33	2	1
Percent		3	89	5	3

Comparative Analysis of the Seventh Grade Textbooks

A summary of the data of the comprehensive evaluation for seventh grade textbooks is presented in Table 4.11. Of the five textbooks investigated, not one of the texts yields an actual readability score on the same grade level as the publisher's estimated readability. Houghton Mifflin is more than three grade levels higher than the estimated grade level and the others were more than two grade levels higher. The mean index numbers range from .24 to .31+.

Table 4.11. Comparison of Comprehensive Evaluation Data for Seventh Grade Textbooks

Publisher	Designated/Estimated Grade Level	Actual (Mean)	Index Number	Percent of Reinforcements			% of words not introduced
				<5	5	>5	
D.C. Heath	7.0	9.6	.27	76	0	7	17
Harcourt Brace Jovanovich	7.0	9.1+*	.24+	98	2	0	0
Houghton Mifflin	7.0	10.1+*	.31+	76	3	5	16
McGraw-Hill	7.0	9.2	.24	97	0	0	3
Silver Burdett & Ginn	7.0	9.1+*	.24+	89	5	3	3
Percent of Total Number of word (179)				88	2	3	7

* one or more samples had readability scores that exceeded the highest score (8.0) on the Harris-Jacobson conversion table.

The mean scores indicate another interpretation, when the wide range of sample scores are taken into consideration (Harris and Sipay, 1985). The range for D.C. Heath is 7.5 through 11.3 which is five levels; for Harcourt Brace Jovanovich, 3.7 through 11.3+, more than nine levels; for Houghton Mifflin, 7.7 through 11.3+, more than five levels; McGraw-Hill, 8.1 through 11.3, four levels; and Silver Burdett and Ginn, 6.0 through 11.3+, more than six levels. Three samples are on grade level; four are below grade level; and 19 are above grade level, four of which have higher scores than the conversion chart. The index numbers for all the samples in the five texts range from -.89 through .38+. Of the 25 samples, four have index numbers within the acceptable range of -.1 to .1; three are below; and, 18 are above.

In all the investigated stories, the percentage of words that are reinforced more than five times is three percent; five times, two percent; less than five times, 95 percent, of which seven percent of the words are not even presented except in the workbook. The percentage of words per individual textbook that were reinforced adequately ranged from zero to eight percent. That means that nine words of the total 179 words investigated are reinforced Kingsley's (1965) recommended five times.

Individual Analysis of the Eighth Grade Textbooks

The five eighth grade text books are the following: Roads Go Ever Ever On (1989) by Donna Alverman and Connie A. Bridge, D.C. Heath and Company; Panoramas (1989) by Bernice E. Cullinan and Roger C. Farr, Harcourt Brace Jovanovich, Publishers; Triumphs (1989) by William K. Durr and John J. Pikulski, Houghton Mifflin Company; Crystal Stair (1989) by Dr. Elizabeth Sulzby and Dr. James Hoffman, McGraw Hill School Division; and Worlds Beyond (1989) by P.

David Pearson and Dale D. Johnson, Silver Burdett and Ginn. They will be discussed in the above-mentioned order and referred to by the publisher's name.

D.C. Heath Company

Table 4.12 and Figure 4.6 illustrate the data to answer questions 1, 2, and 3.

Question 1: The actual readability of 10.5+ indicates this textbook is more than two grade levels higher than estimated by the publisher. The mean index number of .24+ is not within the confidence interval which is tolerable for this study. These data are shown in Table 4.12. Of the eighth grade textbooks this one has the second highest actual readability score.

Question 2: Table 4.1 shows that the four selections are not all on the same grade level assigned by the publisher. Selection 2 is near grade level by being half a year lower (7.5) with an index number of -.06 which makes it acceptable for this study. Selection 3 is below grade level scoring 6.2 with an index of -.29 which is not acceptable. Selections 1, 4, and 5 are above grade level, with scores of 11.3+, 11.3+, and 10.1 respectively, two of which exceed the highest score on the conversion chart. Their indexes .30+, .30+, and .21 respectively, are not within the tolerable confidence interval.

Question 3: Figure 4.6 shows that the passages in the textbook do not progress from less difficult in the beginning to more difficult at the end of the text. The selections in order are 11.3+, 7.5, 6.2, 11.3+, and 10.1. The second and third samples are lower; the first, fourth, and fifth are extremely high.

