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Date April 26, 1989

AN EVALUATION OF THE READABILITY OF
TWELVE SECONDARY LEVEL GEOGRAPHY TEXTBOOKS

A Thesis
Presented for the
Master of Science
Degree
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Judith C. Linn

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ABSTRACT

The purpose of this study was to evaluate twelve secondary level geography textbooks to determine the readability score of individual samples, the mean readability score of each textbook, and the reinforcement of the new vocabulary words. The readability scores were calculated by applying the Harris-Jacobson Wide Range Readability Formula. The reinforcements of the new vocabulary words were tabulated on the Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980).

These instruments of comprehensive evaluation indicated that portions of all the texts are substantially more difficult than the designated grade levels. In addition, none of the textbooks adequately reinforced the new vocabulary words. Because of the importance of the geography textbook as an instructional tool, the results of this study have strong implications for publishers and teachers.

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CHAPTER I

INTRODUCTION

The importance of geography as a school subject, at all levels of education, is in the forefront of the news at the present time. The entire first page of the Perspective section of the November 13, 1988 edition of the Knoxville, Tennessee News-Sentinel was devoted to the reemergence of geographic education (Diskey, 1988). The article emphasizes that for several decades there has been a decline in the teaching of geography as a separate discipline--a fact that has been verified by this researcher's personal experience.

In the elementary grades, geography has primarily been integrated into the broader discipline of social studies. At the secondary level, it has often been incorporated into the teaching of history. This de-emphasis, however, appears to be changing. As the News-Sentinel article points out, educators and geographers are working together to give new impetus to geography education.

A significant factor in this decline at the secondary level may have been the lack of interest in a subject area considered extremely boring. To many students the study of geography "means having to learn facts about rivers, towns and products" (Lawton & Dufour, 1973, p. 144).

The problem may have been compounded by the use of reading materials that were too difficult and therefore frustrating for the student in a geography class. Two data base searches by this researcher revealed no inquiry into the readability levels of geography textbooks for junior or senior high school from 1950 through 1975. Similarly,

Miller and Roberts (1976) noted an absence of readability studies of secondary geography materials. Perhaps too much emphasis has been placed upon the content of the textbook with very little or no consideration of its readability, as determined by the use of a comprehensive evaluation process.

Background

Secondary level classes are generally organized in terms of specific subject areas and include a well-defined scope and sequence of skills to be mastered and knowledge to be acquired. The content to be learned is the focus of the class, and the textbook is usually the primary instructional tool utilized in the presentation of that content. Even when teachers supplement instruction with secondary sources and enrichment activities, their lesson plans revolve around the format of the textbook.

With curriculum mandates and more stringent scholastic requirements, the teacher may be under increasing pressure from administrators to complete the entire geography textbook. The authors normally have not written the material for the student's independent reading level (Evans, 1978). However, because of the necessity to move through the text rather rapidly, the reading may be assigned as homework with very little teacher guidance in the form of pre-reading activities. Harrison (1980) reported on a survey done in a large school district in England in which there was a small negative correlation between the difficulty of the text and the degree of teacher support. He found that

the more difficult the books, the more likely that students were required to read them independently.

Teachers generally have students with inadequate reading abilities enrolled in their classes. According to Johnson and Vardian (1973), at least 50 percent of the children in the normal classroom may experience some difficulty with the reading materials. This number may be even higher with the mainstreaming of handicapped students into regular classrooms. In a survey reported by Superka, Hawke, and Morrissett (1980), inadequate reading ability is considered a problem by 90 percent of secondary school educators nationwide.

Reading abilities vary in the normal first grade classroom. By the secondary school level, the range may have widened to seven to nine years or more (Tyrell, 1983). For teachers who are faced with teaching content to these students and who realize the importance of successful learning experiences, the issue of demanding texts and poor reading abilities must be one of increasing concern.

When material is read that is inherently too difficult for the reader to understand, whatever the reader's age, one or more of several negative consequences may occur. The reader may simply "turn off" or lose interest in the material. There may be an increase in off-task or distractible behavior, an increasingly negative attitude toward the reading process, or a strong outburst of extreme frustration.

Requiring students to read texts that extend considerably beyond their capabilities certainly cannot breed success in the classroom. It will only breed frustration and eventually inculcate a distaste for a convenient target, the subject the text deals with (Smith, 1988).

At best, students learn less than is possible from instructional materials that are too difficult (Harrison, 1980).

The measurement of readability evolved from an interest in the comprehension difficulty of content area textbooks; it was rooted in the prevailing educational philosophy that all children have an equal right to an education (Chall, 1988). Inherent in the study of readability is the desire to give the reader an appropriate text. Those involved with readability research assume that reading is most effective when the ability and intent of the reader agrees with the style and objective of the writer (Coleman, 1982).

Readability research has consistently shown that social studies texts are too difficult at both the elementary and secondary levels (Harrison, 1979; Johnson & Vardian, 1963; Pennock, 1982). Pennock analyzed social studies books for the intermediate grades in British Columbia and found them suitable only for the gifted reader. In the readability study described by Harrison, social studies and science courses for the first and fourth year secondary level, including geography, involved the most difficult texts. If these books are too hard for average readers, they will be especially inappropriate for readers of lower ability level. Harrison concludes that "in science and social studies in particular, the demands made of children by the texts currently in use are excessive, particularly in the lower years of secondary schooling" (p. 103).

Most of this readability research has concentrated on the average readability levels of texts. Recent studies in intratext variability, however, may be of equal concern. There was a significant range of

difficulty within the texts examined by Pennock (1982). Ames and Bradley (cited in Bradley, Ames & Mitchell, 1980) did an in-depth study of one junior high social studies book and discovered that readability scores varied from a low of seventh grade to a high, in the last two chapters, of eleventh grade.

In a subsequent investigation of eight junior high school American history textbooks, Bradley et. al. (1980) found similar variations, with a range across topics of at least five grades, ninth grade through college. Smith (1988) reasons that these variations in difficulty within content area texts may be very confusing to students. He further states that the material may actually increase in difficulty rather than become easier to comprehend. For the poor reader this fact means increasing frustration or lack of interest.

Textbook companies usually publish only one book for each grade level and subject area. Unless specific information is given in the teacher's manual, educators do not know the basis for the grade level designation. This researcher examined sixteen teacher editions of geography texts for the secondary level and found exact information in only one of them. Harcourt Brace Jovanovich reports a specific Dale-Chall readability score with its 1989 edition of World Geography: The Earth and Its People. Another text states that the reading levels of chapters have been calculated with the Dale-Chall formula but gives no readability score. Three other publishing companies use only the phrase "carefully controlled" or "closely controlled" when referring to readability. Such generalizations or complete absence of readability

data leave the teacher wondering how the textbook company arrived at the grade level determination.

Because of previous experience with demanding texts and reader frustration, teachers may want to determine whether a specific set of materials is suitable for the students in their classes. They may wish to challenge the commonly-held assumption that the publisher's grade level designation is accurate and consistent throughout all sections of the textbook.

Whether measuring the readability of an entire text or only one chapter, the comprehensive evaluation process can be useful in ensuring student success. Educators in the classroom, as well as those who serve on state textbook adoption committees, understand that successful reading facilitates greater learning and a higher self-esteem.

Statement of the Problem

The purpose of this study is to use the process of comprehensive evaluation to determine the following:

1. Is there a difference between the publishers' stated grade level designations of twelve secondary school geography texts and the actual readability levels according to the Harris-Jacobson readability formula?
2. Is there a difference between the publishers' stated grade level designations and the actual readability level of each sample within the texts?
3. Are the newly introduced vocabulary words reinforced at least five times within the context of the chapter?

The comprehensive evaluation procedure involves 1) computing the actual readability of five sample passages within each text; 2) computing the mean actual readability of each text; and 3) tabulating the number of reinforcements of the new words in three sample chapters of each text.

Definitions of Terms

1. Comprehensive evaluation is a method of determining the reading difficulty of instructional materials utilizing the Harris-Jacobson readability formula and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980).

2. Secondary level is defined as encompassing the grades from seven through twelve.

3. Readability factors are the characteristics of printed materials that affect the reader's understanding of that material. The term "readability factors" is synonymous with the aspects of readability. Readability factors include vocabulary, sentence length, frequency of word reinforcement, typography, legibility, illustration and color, organization, style of writing, conceptual difficulty, and linguistic complexity.

4. New words are the vocabulary words introduced in a chapter of the text.

5. Readability as determined by a readability formula refers to characteristics of the style of writing which facilitate the reader's understanding of the material.

A. Actual readability is the grade level calculated by the Harris-Jacobson readability formula.

B. Estimated readability is the lowest grade level designation assigned to the textbook by the publisher.

C. Comprehensive readability includes the grade level calculation as computed by the readability formula and a determination of the percentage of reinforcement of the new words.

6. Reading is defined as the process of extracting meaning from printed materials. Some skills involved in reading include word attack, vocabulary recognition, and comprehension.

7. Reinforcement is the repetition of new vocabulary words in the text after their introduction.

8. Word lists accompany readability scales to check the percentage of hard words in the formula calculations. The words were chosen by the formula authors to validate the calculated results. The Harris-Jacobson word list is shown in Appendix D.

9. Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980) is a form used to list the new words and to check the number of times these words are reinforced in the chapter of introduction and the three subsequent chapters (see Appendix B). It can also be used to record and subjectively evaluate the skills to be taught in each lesson, although that procedure was not applicable to this research.

Assumptions

1. The Harris-Jacobson readability formula produces accurate readability scores for secondary geography texts.
2. The procedure used to determine the number of reinforcements reflects the true extent of reinforcement found in the geography texts.
3. Although Kingsley's (1965) recommendation of a minimum of five repetitions was made for basal reading series, it applies to geography textbooks as well.
4. The information obtained directly from the publishers on the grade level designations of the geography textbooks is accurate.
5. If the publisher designates the textbook as suitable for several grade levels, it must be readable by students at the lowest of those grade levels.

Null Hypotheses

1. There is no difference between the publisher's estimated readability and the mean actual readability score of each geography textbook.
2. There is no difference between the publisher's estimated readability and the actual readability score of each sample.
3. There is no difference between the number of reinforcements of the new words and Kingsley's (1965) recommended minimum of five times within the chapter of introduction.

Limitations

1. Only five passages in each book were analyzed with the Harris-Jacobson readability formula. The examination of additional samples might yield a mean actual readability score which more accurately reflects the readability of the textbook.

2. Reinforcements of the new words were tabulated for only three sample chapters in each book. The review of additional chapters might provide more insight into the publisher's attention to word reinforcement.

3. Geography textbooks contain numerous proper names. Even though they may not appear on the Harris-Jacobson word list, they are counted as "easy" words. The inclusion of so many proper names could mean that the actual readability score is underestimated.

Summary

The textbook is essentially the primary instructional tool for presenting information in secondary level geography courses. The readability must be carefully considered in order to ascertain its appropriateness for students. Utilizing the process of comprehensive evaluation, this researcher examined the readability of twelve secondary level geography textbooks. This chapter presented the background, purposes, definitions, assumptions, null hypotheses, and limitations of the study.

CHAPTER II

RELATED LITERATURE

Introduction

This chapter clarifies the aspects of readability, readability in relation to the teaching of geography, and the comprehensive evaluation of readability.

The Aspects of Readability

The aspects of readability refer to the characteristics of written material which affect the reader's understanding of that material. According to Harrison (1980), empirical studies have consistently proven that vocabulary is the greatest single predictor of text difficulty. This readability factor becomes increasingly significant after a child reaches the age of nine or ten, when books that he is required to read contain more and more words that he rarely or never uses in conversation or writing.

It is likely that words which are not understood or only partly understood will be encountered more frequently at secondary-school level. Almost by definition, therefore, a textbook will contain words and concepts which are only partly understood, and which the book is attempting to elucidate (Harrison, 1980, p. 31).

Because of vocabulary's correlation with text difficulty, almost all readability formulas include a word frequency variable. This variable is commonly measured by counting the syllables of words or

checking to see if the words appear on a list of familiar words. Longer words are assumed to be encountered by readers less often (Coleman, 1982); thus, the number of syllables in a word gives an indication of its length and therefore its familiarity. The familiar word lists that accompany readability formulas contain words that children encounter often in conversation or writing.