Question 4: There are not any words that are reinforced five times or more than five times. Thirty-two of the 35 words are reinforced less than five times. Of these 32 words, 25 are only introduced. Three words are repeated two or three times. Three

Table 4.12 D. C. Heath and Company (1989) Readability Data- Eighth Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	8.0	8.0	8.0	8.0	8.0	8.0
Page #	72	118	292	406	501	-
Number of words in sample	211	231	218	211	235	-
Number of hard words not on list	43	20	27	37	29	-
Number of sentences	7	11	20	9	10	-
Raw Score	10.5*	6.1	5.4	8.7*	7.4	-
Readability Score	11.3+	7.5	6.2	11.3+	10.1	10.5+
Index Number	.30+	-.06	-.29	.30+	.21	.24+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

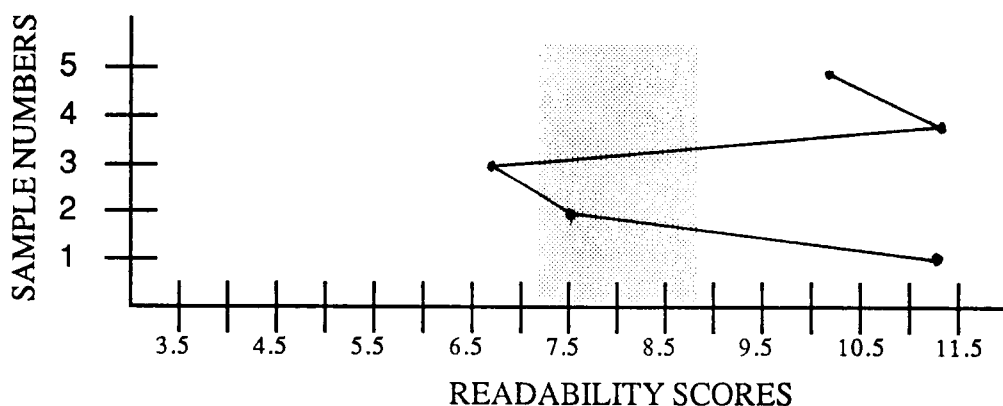


Figure 4.6 D. C. Heath and Company (1989) Readability Data- Eighth Grade
(7.2 to 8.8 readability scores are acceptable for this study)

words do not appear in the stories, but are included in the vocabulary in the workbook. One of the words not used has its root word used once. One hundred percent of these words are *not* reinforced. Nine percent are *not* used in the stories (Table 4.13).

Table 4.13. D.C. Heath and Company (1989) Eighth Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	8	2	6	0	0
2	4	0	4	0	0
3	5	1	4	0	0
4	10	0	10	0	0
5	8	0	8	0	0
Total	37	1	32	0	0
Percent		3	91	0	0

Harcourt Brace Jovanovich, Publishers

Table 4.14 and Figure 4.7 summarize the data for questions 1, 2, and 3.

Question 1: The data indicate the actual readability to be 8.9+, almost one year above grade level (Table 4.14). The mean index number is .11+ and is almost within the acceptable confidence interval for this study. Of the five textbooks investigated, this is one of two with the lowest readability levels for eighth grade.

Question 2: Table 4.14 shows that only Sample 5 is considered grade level. This sample is half a year higher. Its index number is .06 which is acceptable for this study. Sample 2 is five grade levels below the estimate at 3.6 with an index of -1.2

Table 4.14 Harcourt Brace Jovanovich (1989) Readability Data- Eighth Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	8.0	8.0	8.0	8.0	8.0	8.0
Page #	91	265	368-9	432-3	549	-
Number of words in sample	215	200	203	205	211	-
Number of hard words	48	16	41	42	25	-
Number of sentences	17	32	16	14	11	-
Raw Score	8.1*	3.6	7.6	8.0	6.6	-
Readability Score	11.3+	3.6	10.5	11.3	8.5	8.9+
Index Number	.30+	-1.2	.25	.30	.06	.11+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

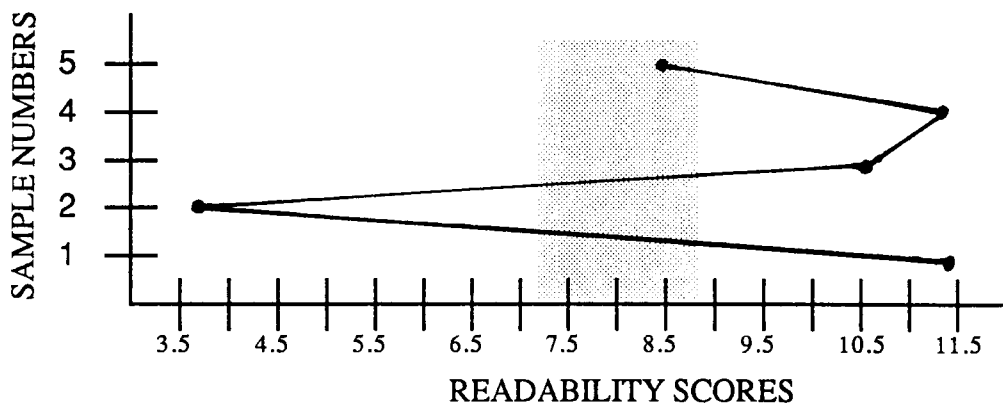


Figure 4.7 Harcourt Brace Jovanovich (1989) Readability Data- Eighth Grade (7.2 to 8.8 readability scores are acceptable for this study)

which is unacceptable. Sample 1, 3, and 4 have scores of 11.3+, 10.5, and 11.3 respectively. These three samples are more than two and more than three grade levels higher than the estimate. Their index numbers are .30+, .25, and .30. These are not within the tolerable confidence intervals.