The second style variable that is generally measured in readability formulas is sentence length. Whereas vocabulary is an index of semantic difficulty, sentence length is an index of syntactic difficulty (Harris & Sipay, 1985). It is reasoned that longer sentences contain more dependent clauses and subordinate ideas and place a greater concept load on the reader (Coleman, 1982). Harrison (1980) points out, however, that sentence length does not always correlate positively with reading difficulty; in some cases, shortening a sentence can make comprehension more difficult. Pearson (1974-1975) provides an excellent example:

- a) Because the chain broke, the machine stopped.
- b) The chain broke. The machine stopped (p. 190).

In sentence a) the subordinating conjunction "because" clarifies the cause and effect relationship, whereas its elimination in b) obscures this relationship.

Perera (1984) further analyzes linguistic complexity in relation to readability and children's language development. She points out that complex linguistic structures, which occur more often in writing and formal speech, may not be acquired until the teenage years. These difficult constructions include, for example, concealed negatives, ambiguous use of pronouns, inferential "if" clauses, and long subject

noun phrases. In order to more accurately ascertain the potential difficulty of reading materials, the teacher needs to be aware of these complex linguistic structures.

In addition to attributes of the style of writing, the format and organization of printed material affects reader understanding. Logical presentation of the content, the use of illustration and color, and typography all contribute to making a book readable. Irwin and Davis (1980) report on research studies (Glenn, Mandler & Johnson; Stein & Nezworski; Thorndyke) in which students' familiarity with an organizational format promoted retention. Harrison (1986) relates Freedman's interesting investigation into different formats of examination papers. The control group, using the customary version, achieved higher scores than the experimental group, using what Freedman assumed to be a clearer format. Perhaps if students had been equally familiar with both formats, the experimental group would have achieved the higher scores.

Conceptual difficulty is an extremely important determinant of readability, but it is rarely included in a formula because it is too hard to estimate reliably (Harrison, 1980). Content area textbooks typically contain many difficult concepts and abstract statements. Peterson (1954) relates the difficulty of ideas to how far removed they are from the reader's experience. Information which is to be inferred is also a source of potential difficulty for the reader (Davison & Kantor, 1982). If the information is not explicitly stated and the correct inferences not made, the text will essentially be rendered incomprehensible.

Harrison (1980) elucidates the relationship between readability and comprehension. Readability is an attribute of texts, and comprehension is an attribute of readers. They are intimately related, however, because very often we use readability to mean the "comprehensibility of a text" (p.33). Several researchers (Harris & Sipay, 1985; Harrison, 1980; Kazemek, 1984; Klare, 1988; Zakaluk & Samuels, 1988) have concluded that the reader's response to written material depends on both text factors and factors within the reader himself.

The student's degree of reading fluency significantly affects his understanding of the printed page.

Accuracy and automaticity of word recognition facilitate reading comprehension. Having to expend effort at decoding in a word by word manner leaves the reader with little capacity for higher order reading and comprehension (Zakaluk & Samuels, 1988, p. 131).

Zakaluk and Samuels emphasize that even material with a low readability score will be difficult for the child with poor decoding skills.

Equally important to reading comprehension is the reader's degree of language competence. As Perera (1984) states, the process of acquiring language is not complete by the age of five. Language development continues off and on, at a slower rate, until the teenage years. Therefore, secondary students may still be formulating their language, especially if they are developmentally delayed. The student's lack of linguistic maturity may preclude his ability to process the complex structures of formal writing.

In order for the student to understand the material he is required to read, he must have a background knowledge of the subject matter as well as knowledge of the particular language in which the material is

written. Bisanz and Voss (1981) theorize that because of our increasingly specialized and technical society, subject matter knowledge may now be relatively more important than understanding of the language per se. The role of domain-related knowledge is established in the following example given by Kazemek (1984):

A text on rebuilding automobile engines which is written at a "12th grade" level according to some formula will probably pose relatively few problems for the high school junior who is a very poor reader but who has been rebuilding automobile engines in the garage at home for the past six years. On the other hand, the same text will most likely pose many problems for the college professor whose knowledge of automobile engines is limited to checking the oil (p. 250).

Comprehension of a text requires the reader to integrate new and unknown material with his own background knowledge and experience; he understands the unfamiliar by relating it with the familiar (Nelson, 1978). In a well-designed study of the effect of topic knowledge on the reading comprehension of ninth graders of high, medium and low ability levels, Stevens (1980b) found that high knowledge facilitated comprehension equally in all ability groups. She states that the results of this research support the theory that a previously possessed schema, or framework, for the topic to be read is a necessary component of comprehension. Adding to an already-formulated schema for the topic at hand is much simpler than having to formulate a schema and add information to it simultaneously, as when a reader attempts a totally new subject (Anderson, 1977). Stevens (1980b) concludes the following:

Indeed, many subgroups of the population who face reading difficulties may be seen as having a "school-associated knowledge" deficit rather than a "reading skills" deficit. Subjects who fit this category would include those students whose word attack skills are adequate, but who 'just cannot comprehend what they read'....Thus, more attention must be

devoted to the development of the prior knowledge bases upon which sound reading depends (p. 153).

Motivation can potentially outweigh the effect of a high readability upon comprehension (Klare, 1976). According to Harrison (1980), a person's reading ability increases when his interest level is high. He refers to a study by Shnayer who found that high motivation especially facilitated the comprehension of poor readers. Conversely, Harrison concludes that the measurement of readability is extremely important when motivation is low. If poor readers are required to read material that does not have a high interest level for them, the readability must be appropriate in order for them to understand the content.

Researchers have recently begun to emphasize that text comprehensibility is a function of text-reader interaction (Dreyer, 1984; Kazemek, 1984; Nilsson, 1979; Zakaluk & Samuels, 1988). Kazemek (1984) views the reading process as an interaction, between the thought and language of the reader and that of the writer, which results in meaning being construed by the reader. Irwin (cited in Smith, 1987) defines reading comprehension as "'an active process to which each reader brings his or her individual attitudes, interests, expectations, skills and prior knowledge'" (p. 86). As shown in Figure 1, reading is the product of this complex interaction of several variables.

Readability measurement has been criticized for being concerned only with surface structures (Chall, 1988; Kazemek, 1984). It does focus totally on style difficulty, which is only one factor of readability. However, at the present time, utilization of a readability

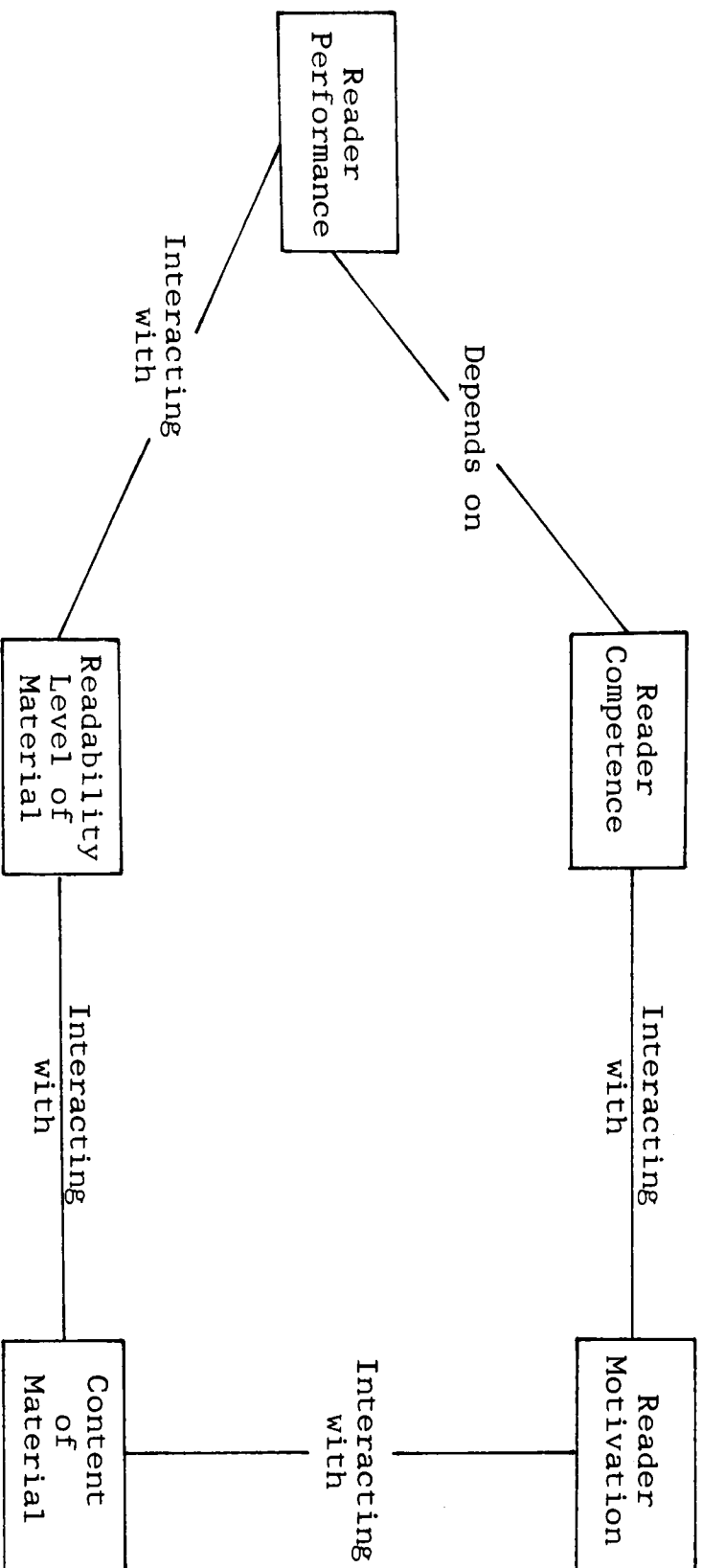


Figure 1. A model of reader performance

Source: Klare, G. R. (1988). The formative years. In B. L. Zakaluk & S. J. Samuels (Eds.), Readability: Its past, present, and future. Newark, Delaware: International Reading Association, p. 29.

formula is the best objective measure available to educators. It has not yet been possible to quantify other significant readability factors, such as interest level, concept load, and organizational format, in a usable formula (Bradley, et. al., 1980).

In spite of the criticisms, the measurement of readability has practical importance for educators (Nilsson, 1979). Readers lose interest or become discontented if their reading material is too hard or the subject matter too unfamiliar. We need to predict those passages in which our students are likely to find difficulties; therefore, readability assessment should be an integral part of our course evaluation (Harrison, 1980).

Children can be helped to use books and other printed resources more effectively than they do at present, and although one should not overestimate their potential, measures of readability can be used to help in this important task (Harrison, 1980, p. 103).

At the least, a lower readability level may increase the possibility that students will continue to read, even if it does not improve comprehension (Klare, 1976). The significance of this statement cannot be overemphasized.

Harrison (1980) gives the following suggestions for teachers who wish to measure readability:

1. Do not use readability data to deny children access to what they wish to read, but only as an indication of potential problem areas.
2. Readability measurement is especially important in the content areas, in which motivation is likely to be low.

3. We should be aware of the readability levels of the books our students use for independent research.

Klare (1984) emphasizes these points:

1. Consider other known contributors to comprehension, especially motivation and background knowledge; otherwise, formula data may overestimate or underestimate difficulty.
2. Be cognizant of the purpose of the reading material.
Presenting information in content area courses requires less challenging material than training readers.
3. Increase the predictive value by taking a large random or numerically spread sample.
4. Acknowledge the fact that it may be necessary to change instructional materials after tentative placement.

Because of the complex interactions inherent in readability, Klare (1976) stresses that formula scores must be tempered with human judgment. Harrison (1980) concurs when he states that "what we need is not something which replaces the teacher's own professional judgment, but something which extends it and makes it more reliable" (p. 11).

Readability in Relation to Teaching Geography

In secondary level geography courses, the textbook is the main instructional tool. Much of the material may be assigned for independent reading, with the student struggling through an abundance of technical vocabulary and unfamiliar ideas. The inherent difficulty of the subject matter often precludes an appropriate readability level, especially for poor readers.