Question 3: The textbook does not get progressively more difficult as illustrated by Figure 4.7 The samples in order are: 11.2+, 3.6, 10.5, 11.3, and 8.5. The most difficult passage investigated, Sample 1, is in the first quarter of the text. The below grade level story, Sample 2, is at the beginning of the second third of the book. Passage 5, considered grade level, is placed fourth to the last story in the text.

Question 4: Table 14.15 indicates that there are no vocabulary words reinforced the recommended five or more times. Thirty-two words were reinforced less than five times. Twenty-nine of these words are only introduced. One vocabulary word in Story 4 appears three times; two words in Story 5 appear twice each. One word in Story 2 and two words in Story 4 did not appear in their stories. The three words that did *not* appear make up the nine percent of the words. One hundred percent are not adequately reinforced.

Table 4.15. Harcourt Brace Jovanovich (1989) Eighth Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	7	0	7	0	0
2	6	1	5	0	0
3	7	0	7	0	0
4	7	2	5	0	0
5	8	0	8	0	0
Total	35	3	32	0	0
Percent		9	91	0	0

Houghton Mifflin Company

Table 4.16 and Figure 4.8 show the data results that answer question 1, 2, and 3.

Question 1: This textbook yields a score of 10.9+. It is the highest mean readability score of all the investigated textbooks on this grade level. The mean index number is .27+ and is very far from the acceptable confidence interval (Table 4.16).

Question 2: Table 4.16 indicates that only one of the passages is on grade level. The first passage is below grade level at 7.1, but its index number of -.1, which is within confidence interval is acceptable. This means Sample 1 is considered grade level appropriate. The third passage is almost one-and-a-half grade levels higher at 9.4. Its index number is .15 which is not acceptable. Passages 2, 4, and 5 are 11.3+. Their readability levels exceed the highest score on the conversion table. Their index numbers of .30+ are far from the tolerable confidence interval for this study.

Question 3: The sampled passages do not progress from easier to more difficult levels. The scores in order are 7.1, 11.3+, 9.4, 11.3+, and 11.3+. The third passage, although one-and-a-half-grade levels too high, is two grade levels below the passage before and after it. Refer to Figure 4.8

Question 4: Two words of 41 emphasized, are reinforced more than five times. In Story 3, one word appears seven times; in Story 5, one word is reinforced 30 times. One word is reinforced five times in Story 2. Thirty-six words are reinforced less than five times. Of these, 27 are only introduced; the other nine are reinforced two or three times. Two vocabulary words, one each in Stories 3 and 5, never appear in the story. Seven percent of the 41 vocabulary words are reinforced the recommended number of times or more. Five percent are *not* used in the stories. Table 4.17 summarizes these findings.

Table 4.16 Hough Mifflin Company (1989) Readability Data - Eighth Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	8.0	8.0	8.0	8.0	8.0	8.0
Page #	28	114	273	421	539	-
Number of words in sample	206	215	215	205	215	-
Number of hard words	19	40	29	37	42	-
Number of sentences	11	10	11	9	10	-
Raw Score	5.9	8.6*	7.1	8.7*	8.9*	-
Readability Score	7.1	11.3+	9.4	11.3+	11.3+	10.9+
Index Number	-.1	.30+	.15	.30+	.30+	.27+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

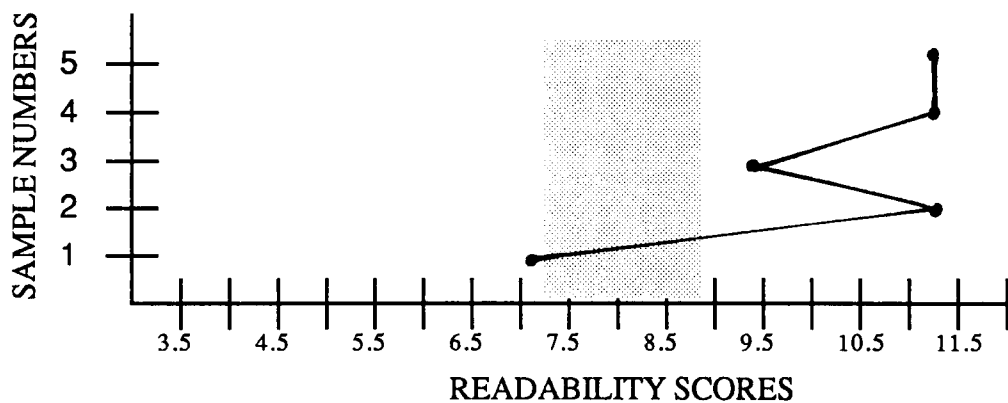


Figure 4.8 Hough Mifflin Company (1989) Readability Data - Eighth Grade
(7.2 to 8.8 readability scores are acceptable for this study)

Table 4.17. Houghton Mifflin (1989) Eighth Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	8	0	8	0	0
2	8	0	7	1	0
3	9	1	7	0	1
4	6	0	6	0	0
5	10	1	8	0	1
Total	41	2	36	1	2
Percent		5	88	2	5

McGraw-Hill School Division

Table 4.18 and Figure 4.9 illustrate the results of data collected to answer questions 1, 2, and 3.

Question 1: The actual readability computed for this textbook is 8.9+, almost one year above grade level. Table 4.18 shows this. The mean index number is .11+ and is almost within the acceptable confidence interval for this study. Of the five textbooks investigated on eighth grade level, this is one of two with the lowest readability score.

Question 2: This textbook has three samples that are considered grade level. Passage 3 is on grade level with a score of 8.1 and an acceptable index number of .02 as shown in Table 4.18. Passage 2 and 4 are below grade level with scores of 7.5 and 7.3 respectively, but their corresponding index numbers, -.06 and -.09, are acceptable. Passage 1 has a 7.1 readability score and an index number of -.12 which is not acceptable. Passage 5 has a score of 11.3+ that indicates its score is higher than the conversion table. Its index number is .30+ which is far from tolerable.

Table 4.18 McGraw-Hill School Division (1989) Readability Data- Eighth Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	8.0	8.0	8.0	8.0	8.0	8.0
Page #	56	168	265	403	539	-
Number of words in sample	213	208	204	205	201	-
Number of hard words	16	18	27	25	41	-
Number of sentences	10	10	13	14	8	-
Raw Score	5.9	6.1	6.4	6.0	9.7*	-
Readability Score	7.1	7.5	8.1	7.3	11.3+	8.9+
Index Number	-.12	-.06	.02	-.09	.30+	.11+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

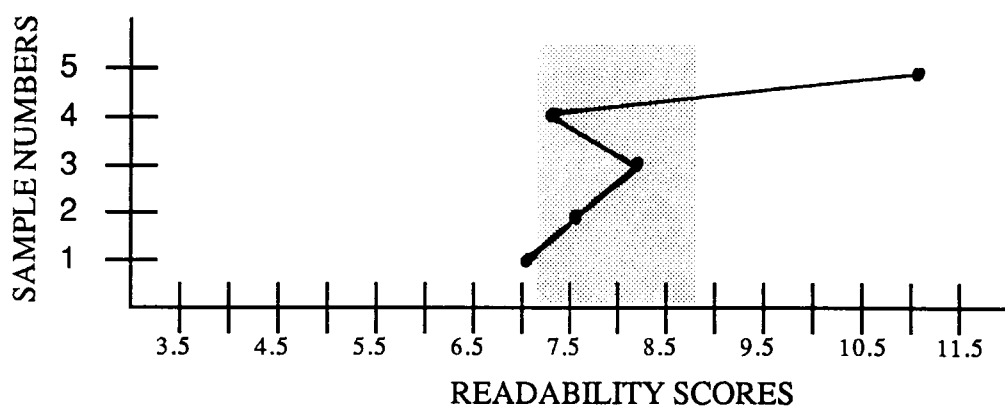


Figure 4.9 McGraw-Hill School Division (1989) Readability Data- Eighth Grade (7.2 to 8.8 readability scores are acceptable for this study)

Question 3: This textbook comes closest to having the sampled passages progress to more difficult levels than the others. The sample's scores are 7.1, 7.5, 8.1, 7.3, and 11.3+. Sample 4, which was below grade level, interrupts the progression. Figure 4.9 illustrates the levels of difficulty.

Question 4: Of the 28 emphasized vocabulary words, all are reinforced less than five times. One word in Story 1 was reinforced three times. Once word in Story 4 is reinforced twice. The other 26 words are introduced only once. One hundred percent of the vocabulary words are *not* adequately reinforced as shown in Table 4.19.

Table 4.19. McGraw-Hill School Division (1989) Eighth Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	4	0	4	0	0
2	5	0	5	0	0
3	4	0	4	0	0
4	10	0	10	0	0
5	5	0	5	0	0
Total	28	0	28	0	0
Percent		0	100	0	0

Silver Burdett and Ginn

Table 4.20 and Figure 4.10 summarize the data for Questions 1, 2, and 3.

Question 1: This textbook yields an actual readability score of 9.4+, which is a grade-and-a-half higher than the publisher's estimate. The index number of .15+ is not within the tolerable confidence interval for this study (Table 4.20).

Question 2: Only one sample is on grade level; three are higher; and one is below. Passage 4 is considered grade level with a readability score of 8.7, because its index number .08 is within the confidence interval accepted for this research. Passage 5 (4.8) is below grade level by four levels. Its index number -.66 is far from the confidence interval. Passage 1 (9.8) is more than one grade level above; Passage 2 (10.7), more than two; and Passage 3 is higher than the conversion chart. These have index numbers of .19, .25, and .30+ respectively, which are also far from the confidence interval. Table 4.20 shows these findings.

Question 3: The investigated passages do not get progressively more difficult. The samples scores in order are 9.8, 10.7, 11.3+, 8.7, and 4.8. The two samples with lower readability scores are the last two samples. Samples 1, 2, and 3 are within the first two-thirds of the text and are progressively more difficult, but are all far above grade level.. Figure 4.10 illustrates this.