The vocabulary burden is more acute in content area textbooks than in general reading materials (Harris & Sipay, 1985). In geography books the student encounters proper names, names of products and resources, and words pertaining to land and water features, transportation, distance and direction, human occupations, the physical phenomena of time and weather, and terrestrial phenomena (Walther, 1925).

In an exhaustive study of the vocabulary load of a state-adopted fourth grade geography text, Berry (1961) reported these findings:

1. More than twice as many different words, including proper names, were introduced in this geography text as were introduced in the average fourth grade basal reader.
2. These words were introduced without concern for a pattern of gradual introduction and use.
3. There were almost three proper names to each one hundred running words.
4. Nearly eight words out of every hundred running words were technical geographical terms.

With regard to the second point, Haffner (1959) examined 42 fifth and sixth grade social studies, history, and geography textbooks and likewise found an irregular distribution of the difficult words. The vocabulary load was usually greatest in the first half of each book that he analyzed.

Understanding the geography text requires a knowledge of mathematical terms (Gray, 1940). For example, in examining instructional materials for seventh grade geography classes, this researcher found the words rate, scale, percent, percentage, proportion,

cylindrical, and conical. The materials also contained scientific vocabulary such as desalinization, infrared, photogrammetry, and diastrophism, as well as economic terms such as tertiary, gross national product, and per capita.

Concepts of time and place, such as "the next decade" or "the temperate zone," can be confusing to many students (Gray, 1940). In addition, teachers need to be aware of the semantic confusion many pupils experience when a familiar word can also be used to imply a geographical concept. Walther (1925) found these "dual meaning" (p. 44) words, such as "pass," "divide," and "mouth," to be especially common among words of high frequency; conversely, he found that as a word's frequency of use diminishes, the precision of its meaning increases.

A closely related problem is vocabulary with meanings that change from one high school subject to another (Harris & Sipay, 1985). Harris and Sipay use the word "group" as an example. Its definition is different in social studies, biology, and chemistry.

Geography as a content area has an extensive specialized vocabulary of its own, including words such as indigenous, imperialism, subregion, landlocked, and isthmus. Unfortunately, the words that are most likely to produce a high readability score are these special meaning words (Nelson, 1978)--the words that are specific to the field of geography and essential to comprehension of the subject. Campbell (1979) describes this special vocabulary as "subject-specific jargon" (p. 686).

In an examination of the readability of thirteen geography series for the secondary level, Miller and Roberts (1976) found that the

readability scores generally fell at or below the grade level designated by the publisher. Only two of the 104 passages sampled produced a score above the publisher's highest specified grade level. However, the authors carefully point out that the "technical vocabulary" (p. 27) was not considered in their study. In view of the number of specialized words inherent in the field of geography, this fact, in my opinion, negates the findings of this research.

These technical terms, words with dual meanings, and subject-specific words create a tremendous vocabulary burden on the reader of geography materials. The examination of the seventh grade materials referred to above revealed a large number of new words to be mastered, some of which were unknown to this researcher.

These facts take on significance when we remind ourselves that much of the learning in the social sciences is acquired through books, and that there is an apparent relation between the failure of students to understand word meanings and their inability to grasp important ideas (Gray, 1940, p. 167).

In addition to the specialized vocabulary, instructional materials in geography may contain a language structure which is different from that of other curriculum areas (Campbell, 1979). In the social sciences there is frequent use of the cause/effect and comparison/contrast patterns. For instance, cause and effect may be indicated by words like "since" or "consequently" or phrases such as "for this reason." Many readers, Campbell feels, are not conscious of these language cues. When students cannot utilize these structure words, their comprehension will undoubtedly be reduced.

Content textbooks may be hard to comprehend because of the high concept load and density and the abstract nature of the material (Harris & Sipay, 1985). Haffner (1959) found an excessive concept load in geography texts for the intermediate grades. There may also be what Peterson (1954) terms "fact density." The reader may be inundated with a large quantity of facts in a limited space. As stated in Chapter I, many students equate the study of geography with the learning and memorization of facts.

A highly motivated reader can handle a reading level two years above his normal level of competence (Harrison, 1980). This motivation, however, may not be present in the students enrolled in a secondary level geography course. It depends to a large extent on whether the course is a required one or a chosen elective. Interest in the subject area may even be related to the student's sex. In the readability study reported by Harrison (1980), at first and fourth year level secondary, girls consistently gave a lower estimate of the interest level of geography passages than boys. In geography classes in which the motivation is likely to be low, the teacher should definitely utilize the comprehensive evaluation of reading materials.

Comprehensive Evaluation of Readability

Although publishers specify the grade level or levels for which their textbooks have been developed, they provide little, if any, data as to the readability of the material. As educators become more concerned with meeting individual needs, it becomes increasingly more important to evaluate the difficulty level of these reading materials

(Miller & Roberts, 1976). Harrison (1980) emphasizes that as teachers we cannot allow the content and its presentation to be the sole criterion of textbook selection. If we do not consider readability, we lessen the opportunities for our students to become self-directed learners.

The comprehensive evaluation of readability is an effective tool for teachers to use in determining the suitability of curriculum materials for the students in their classes. The instruments that will be utilized in the present study include 1) a readability formula and 2) a worksheet for further analysis. These instruments will aid in determining the comprehensive readability of the geography textbooks as compared to their designated grade levels.

Readability Formulas

Klare (1963) defines a readability formula as "a method of measurement intended as a predictive device that will provide quantitative, objective estimates of the style difficulty of writing" (p. 3). In contrast to directly testing the individual reader by using a cloze test or informal reading inventory, readability measurement is predictive in that no actual participation by readers is necessary (Klare, 1974-1975). Formulas use generally established relationships between text factors, usually measures of word frequency and sentence length, to predict difficulty in other passages (Harrison, 1980).

Readability scores are approximate indications of difficulty, accurate to plus or minus one grade level (Harrison, 1980), not firm and absolute levels (Nelson, 1978). The variables that formulas measure are

simply good indicators of difficulty (Dreyer, 1984; Klare, 1974-1975; Nelson, 1978; Standal, 1981). The relationship is one of correlation and not causality.

Two simple language variables, a word or semantic variable and a sentence or syntactic variable, account for a large amount of the variation in the prediction of readable writing (Klare, 1974-1975; Klare, 1984). The word or semantic variable is highly predictive even when considered alone; however, the sentence variable contributes by giving one an indication of sentence complexity, which is likely to be the real causal factor in difficulty (Klare, 1974-1975). Klare (1974-1975) further states that adding new and different variables yields relatively little predictive validity compared to the extra application time involved.

Empirical studies by Bormuth (1966) and Klare, Mabry, and Gustafson (cited in Klare, 1966) have demonstrated that linguistic variables can normally be expected to predict difficulty equally well for all students, regardless of their reading levels. The subjects in Bormuth's research represented second through twelfth grade reading levels on reading achievement tests. Klare et. al. reported the same results for airmen of different ability levels who read technical materials on three levels of difficulty. Bormuth concludes that one readability formula can be utilized to predict difficulty for students with a wide range of reading abilities.

Most readability techniques yield grade-equivalent scores, which specify that average readers at that grade level can be expected to read the passage (Klare, 1963). Different formulas can produce diverse

scores when applied to the same passage. This variation in grade scores may reflect the differing levels of comprehension that individual formulas require of their criterion measure (Coleman, 1982). The criterion can vary from 50 to 75 percent correct on the comprehension questions on which the formulas are based (Klare, 1963).

Coleman (1982) concludes that readability procedures seem to be reliable and valid indicators of the difficulty that students will experience when reading instructional materials. Teachers can utilize readability measurement much more effectively, however, if they are knowledgeable concerning the formulas' limitations. These limitations include the following:

1. Formulas measure style difficulty, which is only one factor of readability.
2. Matching the readability level of materials to the reading achievement scores of students will not automatically yield comprehension (Nelson, 1978).
3. If words are used in figurative or idiomatic language, or have more than one meaning, the formulas will not be sensitive to these subtle changes in meaning (Dale & Chall, 1948).
4. The measurement of samples does not necessarily reflect the readability of an entire text.

In spite of their limitations, readability formulas have many advantages for the classroom teacher. These advantages include the following:

1. Readability measurement allows the teacher to calculate the difficulty of reading materials prior to selection for certain students.
2. Readability formulas can give an indication that instructional materials may be too difficult, too easy, or too variable.
3. They are useful for comparing the relative difficulty of several texts, since the same formula would provide a comparative measure of the same traits (Hargis, 1982).
4. Readability measurement does not require testing students.
5. Formulas are easier and quicker to apply than the cloze procedure (Taylor, 1953).
6. Although formulas are not precise, they yield objective measures of instructional materials on the variables that they evaluate (Hargis, 1982).

As illustrated in Figure 1 (p. 17), the readability level of instructional materials is an important variable in reader performance. Teachers need to evaluate the reading difficulty of textbooks that students will be expected to read. Readability formulas provide an objective method of making an estimation, and readability measurement should be the first step in the evaluation process. A formula should not, however, be used as the sole criterion in judging or rating textbooks (Hansell, 1981; Koenke, 1971). The other factors of readability, such as word reinforcement, organization and format, conceptual difficulty, and linguistic complexity must be considered before the evaluation is complete.

When the materials have been thoroughly appraised, the teacher should relate the qualities of the book to the facts known about the reader (Koenke, 1971), such as abilities, background knowledge and experience, interests, and purpose. In the end the students' own classroom teacher is the most qualified person to determine the appropriateness of intended reading materials. "Readers deserve primary consideration in determinations of readability. The final criterion of readability is the effect of a passage upon a particular reader" (Klare, 1963, p. 175).

The Harris-Jacobson Wide Range Readability Formula was chosen for this evaluation of twelve secondary level geography textbooks. It yields readability scores from 1.0 to 11.3 and is therefore applicable to this examination. The Harris-Jacobson formula uses a list of familiar words (see Appendix D), which adds somewhat more predictive validity over counting word length (Klare, 1974-1975). In this researcher's opinion, it is easier to calculate than the Dale-Chall formula, a widely used measure for secondary materials. The Dale-Chall formula contains several pages of special rules for comparing words in the sample to its familiar word list, whereas the Harris-Jacobson word list is completely self-contained. Other reasons why the Harris-Jacobson was selected over the Dale-Chall are presented below.

A readability formula is only as good as its criterion measure (Stevens, 1980a). Many of the popular formulas have used the McCall-Crabbs Standard Test Lessons in Reading as their criterion. Stevens (1980a) discovered that this instrument is poorly standardized and was never meant to be used for research purposes; the lessons were intended

only as practice exercises in reading. Dale and Chall (1948), whose formula is based upon the Standard Test Lessons, stated that "this material, it should be noted, has serious deficiencies as a criterion, but it is the best we have at the present time" (p. 5).

Harris and Jacobson have improved the criterion for readability measurement. Their Wide Range Formula is based on the average characteristics of eight series of basal readers in wide use in 1980 (Harris & Sipay, 1985). As an additional check on the formula's validity, it was cross validated on the Standard Test Lessons using a sample of 18,000 students.

According to Harrison (1980), even the most respected formulas have a standard error of plus or minus ten months. With the Harris-Jacobson formula, the standard error of estimate, the difference between the predicted score and the true score, is only .501 or half a grade (Harris & Sipay, 1985). Harris and Sipay do acknowledge, however, that the mean readability score for the text will be less meaningful if there is a wide variation in the scores of the samples.

A Worksheet for Further Analysis

The Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980) extends the usefulness of the readability formula and is beneficial to the comprehensive evaluation process. It helps the teacher document the number of new words introduced as well as the number of times they are reinforced. In order for students to learn the words and recognize them rapidly, reading material must provide for repetition within the selection as well as

repetition from one selection to the next (Hargis, 1982). Kingsley (1965) states that there should be a minimum of five repetitions of a newly introduced word within the lesson of introduction.

Gates (1930), in his investigations of vocabulary burden, reported the average number of reinforcements required for word-recognition mastery at different intelligence levels. These findings are summarized below:

<u>Range of IQ</u>	<u>No. of Repetitions</u>	
120-129	20	
110-119	30	
90-109	35	
80-89	40	
70-79	45	
60-69	55	(p. 35)

Gates emphasizes that these figures refer to the average number of repetitions per word that should systematically be provided for during school hours, without consideration of any possible incidental learning of the word. His research proves the superiority of learning vocabulary through repetition in meaningful context rather than isolated word study (Hargis, 1982).

For children with reading difficulties, a significant factor is the interaction of word-introduction rates and word-repetition rates in printed material (Hargis, 1982). "Failure often occurs precisely because the child is too far out of synchronization with the vocabulary's introduction and repetition rates" (Hargis, 1982, p. 174). Klare (1963) also states that increased frequency leads to a greater number of words within the child's memory span which in turn promotes comprehension.

Although Gates' data applies to beginning readers, it has serious implications for readability research. Many content area textbooks may not adequately reinforce the new words and therefore preclude the student's understanding of the material to be learned.

Summary

This chapter explored the aspects of readability, readability in relation to the teaching of geography, and the comprehensive evaluation process.

CHAPTER III

DESIGN FOR EVALUATION OF GEOGRAPHY SERIES

Introduction

This chapter presents the purposes of the study, the procedures for data collection, the instruments used to collect the data, and the statistical procedures used in the analysis of the data.

Purpose

The purposes of this study were as follows:

1. To determine if a difference exists between the publishers' estimated readability of twelve geography textbooks and their actual readability according to a readability formula.
2. To determine if a difference exists between the publishers' estimated readability and the actual readability of each sample according to a readability formula.
3. To determine if a difference exists between the number of times the new words are reinforced and the recommended minimum of five times or more than five times within the context of the chapter.

Data Collection Procedures

For this study the researcher chose twelve secondary level geography textbooks, six designated by the publishers as appropriate for seventh grade and six for grades nine or ten. The seventh grade texts were as follows: World Geography: People and Places (1989) by D. G.

Armstrong and F. P. Hunkins, Charles E. Merrill; World Geography (1989) by C. F. Gritzner, D. C. Heath and Company; People on Earth: A World Geography (1988) by D. W. Drummond and R. R. Drummond, Scott, Foresman, and Company; Exploring a Changing World (1984) by M. Schwartz and J. R. O'Connor, Globe Book Company; World Geography (1983) by R. A. Harper and J. P. Stoltman, Steck-Vaughn; and World Geography (1983) by H. H. Gross, Follett/Allyn and Bacon.

The texts designated for grades nine or ten were the following: World Geography (1989) by G. Manson, McGraw-Hill; World Geography: The Earth and Its People (1989) by P. Bacon, Harcourt Brace Jovanovich; World Geography (1989) by H. J. de Blij, G. A. Danzer, R. A. Hart, and D. W. Drummond, Scott, Foresman and Company; World Geography Today (1985) by D. M. Helgren, R. J. Sager, and S. Israel, Holt, Rinehart, & Winston; Global Geography (1981) by P. E. James and N. Davis, Macmillan; and World Geography (1980) by N. J. G. Pounds, Silver Burdett.

The textbooks with copyright dates of 1988 or 1989 are being considered for state adoption in 1989. They were loaned to this researcher by the Social Studies Department of the Knox County Schools. The remaining books are on the current adoption list and were available through the Curriculum Lab at the University of Tennessee. The information on designated grade levels was obtained directly from the publishers.

The data for this research were collected solely by the researcher over a six month period. The listing of hard words was compiled with the Spell Check feature of the Word Perfect 5.0 word processing program

for the IBM-PC. Complete instructions for setting up the readability list, sample files, and hard word files are given in Appendix C.

Instrumentation

The following instruments were used to collect data for this study: 1) the Harris-Jacobson Wide Range Readability Formula (see Appendix A) and 2) the Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980) (see Appendix B). These instruments were chosen for their validity and ease of administration.

The Harris-Jacobson formula estimates readability on the basis of a minimum of five 200 word samples taken at equal intervals throughout the textbook. The number of sentences and the number of words not included on the word list (see Appendix D) were checked in each sample to determine these variables: V1) the percentage of hard, or unfamiliar, words and V2) the average sentence length. The following equation was then used to determine a sample's raw score (Harris & Sipay, 1985):

$$\text{Predicted Raw Score} = .245V1 + .160V2 + .642 \quad (\text{p. 657})$$

The raw score was then adjusted to a Readability Score. See Appendix A for an example of the worksheet this researcher utilized for tabulating information and applying the formula.

The Worksheet for Analysis of Instructional Materials Beyond Readability Scales (see Appendix B), developed by Schindler (1980), requires one sample chapter from each third of the book. With this worksheet the newly introduced words in each sample were recorded and tallied for the number of reinforcements. The reinforcements were also

checked in the three chapters immediately following the chapter of introduction.

Data Analysis

The data were analyzed by charting each geography textbook according to readability scores and frequency of new word reinforcements. To compare the results, a ratio was calculated by placing the publisher's estimated grade level over the actual readability level and then subtracting from one. The number derived from this calculation is an index number for each book. Index numbers were also calculated for each sample. A 20 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.

Each new word presented in a sample chapter was listed on the Worksheet for Analysis of Instructional Materials Beyond Readability Scales. The reinforcements in that chapter 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 category by placing the total number of words in that category over the total number of new words introduced in the three samples. The reinforcements were also tabulated for the three chapters following each sample.

Summary

This chapter discussed the design by which the geography materials were evaluated. The twelve textbooks were listed in these two categories: those for seventh grade and those for ninth or tenth grade. The instruments used were named and described. Finally, the process for the analysis of data was discussed.

CHAPTER IV

RESULTS

Introduction

The purpose of this study was to comprehensively evaluate twelve secondary level geography textbooks according to the null hypotheses as presented in Chapter I. These hypotheses are as follows:

1. There is no difference between the publisher's estimated readability and the mean actual readability score for each geography textbook.
2. There is no difference between the publisher's estimated readability and the actual readability score of each sample.
3. There is no difference between the number of reinforcements of the new words and Kingsley's (1965) recommended minimum of five times within the chapter of introduction.

All twelve textbooks are on the current state adoption list or are being considered for state adoption in 1989. They were analyzed by applying the Harris-Jacobson Wide Range Readability Formula (see Appendix A) and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980) (see Appendix B). The results will be presented in the following order: 1) individual analysis of the seventh grade textbooks; 2) comparative analysis of the seventh grade textbooks; 3) individual analysis of the ninth and tenth grade textbooks; and 4) comparative analysis of the ninth and tenth grade textbooks.

Individual Analysis of the Seventh Grade Textbooks

The six seventh grade textbooks are the following: World Geography: People and Places (1989) by D. G. Armstrong and F. P. Hunkins, Charles E. Merrill; World Geography (1989) by C. F. Gritzner, D. C. Heath and Company; People on Earth: A World Geography (1988) by D. W. Drummond and R. R. Drummond, Scott, Foresman and Company; Exploring a Changing World (1984) by M. Schwartz and J. R. O'Connor, Globe Book Company; World Geography (1983) by R. A. Harper and J. P. Stoltman, Steck-Vaughn; and World Geography (1983) by H. H. Gross, Follett/Allyn and Bacon. They will be discussed in the order mentioned and hereafter referred to only by publisher. If the publisher has designated the textbook as appropriate for several grade levels, the estimated readability is the lowest of those grade levels.

Charles E. Merrill

Hypothesis 1: The actual readability of 9.7+ indicates that this text may be far too difficult for the seventh grade reader. The plus (+) denotes the fact that the raw score for one sample was greater than the highest raw score on the conversion table for the Harris-Jacobson formula, necessitating a readability score for that sample of 11.3+. For the same reason, a plus (+) must also follow the index number, which in this case is .28+. It is not within the confidence interval (+.1 through -.1) which is tolerable for this study.

Hypothesis 2: Table 1 summarizes the data from each sample in this text. Only sample 5, with an index number of .14, comes even close to the allowable confidence interval. The lower readability score may be

Table 1. Charles E. Merrill (1989) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	77,78	211	311	439,441	552	---
Number of Words	202	211	205	210	214	---
Number of Hard Words	39	33	42	44	30	---
Number of Sentences	18	14	18	14	15	---
Raw Score	7.2	6.9	7.5	8.2	6.4	---
Readability Score	9.6	9.1	10.3	11.3+**	8.1	9.7+*
Index Number	.27	.23	.32	.38+**	.14	---

*Index No. .28+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

due, in part, to the fact that this sample was taken from a special section titled "Focus on Economy," rather than from the primary instructional material presented in the chapter. Its percentage of hard words (14) is considerably less than the average (19) for the remaining four samples; however, even this passage will undoubtedly be too difficult for the poor reader. Sample 4 yielded a raw score of 8.2, which is above the highest raw score (8.0) on the conversion table. This selection will most likely be too hard for even the able seventh grade reader to understand.

Hypothesis 3: In this text only 10 percent of the new words were reinforced a minimum of five times within the chapter of introduction.

D. C. Heath and Company

Hypothesis 1: The calculations for this text yielded an actual readability of 9.9+, a level which is entirely inappropriate for seventh grade instructional materials. The index number of .29+ is far away from the tolerable confidence interval. The readability score for this text is the highest of the seventh grade books analyzed in this study. Two of the samples had raw scores higher than the maximum on the conversion table.

Hypothesis 2: As shown in Table 2, only the index number for sample 3 (.14) is even near the allowable confidence interval. As with the easiest passage in the Merrill text, this sample came from a special section rather than from the main instructional material of the chapter. The section is titled "Spotlight on a Norse Settlement: A Bull that Changed History" and is written in narrative form, which is inherently

Table 2. D. C. Heath (1989) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	30,31	137	230	336	455,456	---
Number of Words	213	202	204	206	206	---
Number of Hard Words	33	47	31	49	43	---
Number of Sentences	16	17	16	17	18	---
Raw Score	6.6	8.2	6.4	8.4	7.6	---
Readability Score	8.5	11.3+**	8.1	11.3+**	10.5	9.9+*
Index Number	.18	.38+**	.14	.38+**	.33	---

*Index No. .29+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

more interesting to the reader. The narrative style of this passage may facilitate its comprehension by readers for whom a readability level of 8.1 would ordinarily be too difficult. Zaidi (1974) found that narrative text is more readily understood by children than expository writing, because children are more familiar with story prose.

Hypothesis 3: This text reinforced only 35 percent of the new words five times or more than five times within the chapter of introduction.

Scott, Foresman, and Company

Hypothesis 1: The actual readability of 8.5 indicates that the material in this text may be too hard for the seventh grade reader. The index number of .18 is not within the tolerable confidence interval.

Hypothesis 2: As presented in Table 3, only the index number of sample 4 (.09) is within the allowed range. Of the five passages analyzed, this one is the only passage which nearly matches the publisher's estimated reading level.

Hypothesis 3: This text reinforced only 33 percent of the new words a minimum of five times within the chapter of introduction.

Globe Book Company

Hypothesis 1: The actual readability of this text is 7.7, a level which on the surface indicates that it may be appropriate for seventh grade readers. The index number is .09, which is within the allowable confidence interval utilized in this study. However, the variation in scores of the samples, from fifth grade to tenth grade, makes the mean actual readability score somewhat misleading. It is therefore very

Table 3. Scott, Foresman (1988) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	72,73	139-141	250	367,368	484,485	---
Number of Words	201	207	211	201	203	---
Number of Hard Words	20	35	45	33	41	---
Number of Sentences	17	15	19	21	21	---
Raw Score	5.0	7.0	7.6	6.2	7.1	---
Readability Score	5.5	9.2	10.5	7.7	9.4	8.5*
Index Number	-.27	.24	.33	.09	.26	---

*Index No. .18

important to carefully analyze the individual sample scores as well as the mean score.

Hypothesis 2: Although the mean actual readability is close to the publisher's estimated readability, only sample 1 (see Table 4) has an index number (-.04) within the allowed confidence interval.