Question 4: There are 40 words listed as vocabulary words in the sample stories. Five are reinforced according to Kingsley's (1965) recommendation. Four are reinforced 8, 11, 13, and 52 times. One word is reinforced five times. This is 12.5 percent of the words. Thirty-four words are reinforced less than five times. One is used four times, two other words are used twice each, and 31 are introduced once. One word in Story 2 never appears in that story. The percentage of inadequately reinforced words is 87.5 percent. Table 4.21 shows these results.

Table 4.20 Silver Burdett & Ginn (1989) Readability Data- Eighth Grade

ANALYSIS PROCEDURE	SAMPLES					MEANS
	1	2	3	4	5	
Publisher's Readability	8.0	8.0	8.0	8.0	8.0	8.0
Page #	77	230	291	383	519	-
Number of words in sample	231	205	226	210	200	-
Number of hard words	31	44	42	28	20	-
Number of sentences	11	18	9	12	21	-
Raw Score	7.3	7.7	9.2*	6.7	4.6	-
Readability Score	9.8	10.7	11.3+	8.7	4.8	9.4+
Index Number	.19	.25	.30+	.08	-.66	.15+

* The raw score exceeds the highest raw score (8.0) on the Harris-Jacobson Conversion Table.

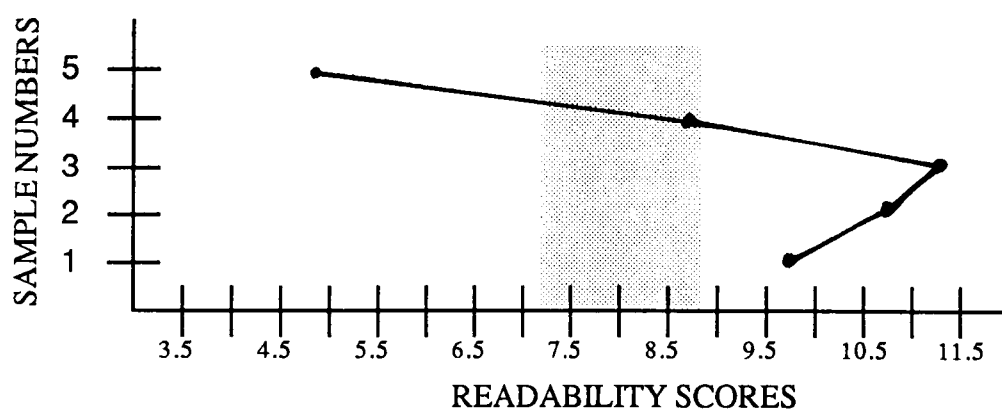


Figure 4.10 Silver Burdett & Ginn (1989) Readability Data- Eighth Grade
(7.2 to 8.8 readability scores are acceptable for this study)

Table 4.21. Silver Burdette and Ginn (1989) Eighth Grade Vocabulary Word Reinforcement Analysis

<u>Story Number</u>	<u>Number of Vocabulary Words</u>	<u>Number of Vocabulary words not appearing in the story</u>	<u>Number of Words reinforced</u>		
			< 5	5	>5
1	8	0	7	0	1
2	8	1	7	0	0
3	8	0	8	0	0
4	8	0	6	1	1
5	8	0	6	0	2
Total	40	1	34	1	4
Percent		2.5	85	2.5	10

Comparative Analysis of the Eighth Grade Textbooks

A summary of the data of the comprehensive evaluation for eighth grade textbooks is presented in Table 4.22. Of the five investigated textbooks, not one of the texts yields a mean actual readability score on the same grade level as the publisher's estimated readability. Harcourt Brace Jovanovich and McGraw-Hill are the closest to grade level. Both have scores of 8.9+ and index numbers of .11+. Silver Burdett and Ginn is one-and-a-half grade levels, higher with a score of 9.4+ and an index of .15+. D.C. Heath is more than two-and-a-half grade levels higher than estimated with a score of 10.5+ and index of .24+. Houghton Mifflin is the highest scored textbook at more than three grade levels (10.9+) with an index number of .27+.

The sample scores show more about the readability of the textbook than the mean score does (Harris & Sipay, 1985). Seven samples, of the 25 investigated, are considered grade level. The range for Harcourt Brace Jovanovich is 3.6 to 11.3+ which

Table 4.22. Comparison of Comprehensive Evaluation Data for Eighth Grade Textbooks

Publisher	Designated/Estimated Grade Level	Actual (Mean)	Index Number	Percent of Reinforcements			% of words not introduced
				<5	5	>5	
D.C. Heath	8.0	10.5+*	.24+*	91	0	0	9
Harcourt Brace Jovanovich	8.0	8.9+*	.11+*	91	0	0	9
Houghton Mifflin	8.0	10.9+*	.27+*	88	2	5	5
McGraw-Hill	8.0	8.9+*	.11+*	100	0	0	0
Silver Burdett & Ginn	8.0	9.4+*	.15+*	85	2.5	10	2.5
Percent of Total Number of word (179)				90	2	3	5

* one or more samples had readability scores that exceeded the highest score (8.0) on the Harris-Jacobson conversion table.

is more than eight grade levels. McGraw-Hill ranges from 7.1 to 11.3+ which is more than four grade levels. Both these textbooks have mean scores almost on grade level with mean index numbers .01 away from being within the acceptable confidence interval. Silver Burdett and Ginn has a readability score ranging from 4.8 to 11.3+, which is more than seven grade levels; D.C. Heath, from 6.2 to 11.3+, more than 5 levels; and Houghton Mifflin, from 7.1 to 11.3+, more than 4 levels. Of the 25 sample passages, three are on grade level, eight are below, and 14 are above grade level, eight of which have higher scores than the conversion chart. The index numbers for all the passages range from -1.2 to .30+. Seven passages have index numbers within the acceptable confidence interval range of -.1 to .1; four are below; and, 14 are above.