Hypotheses 3: This text reinforced only 26 percent of the new words five times or more than five times within the chapter of introduction. It is interesting to note that 21 percent of the new words were not reinforced at all. They were merely introduced and not repeated even one time. There were also no reinforcements for these words in the three subsequent chapters.

Steck-Vaughn

Hypothesis 1: The actual readability is 9.4+, which strongly suggests that even the more able seventh grade readers may be frustrated by the printed material in this text. The index number of .26+ is far removed from the tolerable confidence interval. Two of the samples yielded raw scores above the highest raw score on the conversion table.

Hypotheses 2: As indicated in Table 5, only sample 3 (.01) falls within the allowable confidence interval. This passage appears in the "Sidelights" section rather than in the main body of instructional material. It was taken from a personal journal and is in narrative form, which heightens the reader's interest. The appropriate readability level combined with the high interest of this passage should mean that it will be understood by the majority of seventh grade

Table 4. Globe (1984) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	73	199	319	416	530	---
Number of Words	207	212	208	209	213	---
Number of Hard Words	25	21	38	25	45	---
Number of Sentences	16	19	15	19	19	---
Raw Score	5.7	4.9	7.3	5.3	7.6	---
Readability Score	6.7	5.4	9.8	6.0	10.5	7.7*
Index Number	-.04	-.30	.29	-.17	.33	---

*Index No. 09

Table 5. Steck-Vaughn (1983) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	62	183	290	370,371	516	---
Number of Words	218	200	206	205	204	---
Number of Hard Words	49	29	30	44	38	---
Number of Sentences	15	15	20	14	16	---
Raw Score	8.5	6.3	5.9	8.2	7.2	---
Readability Score	11.3+**	7.9	7.1	11.3+**	9.6	9.4+*
Index Number	.38+**	.11	.01	.38+**	.27	---

*Index No. .26+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

readers. In addition, sample 2 (.11) comes very close to the tolerable confidence interval. In contrast, however, samples 1 and 4 have index numbers of .38+, because their raw scores fall above the maximum on the formula conversion table.

Hypothesis 3: This text reinforced only 36 percent of the new words the minimum of five times within the chapter of introduction. Out of a total of 67 new words, 30 percent (20 words) were not reinforced at all. Two of these 20 words were reinforced twice in the subsequent three chapters, and one was reinforced one time.

The word "axis" was introduced in the first sample in reference to the Earth's rotation. Its six reinforcements were sufficient according to Kingsley's recommendation. However, in the chapter immediately following, it was reintroduced in relation to the interpretation of a bar graph. Students may experience semantic confusion when the same word is used in two consecutive chapters with two different meanings.

Follett/Allyn and Bacon

Hypothesis 1: The actual readability of this text is 8.7+, which may be far too difficult for seventh grade level. The index number of .20+ is not within the allowable confidence interval. One sample had a raw score above the highest raw score on the conversion table.

Hypothesis 2: Only samples 1 and 3, with index numbers of .01 and -.04 respectively (see Table 6), fall within the confidence interval utilized in this study. The other three samples, however, have extremely high index numbers of .21, .27, and .38+.

Table 6. Follett/Allyn & Bacon (1983) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	7.0	7.0	7.0	7.0	7.0	7.0
Page Number	92	155	268,269	355	474,475	---
Number of Words	203	219	211	201	218	---
Number of Hard Words	28	38	28	36	50	---
Number of Sentences	17	18	19	15	13	---
Raw Score	5.9	6.8	5.7	7.2	8.9	---
Readability Score	7.1	8.9	6.7	9.6	11.3+**	8.7+*
Index Number	.01	.21	-.04	.27	.38+**	---

*Index No. .20+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Hypothesis 3: Only 39 percent of the new words in this text were reinforced five times or more than five times within the chapter of introduction.

Comparative Analysis of the Seventh Grade Textbooks

A summary of the data from the comprehensive evaluation of these six textbooks is presented in Table 7. Only the Globe text yielded an actual readability score (7.7) on the same grade level as the publisher's estimated readability. However, as stated by Harris and Sipay (1985), the wide variation in sample scores makes the average score less meaningful. For this reason, one needs to carefully consider the sample scores as well as the mean score for each text. The actual readability scores ranged from 7.7 on the Globe text to 9.9+ on the Heath text.

Of the thirty total samples, only five yielded index numbers within the allowable confidence interval. There were two such samples in the Follett/Allyn and Bacon text and one each in the Scott Foresman, Steck-Vaughn, and Globe texts. The readability scores within each text varied widely, with a range of at least four grade levels and an erratic pattern of distribution. Four of the books had at least one sample with a readability score of 11.3+.

With the Harris-Jacobson formula, the standard error of estimate, the difference between the predicted score and the true score, is .501, or half a grade. Therefore, a sample with a score of 11.3 might have a true score as low as 10.8. This possible variation is of little

Table 7. Comparison of Readability Data for Seventh Grade Textbooks

Text	Designated Grade Level	Estimated	Actual	Index No.	Percent of Reinforcements		
					Less Than 5	5	More Than 5
Charles E. Merrill (1989)	7-10	7.0	9.7+*	.28+*	90	0	10
D. C. Heath (1989)	7-9	7.0	9.9+*	.29+*	65	6	29
Scott, Foresman (1988)	7-8	7.0	8.5	.18	67	4	29
Globe (1984)	7-8	7.0	7.7	.09	74	0	26
Steck-Vaughn (1983)	7	7.0	9.4+*	.26+*	64	9	27
Follett/Allyn & Bacon (1983)	7	7.0	8.7+*	.20+*	61	9	30

*The raw score for at least one sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

consequence, however, because a tenth grade reading level is still too difficult for seventh grade instructional materials.

In all the texts, the majority of the new words were reinforced less than five times. The percentage of new words that were adequately reinforced ranged from a low of 10 percent to a high of 39 percent.

Individual Analysis of the Ninth and Tenth Grade Textbooks

The textbooks for the ninth and tenth grade are as follows: World Geography (1989) by H. J. de Blij, G. A. Danzer, R. A. Hart, and D. W. Drummond, Scott, Foresman and Company; World Geography (1989) by G. Manson, McGraw-Hill; World Geography: The Earth and its People (1989) by P. Bacon, Harcourt Brace Jovanovich; World Geography Today (1985) by D. M. Helgren, R. J. Sager, and S. Israel, Holt, Rinehart, and Winston; Global Geography (1981) by P. E. James and N. Davis, Macmillan; and World Geography (1980) by N. J. G. Pounds, Silver Burdett. They will be discussed in the order mentioned and hereafter referred to only by publisher. If the publisher has designated the textbook as appropriate for several grade levels, the estimated readability is the lowest of those grade levels.

Scott, Foresman and Company

Hypothesis 1: The actual readability score for this text is 10.6+, which indicates that the printed material may be frustrating for many ninth grade readers. The index number of .15+ is not within the tolerable confidence interval utilized in this research. The raw score of one sample is above the maximum raw score on the conversion table.

Hypothesis 2: As shown in Table 8, samples 1 and 2 (.06) fall within the allowable confidence interval. Only these two passages are appropriate for readers at the publisher's designated grade level.

Hypothesis 3: This text reinforced only 19 percent of the new words a minimum of five times within the chapter of introduction.

McGraw-Hill

Hypothesis 1: The actual readability of 10.2+ means that this text may be too difficult for many ninth grade readers. The index number of .12+ is not within the confidence interval. The raw score of one sample fell above the highest raw score on the conversion table.

Hypothesis 2: Only samples 3 and 5, with index numbers of -.01 and -.06 respectively, are within the allowable confidence interval. Sample 5 was taken from a supplementary section of the chapter titled "Interaction," rather than from the main body of instructional material. These special sections often seem to yield an easier readability score, because they usually contain less unfamiliar words. The data from the sample analysis is summarized in Table 9.

Hypothesis 3: This text reinforced only 48 percent of the new words a minimum of five times within the chapter of introduction.

Harcourt Brace Jovanovich

Hypothesis 1: The actual readability for this text is 11.2+, with four of the five samples yielding raw scores above the maximum on the formula conversion table. The index number of .20+ is not within the allowable confidence interval. The data obtained from these

Table 8. Scott, Foresman (1989) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	9.0	9.0	9.0	9.0	9.0	9.0
Page Number	34	181	291	446	593	---
Number of Words	218	211	214	210	208	---
Number of Hard Words	39	42	45	46	44	---
Number of Sentences	16	20	14	17	16	---
Raw Score	7.2	7.2	8.2	8.0	7.9	---
Readability Score	9.6	9.6	11.3+**	11.3	11.1	10.6+*
Index Number	.06	.06	.20+**	.20	.19	---

*Index No. .15+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Table 9. McGraw-Hill (1989) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	9.0	9.0	9.0	9.0	9.0	9.0
Page Number	44	132	304	386	520	---
Number of Words	209	216	211	215	204	---
Number of Hard Words	48	45	39	56	35	---
Number of Sentences	20	16	21	17	19	---
Raw Score	7.9	7.9	6.8	9.0	6.6	---
Readability Score	11.1	11.1	8.9	11.3+**	8.5	10.2+*
Index Number	.19	.19	-.01	.20+**	-.06	---

*Index No. .12+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

calculations indicate that this textbook will undoubtedly be frustrating for all but the gifted ninth grade reader.

It is very important to note that the information obtained directly from the publisher relative to the designated grade level of this text was a 9.2 score as calculated by the Dale-Chall formula. For the purposes of this study, the researcher made the assumption that the publisher therefore considers it readable for ninth grade students.

Hypothesis 2: As shown in Table 10, not one of the samples has an index number within the tolerable confidence interval. A raw score of 8.0 (readability score of 11.3) is the maximum on the formula conversion table. A review of the raw scores of samples 2 through 5, ranging from 8.7 to 10.6, makes one cognizant of the difficulty level of this textbook.

For comparison purposes, this researcher analyzed the identical 200 word samples with the Dale-Chall formula, as well as the Harris-Jacobson formula. Comparative data is given in Table 11. It is interesting to note that this researcher's calculations produced an actual readability score of 11.0 with the Dale-Chall formula, in contrast to the score of 9.2 which was stated by the textbook company. This discrepancy, however, can be attributed to the examination of different passages.

Hypothesis 3: In this text, 50 percent of the new words were reinforced five times or more than five times within the chapter of introduction.

Table 10. Harcourt Brace Jovanovich (1989) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	9.0	9.0	9.0	9.0	9.0	9.0
Page Number	90	260	409	533	646,647	---
Number of Words	205	205	200	203	217	---
Number of Hard Words	38	57	48	59	66	---
Number of Sentences	13	18	15	13	14	---
Raw Score	7.7	9.3	8.7	10.3	10.6	---
Readability Score	10.7	11.3+**	11.3+**	11.3+**	11.3+**	11.2+*
Index Number	.16	.20+**	.20+**	.20+**	.20+**	---

*Index No. .20+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Table 11. Comparison of the Readability of Harcourt Brace Jovanovich (1989) as Calculated by the Harris-Jacobson and Dale-Chall Formulas

Sample Number	Harris-Jacobson Raw Score	Harris-Jacobson Grade Score	Dale-Chall Raw Score	Dale-Chall Grade Score
1	7.7	10.7	8.1	11.2
2	9.3	11.3+*	7.8	10.6
3	8.7	11.3+*	7.3	9.6
4	10.3	11.3+*	8.1	11.2
5	10.6	11.3+*	8.7	12.4
Means	---	11.2+*	---	11.0

*The maximum raw score on the Harris-Jacobson conversion table is 8.0, which corresponds to an actual readability (grade score) of 11.3.

Holt, Rinehart, and Winston

Hypothesis 1: In contrast to the other books in this group, this textbook is designated by the publisher for students in grades 10 to 12. Therefore, the following calculations are based on an estimated readability of 10.0. It is interesting to note, however, that one of the local school districts uses this textbook in a ninth grade geography course.

The actual readability is 10.5+, with an index number of .05+. The numerical value of 10.5 indicates that this text may be appropriate for the majority of tenth grade readers. However, the plus (+) refers to the fact that two of the samples yielded raw scores above the maximum on the conversion table. For this reason, at least some parts of the text may not be understood by many tenth grade readers.

Hypothesis 2: As summarized in Table 12, there is a wide variation in the sample scores. Only samples 2 and 4, with index numbers of .07 and .08 respectively, fall within the confidence interval.

Hypothesis 3: This text reinforced only 31 percent of the new words a minimum of five times within the chapter of introduction.

Macmillan

Hypothesis 1: This text has an actual readability of 11.1+, which means that it will undoubtedly be frustrating for all but the gifted ninth grade reader. The index value of .19+ is not within the allowable confidence interval. Three of the samples produced raw scores above the maximum value on the conversion table.

Table 12. Holt, Rinehart & Winston (1985) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	10.0	10.0	10.0	10.0	10.0	10.0
Page Number	43	190	295	348	481	---
Number of Words	202	215	211	215	205	---
Number of Hard Words	50	45	48	47	31	---
Number of Sentences	19	18	18	19	16	---
Raw Score	8.4	7.7	8.1	7.8	6.4	---
Readability Score	11.3+**	10.7	11.3+**	10.9	8.1	10.5+*
Index Number	.12+**	.07	.12+**	.08	-.23	---

*Index No. .05+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Hypothesis 2: As indicated in Table 13, not one of the index numbers is within the confidence interval. All of the samples have readability scores of 10.7 or higher.

Hypothesis 3: Only 31 percent of the new words were reinforced a minimum of five times within the chapter of introduction. Of the total words, 16 percent were not reinforced at all.

Silver Burdett

Hypothesis 1: The actual readability of this text is 9.2+, with an index number of .02+. One sample yielded a raw score higher than the maximum value on the conversion table. The readability score, therefore, means that at least a portion of this text may not be suitable for ninth grade readers. The inconsistencies of the individual scores need to be given careful consideration as well as the mean.

Hypothesis 2: As shown in Table 14, there is a wide variation in the scores of the samples. The index numbers range from -.27 to .20+, with only samples 2 and 5 (-.01 and -.06 respectively) in the tolerable confidence interval.

Hypothesis 3: Only 16 percent of the new words were reinforced a minimum of five times within the chapter of introduction.

Comparative Analysis of the Ninth and Tenth Grade Textbooks

A summary of the data from the comprehensive evaluation of these six textbooks is summarized in Table 15. The actual readability scores ranged from 9.2+ on the Silver Burdett text to 11.2+ on the Harcourt Brace Jovanovich text. Of the thirty samples analyzed, only eight had

Table 13. Macmillan (1981) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	9.0	9.0	9.0	9.0	9.0	9.0
Page Number	80,81	178	308	443	567	---
Number of Words	206	206	204	201	206	---
Number of Hard Words	38	45	54	39	44	---
Number of Sentences	13	13	16	13	15	---
Raw Score	7.7	8.5	9.2	7.9	8.1	---
Readability Score	10.7	11.3+**	11.3+**	11.1	11.3+**	11.1+*
Index Number	.16	.20+**	.20+**	.19	.20+**	---

*Index No. .19+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Table 14. Silver Burdett (1980) Readability Data

Analysis Procedure	Sample Number					Means
	1	2	3	4	5	
Estimated Readability	9.0	9.0	9.0	9.0	9.0	9.0
Page Number	82	166,167	306	456,457	586,587	---
Number of Words	214	209	222	201	210	---
Number of Hard Words	45	31	25	32	34	---
Number of Sentences	15	13	14	11	17	---
Raw Score	8.1	6.8	5.9	7.5	6.6	---
Readability Score	11.3+**	8.9	7.1	10.3	8.5	9.2+*
Index Number	.20+**	-.01	-.27	.13	-.06	---

*Index No. .02+

**The raw score for this sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

Table 15. Comparison of Readability Data for Ninth and Tenth Grade Textbooks

Text	Designated Grade Level	Estimated	Actual	Index No.	Percent of Reinforcements		
					Less Than 5	5	More Than 5
Scott, Foresman (1989)	9-12	9.0	10.6+*	.15+*	81	19	0
McGraw-Hill (1989)	9-11	9.0	10.2+*	.12+*	52	5	43
Harcourt Brace Jovanovich (1989)	9**	9.0	11.2+*	.20+*	50	9	41
Holt, Rinehart & Winston (1985)	10-12	10.0	10.5+*	.05+*	69	8	23
Macmillan (1981)	9-12	9.0	11.1+*	.19+*	69	6	25
Silver Burdett (1980)	9	9.0	9.2+*	.02+*	84	4	12

*The raw score for at least one sample was higher than the maximum raw score (8.0) on the Harris-Jacobson conversion table.

**The grade level was assigned by the author on the basis of the publisher's statement of a Dale-Chall reading level of 9.2.

index numbers within the tolerable confidence interval. Four of the books contained two samples each. All of the texts, however, had samples with raw scores above the maximum value on the conversion table. The number of these samples within each textbook ranged from one to four. These raw scores were converted to readability scores of 11.3+. With the standard error of estimate of half a grade for the Harris-Jacobson formula, the true scores on these samples might fall as low as 10.8+. However, the passages would still be too difficult for the ninth grade readers and many of the tenth grade readers as well.

In all of the texts except one, the majority of new words were reinforced less than five times within the chapter of introduction. The percentage of new words that were adequately reinforced ranged from a low of 16 percent to a high of 50 percent.

Summary

This chapter analyzed the data from the comprehensive evaluation of twelve secondary level geography textbooks. Each book was discussed individually relative to the null hypotheses as presented in Chapter I. Comparative data was also given for the six seventh grade texts and the six texts for ninth or tenth grade.

CHAPTER V

CONCLUSIONS

Introduction

The purpose of this chapter is to discuss the results of the comprehensive evaluation procedures relative to twelve secondary level geography textbooks. The findings of this study suggest implications for publishers and teachers, as well as possibilities for further research.

Discussion

The textbooks were analyzed with the Harris-Jacobson Wide Range Readability Formula and the Worksheet for Analysis of Instructional Materials Beyond Readability Scales (Schindler, 1980). These instruments enabled this researcher to evaluate the textbooks and formulate conclusions as to their appropriateness for secondary level geography students. According to information obtained directly from the publishers, six of the texts were suitable for grade seven, five for grade nine, and one for grade ten.

The information collected in Chapter IV, however, indicates that at least portions of all the books are substantially more difficult than the estimated readability. These passages would be extremely frustrating for most readers at the designated grade level and especially for students in special education. The results of this research support Harrison's (1979) conclusion that many secondary level

texts, especially in science and social studies, make extraordinary demands of students.

Only the Globe publication, with an estimated readability of 7.0. and an actual readability of 7.7, was precisely within the confidence interval tolerable for this study according to the mean index number. Two other texts, Holt, Rinehart, and Winston and Silver Burdett, with index values of .05+ and .02+ respectively, had numerical values within the confidence interval; the plus (+) sign, however, indicates at least one sample above the Harris-Jacobson scale.

All of the books had sample scores that were highly inconsistent. With the Harcourt Brace Jovanovich and Macmillan texts it was necessary to look at the raw scores in order to determine their degree of consistency, because so many of the samples had readability scores of 11.3+. In the remaining texts, the smallest range was three grade levels. The inconsistencies of the sample scores mean that educators need to consider them as carefully as the mean score when evaluating the difficulty of a textbook.

Only 13, or 22 percent, of the 60 samples produced index numbers within the confidence interval for this study. The maximum number of such samples in one book was two. Therefore, the majority of the individual samples vary widely from the publisher's estimated readability. In fact, 18 of the samples, or 30 percent, yielded scores of 11.3+ because they had raw scores above the highest value on the conversion table. Considering the standard error of half a grade for the Harris-Jacobson formula, the true score of these samples might fall as low as 10.8. That difficulty level, however, would still be

inappropriate for all the readers with the possible exception of some of those in tenth grade.

None of the textbooks adequately reinforced the new words according to Kingsley's (1965) recommendation of a minimum of five times within the chapter of introduction. The percentage of new words in a text that were reinforced five or more times ranged from a low of 10 percent to a high of 50 percent. It is also important to note that 9.5 percent of the total new words in all the texts were merely introduced and never reinforced in the chapter of introduction. Considering the average number of repetitions necessary for word-recognition mastery, according to Gates' (1930) data, even five reinforcements may not facilitate a student's understanding of a new word.

Sometimes the publishers provided further reinforcement in the subsequent three chapters, especially if the chapter topics were related. However, this pattern of reinforcement was variable, with the number of repetitions for a single word ranging from zero to 52 across all texts.

The pattern of word introduction was varied as well. There was no equal distribution of the new words, with several texts having many more words introduced in the first sample than in the other two. These data are summarized in Table 16. These results support the studies of Haffner (1959) and Berry (1961), both of whom found an irregular distribution of the new words throughout geography textbooks. In Haffner's research, the vocabulary load was usually greatest in the first half of each book that he analyzed.

Table 16. Comparison of the Pattern of Word Introduction
for All Texts

Text	Sample Number		
	1	2	3
Charles E. Merrill (1989)	9	6	5
D. C. Heath (1989)	19	6	6
Scott, Foresman (7-8) (1988)	10	5	9
Globe (1984)	5	9	5
Steck-Vaughn (1983)	45	12	10
Follett/Allyn & Bacon (1983)	9	9	5
Scott, Foresman (9-12) (1989)	6	6	4
McGraw-Hill (1989)	10	4	7
Harcourt Brace Jovanovich (1989)	12	5	5
Holt, Rinehart & Winston (1985)	16	6	4
Macmillan (1981)	22	6	4
Silver Burdett (1980)	12	5	8

Implications for Publishers

Publishers of secondary level geography textbooks need to develop these materials with a much greater concern for their readability by the students in the grade level designations. They should give as much consideration to the readability as to the content. Unfortunately, however, many of the textbook authors may be specialists in the area of geography without being reading specialists as well. In addition, the renewed demand for higher academic standards may convince the publishers to actually raise the reading levels of their texts, making it increasingly difficult for low-ability students.

The mainstreaming of handicapped students into regular classrooms is an important issue here and should be carefully considered by publishers as they develop geography materials. The special education student with a learning disability already has a significant discrepancy between his potential and achievement. That discrepancy is further widened when he is required to read and learn from textbooks written above grade level.

Geography textbooks should be written for the student's independent reading level, because their primary purpose is to present information. Betts (1957) defines the independent level as the one at which a student displays only 1 percent word errors and comprehends 90 percent of the material. The majority of the textbooks in this study, however, were developed on the frustration level. At this level, students may be so intent on identifying the many unfamiliar words that they are unable to comprehend the passage.

Unfortunately, the field of geography contains a specialized terminology which is essential to comprehension of the subject matter. Publishers of geography materials can, however, exercise more rigid control over the number of unfamiliar words in their textbooks. They should provide for systematic introduction and repetition of vocabulary. The abundance of proper names in a geography text makes this control especially significant. The large percentage of unfamiliar words combined with the number of proper names means that these materials may be beyond the capabilities of even the average geography student.

Among the samples analyzed by this researcher, the one with the greatest discrepancy between the estimated and actual readability contained 66 unfamiliar words out of a total of 217 words. At 30 percent, this number places a tremendous vocabulary burden on the reader of the passage. Vocabulary load is an enormous barrier to successful reading (Betts, 1957), and publishers need to develop their geography textbooks with much more attention to vocabulary control.

Implications for Teachers

The results of this study strongly emphasize that teachers cannot automatically assume that the grade level designation for a textbook is accurate. Until publishers develop their geography texts with more concern for their readability, teachers must evaluate the materials themselves before using them with their students.

Ideally, teachers should provide instructional materials at several reading levels appropriate to the range of reading abilities within their classrooms (Nelson, 1978). If the use of materials at

various levels of difficulty is not possible and the readability of the required textbook is too high, then teachers must carefully consider the role of the text in the instructional program.

A geography text that is written on the student's frustration level should not be assigned for independent reading. Even with a large amount of teacher support, the reader will find it difficult to comprehend and maintain motivation. It will probably be necessary for teachers to rewrite portions of the material for use with these students.