In all the textbook sample stories, the percentage of words that are reinforced more than five times is three percent; five times, two percent; and, less than five times, 95 percent (five percent of these words are not even presented except in the workbook). The percentage of words per individual textbook that are reinforced adequately range from zero to 12.5 percent. Only five percent of the investigated vocabulary words are reinforced the recommended five times. This means seven of 179 words are reinforced according to Kingsley's (1965) recommendations.

Summary

This Chapter analyzed the data collected in the comprehensive evaluation of ten basal readers for the seventh and eighth grade. Each book was discussed individually according to the research questions presented in Chapter I. A comparative analysis was also given for the five seventh grade textbooks and the five eighth grade textbooks.

CHAPTER V

CONCLUSIONS

Introduction

This chapter will discuss the results of the comprehensive evaluation relative to the ten seventh and eighth grade basal reading textbooks used in this study. The data to be discussed were presented in Chapter IV. The findings in this study suggest implications for publishers, teachers, and further research studies.

Discussion

The textbooks were analyzed by applying the Harris-Jacobson Wide Range Readability Formula (Harris & Sipay, 1985) and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales, Revised (Schindler, 1991). These instruments enabled the researcher to evaluate the textbooks and to draw conclusions as to their appropriateness for the seventh and eighth grade reading curriculum.

Using the data reported earlier in this paper as a point of reference, it appears that the publisher's estimated grade levels are not accurate compared to scores attained by the Harris-Jacobson formula. The textbooks used in this study are all above the estimated grade level. The number of grade levels varies from almost a full year to more than three years above the estimate, when using the mean readability scores. The mean index scores for all the textbooks are not within the tolerable confidence interval. All are above with + scores ranging from .11+ to .27+.

When the individual sample scores are considered, some portions of the textbooks appear to be below the instructional grade level and some are too difficult for

grade level. When a selection for a seventh or eighth grade reader is on a 3.6, 3.7, or 4.8 grade level, the student may encounter no challenge and lose interest in that story. On the opposite end of the scale, when the seventh or eighth grade reader encounters 50 percent of the stories at least two grade levels higher than his/her grade level, frustration will begin. Fifty percent of these samples are higher than the conversion table at 11.3. Each textbook contains at least one selection that is above the score of 11.3; some texts contain three of them. None of the mean index scores are within the tolerable confidence level of $-.1$ to $+.1$. The eighth grade texts for Harcourt, Brace Jovanovich and McGraw Hill are closest at $.11+$. The eighth grade Silver Burdett and Ginn is close at $.15$. All the others are $.24$ and above. Twenty-five percent of the investigated stories will be difficult for gifted seventh and eighth grade students.

All the textbooks show inconsistency in their sample scores. The closest range of scores, four grade levels, is in the seventh and eighth grade McGraw-Hill and the eighth grade Houghton Mifflin textbooks. The seventh and eighth grade Harcourt Brace Jovanovich's textbooks have the widest range of nine + levels and eight + levels respectively. The other textbooks are between the two extremes of four to nine + levels.

Further inconsistencies are found in that the passages in every text do not progress from less difficult in the beginning to more difficult at the end of the text. This fact can be very frustrating by itself in that the student may wonder about his/her reading abilities. S/he reads one selection and has little difficulty; another on which s/he struggles; another on which s/he must have it read to them; and, then one that does not challenge the student. For example, the worst offender is the eighth grade Silver Burdett and Ginn. Sample 3 readability is $11.3+$ or 12.7 if the conversion table is further extended; sample 4 is 8.7 ; and sample 5 is 4.8 . Their index scores are $.30+$, $.08$, and -6.6 respectively. Another example is the seventh grade Silver Burdett and Ginn

text. Sample 1 readability is 7.1; sample 2 is 11.3+ or 15.1 if extended; sample 3 is 6.2. The index ranges are .02, .38+, and -.12 respectively. Would these sequences inspire reader confidence?

The reinforcement of words is almost non-existent. Only five percent of the words in the samples vocabulary lists are reinforced adequately by Kingsley's (1965) recommendation of five times. Gates stated that 35 repetitions are necessary for an average student to know a word. Hargis (1988) stated that a minimum of 35 repetitions on a third grade level were required for the mastery of a word. In this study, 95 percent of the words are reinforced an insufficient number of times. The total number of words investigated was 358. Only 16 of 358 vocabulary words are reinforced to Kingsley's (1965) standard of five times. The worst offenders are McGraw-Hill for both texts and the eighth grade Harcourt Brace Jovanovich, in which *none* of the words were adequately reinforced. Nagy and Herman (cited in McKeown, 1987), Deighton (1959), and Hargis (1982) stated that only through repetition is vocabulary meaning gained through the context of the stories. The importance of vocabulary repetition for word mastery appears not to be supported by the texts investigated by this study. As was previously noted, 342 vocabulary words are not adequately reinforced and 22 words do not even appear in the text of the stories while remaining on vocabulary lists. In other words, only five percent of the vocabulary words are reinforced while 95 percent are not. Of this 95 percent, six percent of the vocabulary words (22 of 358) do not appear in the text at all. Therefore it appears to be evident that reading textbooks do not consider vocabulary mastery an integral part of the reading program.

Implications for Publishers

Publishers need to show evidence of more concern toward readability levels for the goal of reading is to gain meaning (comprehension) from written words. When the selections are unreasonably difficult a high percentage of the time students will choose *not* to read them (Klare, 1976).

The scores above eighth grade level were derived by extrapolation by the author of the formula. If the same pattern of scores is repeated beyond the table, the actual readability scores on some passages might be 12.7, 13.3, 13.7, 15.1, or 15.3. Does this mean seventh and eighth graders are expected to read stories according to a readability formula intended for high school seniors (12.7) and college students (15.3)?

Publishers also need to take into consideration that most students seem to read better when they are familiar with the vocabulary words and can use them in their reading and speaking vocabularies. Students cannot be familiar with the words unless the words are reinforced. The researcher has already discussed how words are learned more readily in context and through repeated reinforcements in more than one story (Hargis, 1982). If publishers want to use quality literature stories, they need to edit their stories and add the repetitions necessary for students to know the words. They, also, should carefully consider which words are to be emphasized as new vocabulary for the stories. One seventh grade story had the word "glyphs" reinforced 15 times. When might a student use or see that word again unless they had artifacts as a major interest? "Artifacts" was also a vocabulary word in the same story, but it appeared only once. How often would words like minutiae, reconnoiter, acquiesced, or impunity be utilized by an eight grader? McGregor's (1989) study found by varying the frequency of 15 percent of the words in a passage, increases in comprehension were significant. High frequency words generated better comprehension.

Implications for Teachers

Teachers should not assume the publisher's estimated readability is accurate. With the intertext irregularity factor, a teacher may have to examine each story individually, not just a few samples in the book. In order to examine these stories efficiently with the limited outside class time a teacher has available, s/he will have to use a formula such as the Harris-Jacobson Wide Range Readability Formula (Harris & Sipay, 1985) or use a computer program that estimates readability (Kennedy, 1985; Koenke, 1987). Either instrument may assist the teacher in planning her teaching program and preparing for the difficulties the students may encounter with a particular selection.

Blachowicz (1987) found teachers averaged spending 19 percent of reading instructional time on vocabulary development. The results of this thesis strongly suggest that teachers will have to teach vocabulary. The 19 percent time allotment may not be enough. They will have to use the word lists in the present as well as past readers, in readability formulas, and/or published word lists to get control of the vocabulary "overload" publishers are now producing in their reading textbooks. One need only to notice the number of readability formula hard words and the vocabulary lists for textbook stories to realize students may find it difficult to learn all the words. Teachers will have to introduce words at a slower rate and a slower pace (Perry & Sagen, 1989). Tomasello et al. (1988) recommends introducing words that are closely related to known words to facilitate vocabulary development. New meanings for old words must be taught (Harris & Sipay, 1980). How will students learn vocabulary if it is not taught? When third grade children have learned 4238 reading vocabulary words (Perry & Sagen, 1989), if the vocabulary explosion begins in the middle school

(Blachowicz, 1987), and as shown in this study, vocabulary is not reinforced through the basal reader, when will students learn all these reading words and the vocabulary in their other subjects? The point is to find the delicate balance between material that is easy enough to comprehend and master and material that will challenge, motivate, and interest students in becoming literate adults.

Data from this study indicate that teachers may have to adapt text books or acquire tape recordings of textbooks (Wood & Wooley, 1986) to aid students in their reading of the textbooks and/or to increase their reading abilities. In instances where this is not practical, the teacher may have to limit independent and/or peer reading groups to specific (grade level) selections. S/he may have to use the selections that have incredibly high readability scores as "listening" stories, where the stories are read aloud by the teacher to the students. In any of these cases, the teacher will have to provide the students with much more instructional support and be more knowledgeable of the reading process.

Implications for Further Research

There are three obvious implications here. One is to have collected data on all the samples in each textbook. The five randomly selected passages may not be representative of the whole book. The second implication is to confirm the findings in this study by using another formula. All readability formulas are estimates (Klare, 1976) and they do agree on the rank ordering of the textbooks from easier to harder (Harris & Sipay, 1980). A second collection of data may lessen any variability in the formula used in this study or any researcher inconsistencies. The third implication is to conduct a study on these textbooks to consider other factors affecting reading success other than vocabulary and sentence length.