If the textbook has not been developed with a controlled rate of vocabulary introduction and repetition, it is mandatory that the classroom teacher pre-teach the unfamiliar words and provide a pattern of systematic reinforcement to enhance the student's comprehension of reading assignments. O'Connor (1988) found that including "the language of mathematics" (p. 38) in daily math lessons made the lessons more meaningful, improved students' attitudes toward the subject area, and raised test scores. Systematic instruction of the new words in the geography text should produce equally significant results.

This researcher compared the new words in the sample chapters of all twelve texts with two lists of key words from The NEW Reading Teacher's Book of Lists (Fry, Fountoukidis, and Polk, 1985). The first list contained middle grade geography terms and the second list included social studies terms for students in grades 9 through 12. Only 26 percent of the new words appeared on the geography list and only 27 percent appeared on the social studies list. This small percentage discounts the value of teaching these lists of key words in isolation.

Furthermore, the vocabulary is more effectively taught in the context of the chapter in which it is introduced.

The degree of teacher support is a significant factor in the student's comprehension of geography materials that are inherently too difficult. The larger the discrepancy between the estimated readability and the actual readability the greater the necessity for teacher support in the form of vocabulary instruction, systematic reinforcement of the vocabulary, and guided reading activities. The establishment of this framework for reading is fundamentally important if students are to comprehend the essential facts and concepts in the subject area.

Suggestions for Further Research

The results of this study suggest several possibilities for further research. The first one would be to evaluate additional samples with the Harris-Jacobson formula in order to provide a more accurate mean readability score and to further clarify the consistency of the sample scores. This study of further passages could be facilitated by utilizing the Spell Check feature of the Word Perfect 5.0 program for the IBM-PC (see Appendix C).

A second option would be to evaluate the texts with another readability formula, such as the Dale-Chall, capable of producing a range of scores higher than the 11.3 on the Harris-Jacobson scale. This option would more precisely define the relative difficulty of the twelve textbooks. However, grade scores become less meaningful at these higher ranges. Similar to the concept of mental age, the concept of grade score becomes useless at adult levels. Relative to this study in

particular, there is very little difference between a reading level of 11.3, 12.0, or even 13.0 for textbooks with an estimated readability of 7.0, 9.0, or 10.0.

Standal (1981) presents a third possibility for further research by educators who want to measure the readability level of content material. If the teacher is committed to systematically teaching and reinforcing the new vocabulary words in the passage, the Harris-Jacobson formula would then be computed counting these new words as familiar, even though they do not appear on the readability list. This procedure, according to Standal, provides a more realistic measure of the difficulty level of the sample.

Finally, this researcher would be very interested in a study of the attitudes of students toward the subject of geography as compared to the difficulty of the text. Such an investigation might enlighten publishers and educators who feel that textbooks should be made even more difficult. As Americans increasingly become citizens of the world, the study of geography becomes more and more important. Equally significant is the fact that geographic knowledge provides a framework for the study of other subject areas, including history, political science, economics, foreign languages, and literature. It is essential that we promote the appropriate readability levels in order to keep students enrolling in geography classes and reading the geography textbook.

Summary

This chapter discussed the results of the comprehensive evaluation process relative to twelve secondary level geography textbooks. The findings of this study suggest implications for publishers and teachers, as well as possibilities for further research.

If a student closes the geography text in desperation over his inability to understand its contents, he will not acquire the knowledge and skills necessary to function as a citizen of the world. The importance of successful reading cannot be overemphasized, for reading is the means for learning in the secondary geography classroom.

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APENDIXES

APPENDIX A

Worksheet

Book Title:

Author:

Publisher:

Copyright Date:

Sample Number: 1 2 3 4 5

Pages of Sample:

- A. No. of words
- B. No. of hard words
- C. No. of sentences

Steps:

1. $V1 = B \div A \times 100$
2. $V2 = A \div C$
3. $V1 \times .245$
4. $V2 \times .160$
5. Step 3 + Step 4 + .642
= Predicted Raw Score
6. Step 5 rounded
7. Readability Score

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APPENDIX B

Worksheet for Analysis of Instructional Materials Beyond Readability Scales

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:

[illegible]

<u>List New Words</u>	<u>Number of times reinforced</u>	<u>Reinforcements in next 3 stories</u>

Looking at teachers manual, list skills to be taught in this lesson:

<u>Skills</u>	<u>Are they taught</u>

Skills to be taught or reinforced in workbook

Check appropriate observation
taught reinforced neither

APPENDIX C

Instructions for Setting up the Readability List, Sample Files and Hard Word Files

READ.LST (readability list)
SAMPLE.000 (test sample selection)
HARDWORD.000 (supplemental word list from SAMPLE.000)

SAMPLE.011 (textbook 1, sample 1)
 .012
 .013
 .014
 .015 (textbook 1, sample 5)
 .
 .
 .
Sample.121 (textbook 12, sample 1)
 .122
 .123
 .124
 .125 (textbook 12, sample 5)

This format can be used for up to 99 books with up to 9 samples in each book.

- Step 1. Enter the readability list in READ.LST. The Spell Check program will alphabetize the list automatically. Save on disk.
- Step 2. Delete the US from WP{WP}US.LEX and delete the file WP{WP}US.SUP. Exit Word Perfect to DOS.
- Step 3. Go into Speller Utility program (SPELL.EXE) by using the command "spell." Will say "can't find" and "create a new WP{WP}US.LEX?" Say Yes to create a new dictionary (ie. Readability List).

Note: To change the dictionary delete WP{WP}US.LEX from DOS directory and start over as follows:

- Step 4. Speller Utility/selections 0-9. Choose #2, "add words."
- Step 5. Selections 0-5. Choose #2, "add to common word list from a file." On the prompt to "enter file name," include root directory path in file name (ie. C:\WP50\READ.LST). Note: The common word list will only hold 1000 to 1200 words and any attempt to put more words into this list results in either

putting the computer into *please wait* or a rejection with "common word list full."

- Step 6. Selections 0-5. Choose #4, "add to main word list from a file." On the prompt to "enter file name," include root directory path in file name (ie. C:\WP50\READ.LST).
- Step 7. Choose #5 to exit.
- Step 8. Choose #4 to optimize.
- Step 9. Choose #5 to view the new dictionary "READ.LST."
- Step 10. Go to Word Perfect "Setup." Choose #7, Auxiliary Files. Set #4 Main Dictionary path to "C:\\" only. Check #7 Supplementary Dictionary. Path should be "C:\WP50".

Now call up a document to Spell Check, ie. SAMPLE.011. Use Ctrl F2 to operate the new Spell Check with the dictionary READ.LST. When the Spell Check highlights a word that is not a proper noun, press #3 (Add) to compile the supplementary dictionary, which will then be the list of hard words for that sample. When the Spell Check is completed, change the name of that file (WP{WP}US.SUP) to HARDWORD.011. (The file name should always correspond to the sample used to create it.) If the SUP file has not had its name changed, it will act as a dictionary for the next sample. The words that it contains would then not be detected as being unfamiliar.

Note: When using "word count" with the Spell Check, remember to:

- 1) subtract 2 words from the total for the title
- 2) subtract 1 word from the total for each hyphenated word

APPENDIX D

Harris-Jacobson List of Familiar Words

The following "Readability List" accompanies the Harris-Jacobson Wide Range Readability Formula to determine the percent of hard words in the formula calculations. With the exception of proper nouns, any word in the sample that is not included on this list is counted as an unfamiliar, or hard, word.

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READABILITY LIST

a	always	as	basket s
able r st	am	ask s ed ing	bat s 's ted ting
about	an	asleep	bath s
above	and	at	be
across	angry ier iest	ate	beach es ed ing
act s ed ing	animal s 's	aunt s 's	bean s
add s ed ing	another 's	awake d	bear s 's ing
afraid	answer s 's ed ing	away s	beat s ing
after	ant s 's	baby ies 's	beautiful ly
afternoon s 's	any	back s ed ing	beaver s 's
again	anybody 's	backyard s	became
against	anymore	bad dest ly	because
age s d ing	anyone 's	bag s ged ging	become s ing
ago	anything	bake s d ing	bed s ded ding
agree s d ing	anyway s	ball s 's ed	bedroom s
ahead	anywhere	balloon s 's ing	bedtime
air s 's ed y ily	apart	band s ed ing	bee s
airplane s 's	apartment s	bang s ed ing	been
alike	apple s 's	bank s 's ed ing	before
all	are	bar s 's red ring	began
alley s	aren't	bare s d ing r st ly	begin s ning
almost	arm s 's ed ing	bark s ed ing	behind
alone	around	barn s 's	being s
along	arrow s ed	base s 's d ing	believe s d ing
already	art s	baseball s 's	bell s 's ed
also	artist s 's	basement s	belong s ed ing

below	breeze s d	cattle 's	coming
belt s ed	bridge s 's d ing	caught	cook s 's ed ing
bench es ed	bright er est ly	cave s 's d ing	cookie s
bend s ing	bring s ing	center s 's ed ing	cool s ed ing er est
beside s	broke r	certain ly	ly
best	broken ly	chair s 's ed	copy ies 's ied ing
bet s ting	brook s	chance s d	corn y
better s ed ing	brother s 's ly	change s d ing	corner s ed
between	brought	charge s d ing	cost s ing ly
beyond	brown s ed	chase s d ing	could
big ger gest	brush es ed ing y	cheer s ed ing ily y	couldn't
bike s d ing	bug s ged ing	cheese s	count s 's ed ing
bill s ed ing	build s ing	cherry ies	country ies 's
bird s 's	buildings	chest s y	course s d ing
birthday s 's	built	chew s ed ing y	cover s ed ing
bit s	bump s ed ing y	chicken s 's	cow s 's ed
bite s ing	bunch es ed ing	chief s 's ly	cowboy s 's
black s ed ing er	bunny ies	child 's	coyote s 's
est ly	burn s ed ing	children 's	crab s bed bing
blackberry ies	bus es	chin s	crack s ed ing
blanket s ed ing	bush es ed y ily	chirp s ed ing	crash es ed ing
blew	busy ied ier iest	choose s ing	crawl s ed ing y
block s ed ing y	but	circle s 's d ing	crayon s ed
bloom s ed ing	butter 's ed ing y	circus es 's	cricket s
blow s ing	butterfly ies 's	city ies 's	cross es ed ing er
blue s 's r st	button s ed ing	clap s ped ping	ly
board s 's ed ing	buy s ing	class es ed ing y	crow s 's ed ing
boat s 's ed ing	by	classroom s	cry ies ied ing
bob s bed bing	cage s d y	clay s 's	cup s ped ping
body ies 's	cake s 's d ing	clean s ed ing est	curl s ed ing y
bone s d ing	call s ed ing	ly	cut s ting
book s 's ed	came	clear s ed ing er	dad s 's
boot s ed ing y	camp s 's ed ing y	est ly	daddy 's
born	can s ned ning	clever er est ly	dam s med ming
boss es 's ed y	can't	click s ed ing	dance s d ing
both	candle s	climb s ed ing	dandelion s
bottle s 's d	candy ies ied	clock s 's ed	dark s er est ly
bottom s	cannot	close s d ing r st ly	dash es ed ing
bought	cap s ped ping	cloth s	daughter s 's
bow s ed ing	captain s 's	clothe s d ing	day s 's
bowl s ed ing	car s 's	cloud s ed ing y	daylight s
box es ed ing y	card s ing	clown s 's ed ing	daytime s
boy s 's	care s d ing	clue s 's d	dear s 's er est ly y
brace s d ing	careful ly	coat s ed ing	decide s d ing
branch es ed ing	carrot s y	cock s ed ing y	deep s er est ly
brave s 's d r st ly	carry ies ied ing	coin s 's ed	deer 's
bread s ed	case s 's d ing	cold s er est ly	desk s
break s ing	castle s 's	collect s ed ing	detective s 's
breakfast s 's ed	cat s 's	color s ed ing	did
breath s y	catch es ing y	come s	didn't