From the data collected in this study, the researcher wonders how much emphasis is put on accurate readability levels compared to impressing adoption committees and other large purchasers of textbooks with quality literature, known authors, impressive vocabulary lists, and beautiful "packages" (inside and out) of reading textbooks. Research needs to be conducted, not only the readability of the textbooks, but on a way to stress the importance of readable materials that children can really learn from and not be frustrated. This research would include four areas: The first is how to educate parents and the public of this problem of accurate grade level materials and have it make a difference. The second is to influence adoption committees into choosing appropriate materials by considering "learnability," not "packaging" and cost. Third, enough data must be collected and published as a whole to make an enormous straight-forward stand on this important issue. Learning to read in school may eliminate adult illiteracy. Fourth, studies must be done to change the publishing companies' views on textbooks.

Summary

This chapter discussed the findings from the comprehensive evaluation on seventh and eighth grade reading textbooks and implications for publishers, teachers, and further research studies.

Reading is the "tool" to build the foundation where school learning begins. Reading textbooks, on the appropriate grade level with reinforced vocabulary, aid students in becoming active learners. Only then is student comprehension ensured and continuous motivation promoted. Success in reading opens the door to learning in many areas and can shut the door to school frustration. Success in reading advances literacy. Being literate can fulfill educational, emotional, and spiritual needs. Reading is one of the necessary skills for survival.

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LIST OF REFERENCES

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APPENDIXES

APPENDIX A

Harrison-Jacobson Wide Range Readability Formula Worksheet

Book Title _____

Author _____

Publisher _____

Copyright Date _____

Formula: Predicted Raw Score = $.245 V_1 + .160 V_2 + .642$

ANALYSIS PROCEDURE

SAMPLES

	1	2	3	4	5	MEAN
Publisher's Readability:						
Page #:						
A. Number of words in sample						
B. Number of hard words						
C. Number of sentences						
STEPS:						
1. $V_1 = B + A \times 100$						
2. $V_2 = A \div C$						
3. $V_1 \times .245$						
4. $V_2 \times .160$						
5. Add steps 3, 4, and .642 = Predicted Raw Score						
6. Rounded Raw Score						
7. Readability Score						
8. Average Readability - All Samples by Rounded Raw Score						
9. Index Number						

Source: Harris, A. J. & Sipay, E.R. (1985). How to increase reading ability. New York: Longman.
p. 659. Adapted by permission.

APPENDIX B

Table of Readability Scores

Readability Scores Corresponding to Predicted Raw Scores*

Raw Score	Readability Score	Raw Score	Readability Score	Raw Score	Readability Score
1.1	1.0	3.4	3.4	5.7	6.7
1.2	1.0	3.5	3.5	5.8	6.9
1.3	1.0	3.6	3.6	5.9	7.1
1.4	1.1	3.7	3.7	6.0	7.3
1.5	1.2	3.8	3.8	6.1	7.5
1.6	1.3	3.9	3.9	6.2	7.7
1.7	1.4	4.0	4.0	6.3	7.9
1.8	1.5	4.1	4.1	6.4	8.1
1.9	1.7	4.2	4.3	6.5	8.3
2.0	1.8	4.3	4.5	6.6	8.5*
2.1	1.9	4.4	4.6	6.7	8.7
2.2	2.0	4.5	4.7	6.8	8.9
2.3	2.1	4.6	4.8	6.9	9.1
2.4	2.2	4.7	5.0	7.0	9.2
2.5	2.3	4.8	5.2	7.1	9.4
2.6	2.4	4.9	5.4	7.2	9.6
2.7	2.6	5.0	5.5	7.3	9.8
2.8	2.7	5.1	5.7	7.4	10.1
2.9	2.8	5.2	5.9	7.5	10.3
3.0	2.9	5.3	6.0	7.6	10.5
3.1	3.1	5.4	6.2	7.7	10.7
3.2	3.2	5.5	6.4	7.8	10.9
3.3	3.3	5.6	6.5	7.9	11.1
				8.0	11.3

*Readability Scores above 8.5 have been derived by extrapolation.

Source: Harris, A. J. & Sipay, E.R. (1985). How to increase reading ability. New York: Longman. p. 658. Adapted by permission.

APPENDIX C

Worksheet for Analysis of Instructional Materials
Beyond Readability Scales, Revised
(Schindler, 1991)

Name of Book _____

Workbook _____

Publisher _____

Proposed Grade Level _____

Other Information _____

Pick a story at the beginning, middle, and end of each level and analyze according to information requested below:

List New Words	Number of times reinforced	Reinforcements in next 3 stories

VITA

Mary Jo Hoffmeier Thomas was born in New York and raised in Aiken, South Carolina. She attended elementary schools in Aiken and graduated from Aiken Senior High School in June 1968. The following September she entered Florida State University in Tallahassee and received the degree of Bachelor of Science in Education in Art Education in June 1972. She taught Art at Sevier County High School two semesters - Fall 1976 and Spring 1984. In March 1986, she entered The University of Tennessee, Knoxville. She was honored to join The Phi Kappa Phi Honor Society in November, 1989. She re-entered The University of Tennessee, Knoxville June 1991 and in June 1992 will receive a Master of Science degree in Education in Special Education.

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