die s d
different ly
dig s ging
dine s d ing
dinner s 's
dirt y
dish es ed ing
dive s d ing
do 's ing
doctor s 's ed ing
does
doesn't
dog s 's ged ging
doghouse s
doll s 's y
dollar s 's
don s ned ning
don't
done
donkey s 's
door s 's
doorbell s
doorway s
dot s ted ting
down s ed ing y
downstairs
Dr.
dragon s 's
draw s ing
dream s ed ing ily
y
dress es ed ing
drew
drink s ing
drive s ing
driver s 's
drop s ped ping
drove s
drum s med ming
dry ies ied ing ier
iest ly
duck s 's ed ing y
dug
during
dust s ed ing y
each
ear s
early ier iest
earth 's ly y
east

easy ier iest
eat s ing
eaten
edge s d ing
editor s 's
egg s ing
eight s 's
either
elephant s 's
elevator s 's
else 's
elves
empty ies ied ing
end s ed ing
enemy ies 's
enough
enter s ed ing
even s ed ly
evening s 's
ever
every
everybody 's
everyday
everyone 's
everything 's
everywhere
exact s ing ly
except ing
exchange s d ing
exercise s d ing
explain s ed ing
explore s d ing
extra s
eye s d ing
face s d ing
fact s ly
factory ies
fair s 's er est ly
fall s 's ing
fallen
family ies 's
far
farm s 's ed ing
farmer s 's
farther
fast ed ing est
faster
fat s ter test
father s 's ed ly
favorite s

fear s ed ing
feather s ed ing y
fed s
feed s ing
feel s ing
feelings
feet
fell s ed ing
felt s
fence s d ing
few er est
field s 's ed ing
flight s ing
fill s ed ing
final s ly
find s ing
fine s d r st ly
finger s 's ed ing
finish es ed ing
fire s 's d ing
first s ly
fish es 's ed ing
ily y
fishermen 's
fit s ted ting ter
five s
fix es ed ing
flap s ped ping
flash es ed ing y
flat s test ly
flew
flip s ped ping
float s ed ing
flood s ed ing
floor s ed ing
flour s y
flower s ed ing y
fly ies 's ied ing
fold s ed ing
follow s ed ing
food s
fool s 's ed ing
foot ing
for
forest s ed
forever
forget s ting
forgot
forgotten
forth

found ed ing
fountain s
four s 's
fox es 's ing y
free s d ing r ly
fresh er est ly
Friday s 's
friend s 's ly
frighten s ed ing
frog s 's
from
front s ed
fruit s ed
full er est y
fun
funny ies ier iest
funny-looking
fur s
fuzz y
gallop s ed ing
game s 's ing ly
garage s
garbage
garden s 's ing
gate s 's
gather s ed ing
gave
geese
geography
get s ting
ghost s 's ing ly
giant s 's
girl s 's
give s ing
given
glad dest ly
glass es ed y
go es ing
goat s 's
gold s
golden
gone
good s 's ly
good-by s
goodness
got
gotten
grab s bed bing
grade s d ing
grandfather s 's ly

grandma s 's	hid	interest s ed ing	leaf ed ing y
grandmother s 's ly	hidden	into	lean s ed ing er est
grass es y	hide s ing	invite s d ing	leap s ed ing
gray s ed ing er	high er est ly	is	learn s ed ing
great s er est ly	hill s y	island s 's	leather y
green s ing er est	him	isn't	leave s ing
grew	himself	it s	led
ground s 's ed ing	his	it's	left y
grow s ing	hiss es ed ing	itself	leg s 's ged ging
growl s ed ing	hit s ting	jam s 's med ming	lemon s ed
grown	hold s ing	jar s 's red ring	lesson s
guess es ed ing	hole s 's d y	jay s 's	let s ting
ha	home s 's ing ly y	jet s ted	let's
had	homework 's	job s 's	letter s ed ing
hadn't	honey ed	join s ed ing	library ies 's
hair s 's ed y	hop s ped ping	joke s d ing	lick s ed ing
half	hope s d ing	joy s	lie s d
hall s	horn s 's ed y	jump s ed ing y	life 's
hammer s ed ing	horse s 's ing y	junk	lift s ed ing
hand s 's ed ing y	hose s d	just ly	light s 's ed ing er
ily	hospital s 's	keep s ing	ly
hang s ed ing	hot ter test ly	kept	like s ing ly
happen s ed ing	hour s 's ly	key s ed	liked
happily	house s 's d ing	kick s ed ing	line s d ing
happy ier iest	how	kid s 's ded ding	lion s 's
hard er est ly	howl s ed ing	kill s ed ing	listen s ed ing
has	hug s ged ging	kind s er est ly	little r st
hat s 's	huge st ly	king s 's ly	live s ing
hate s d ing	hum s med ming	kiss es ed ing	lived
have ing	hundred s 's	kitchen s 's	lock s 's ed ing
haven't	hung	kite s 's	log s ged ging
he	hungry ier	kitten s 's	lonely ier iest
he'd	hunt s ed ing	knee s 's d ing	long s ed ing er est
he'll	hunter s 's	knew	look s ed ing
he's	hurry ies ied ing	knock s ed ing	loose d ing r ly
head s 's ed ing y	hurt s ing	knot s 's ted ting	lose s ing
hear s ing	I	know s ing	lost
heard	I'd	known	lot s 's
heavy ier iest	I'll	ladder s 's	loud er est ly
held	I'm	lady ies 's	love s 's d ing ly
hello s	I've	lake s 's	low ing er est ly
help s ed ing	ice s d ing	land s 's ed ing	luck ily y
helper s 's	idea s	language s	lunch es
hen s 's	if	lap s ped ping	lunchroom
her s	important ly	large r st ly	lunchtime
here	in	last s ed ing ly	lying
here's	indeed	late r st ly	ma 's
herself	indoor s	laugh s ed ing	machine s 's d
hey	inside s	lay s ing	mad der ly
hi	instead	lead s ed ing	made

magic 's	moon s 's ing y	nose s d ing y	parade s 's d ing
mail s ed ing	moonlight	not	park s 's ed ing
main ly	more	note s d ing	parrot s 's
make s	morning s 's	nothing 's	part s 's ed ing ly
making s	most ly	notice s d ing	party ies 's
mama 's	mother s 's ed ing	now	pass es ed ing
man s 's ned ly	ly	nowhere	past
many	mountain s 's	number s ed ing	paste d ing
map s 's ped ping	mouse 's d ing y	nut s ting	pat s ted ting
march es ed ing	mouth s 's ed ing	o'clock	patch es ed ing y
mark s ed ing	move s ing	ocean s 's	path s
market s ing	moved	of	paw s ed ing
marry ies led ing	movie s	off ing	pay s ed ing
mask s ed ing	Mr.	office s 's	pea s
matter s ed	Mrs.	officer s 's	peanut s
may	Ms.	often	peek s ed ing
maybe	much	oh	pen s ned ning
mayor s 's	mud	oil s 's ed ing y	pencil s ed
me	music	OK	penny ies
meadow s 's	must y	old s er est	people s 's d
mean s ing er est	my	on	pepper s ed y
meant	myself	once	perfect ed ly
measure s d ing	nail s ed ing	one s 's	person s 's
meat s y	name s 's ing ly	only	pet s 's ted ting
meet s ing	named	onto	phone s 's d
melt s ed ing	nap s ped ping	open s ed ing ly	piano s
men 's	near s ed ing er est	or	pick s ed ing y
meow s ed ing	ly	orange s	picnic s
message s	nearby	order s ed ing ly	picture s 's d ing
met	neck s	other s 's	pie s
mice	need s ed ing y	our s	piece s d ing
middle s	neighbor s 's ed	out s ing	pig s 's
might y ily	ing ly	outdoor s	pile s d ing
mile s 's	neither	outside s	pillow s ed
milk ed ing y	nest s ed ing	oven s 's	pin s ned ning
miller 's	net s ted ting	over ly	pink s er
mind s 's ed ing	never	overhead	pipe s d ing
mine s 's d ing	new s er est ly	owl s 's	place s 's d ing
minute s 's ly	newspaper s 's	own s ed ing	plain s er ly
mirror s 's ed ing	next	pack s 's ed ing	plan s ned ning
miss es ed ing	nice r st ly	page s d	plane s 's d
mix es ed ing	night s 's ly	pail s	plant s 's ed ing y
moan s ed ing	nine s 's	paint s ed ing	plate s d
mom s 's	no	painter s 's	play s 's ed ing
Monday s 's	nobody 's	paintings	player s 's
money s 's	nod s ded ding	pair s ed ing	playground s
monkey s 's	noise s	pan s ning	please s d ing
monster s 's	none	pant s ed ing	pocket s ed ing
month s 's ly	noon	papa 's	poem s 's
moo s ed ing	north 's	paper s 's ed ing y	point s ed ing y

pole s d ing y
 police d
 pond s 's
 pony ies 's
 pool s 's ed
 poor er est ly
 pop s 's ped ping
 popcorn
 porch es
 possum s
 pot s 's ted ting
 potato es 's
 pound s ed ing
 pour s ed ing
 practice s d ing
 present s ed ing ly
 press es ed ing
 pretend s ed ing
 pretty ied ier iest
 prince s 's ly
 print s ed ing
 prize s d
 probably
 problem s
 promise s d ing
 proud er est ly
 prove s d ing
 puff s ed ing y
 pull s ed ing
 puppy ies 's
 purple s d ing st
 purr s ed ing
 push es ed ing y
 put s ting
 puzzle s d ing
 quack s ed ing
 queen s 's
 question s ed ing
 quick er est ly y
 quiet ed ing er est
 ly
 quilt s ed ing
 quite
 rabbit s 's
 raccoon s
 race s 's d ing
 radio s 's ed
 rail s ing
 rain s 's ed ing y
 rainbow s 's

raise s d ing
 ran
 ranch es 's ing
 rang
 rat s 's
 reach es ed ing
 read s ing
 ready ied ing
 real ly
 red s 's der dest ly
 remember s ed ing
 repair s ed ing
 rest s ed ing
 return s ed ing
 rice ing
 rich es er est ly
 rid s
 ride s ing
 right s ed ing ly y
 ring s ed ing
 river s 's
 road s 's
 roar s ed ing
 robber s
 rock s ed ing y
 rode
 roll s ed ing
 roller s
 roof s 's ed
 room s 's ed ing y
 rooster s 's
 root s ed ing
 rope s 's d ing
 rose s
 rough s ed ing er
 est ly
 round s 's ed ing er
 est
 row s ed ing
 rub s bed bing
 ruler s 's
 run s ning
 runner s 's
 rush es ed ing
 rustle s d ing
 sack s ing
 sad der dest ly
 safe s r st ly
 said
 sail s 's ed ing

sale s
 salt s ed ing y
 same
 sand s 's ed ing
 sandwich es ed
 sandy
 sang
 sank
 sat
 Saturday s
 save s d ing
 saw s 's ed ing
 say s ing
 scare s d ing
 scary ier iest
 school s 's ed ing
 scientist s 's
 scold s ed ing
 scream s ed ing
 sea s 's
 seat s ed ing
 second s 's ed ly
 secret s ly
 see s ing
 seed s ed ing
 seek s ing
 seem s ed ing ly
 seen
 sell s ing
 send s ing
 sense s d ing
 sent
 sentence s d ing
 set s 's ting
 seven s 's
 shade s d ing
 shadow s 's ed ing
 y
 shake s ing
 shall
 shape s d ing ly
 share s d ing
 sharp er est ly
 she
 she'd
 she'll
 she's
 sheep 's y
 sheet s ed
 shell s ed ing

shine s d ing
 shiny ier iest
 ship s 's ped ping
 shirt s
 shoe s
 shook
 shoot s ing
 shop s ped ping
 shore s d ing
 short s ing er est ly
 y
 shot s
 should
 shoulder s ed ing
 shout s ed ing
 show s 's ed ing y
 shut s ting
 shy ied ing est ly
 sick er ly
 side s 's d ing
 sidewalk s
 sigh s ed ing
 sight s ed ing ly
 sign s 's ed ing
 signal s ed ied ing
 ling
 silly ies ier iest
 silver y
 since
 sing s ing
 sink s ing
 sir
 sister s 's
 sit s ting
 six es
 size s d ing
 skate s d ing
 sky ies 's
 sleep s ing ily y
 slept
 slid
 slide s ing
 slip s ped ping
 slow s ed ing er est
 ly
 small er est
 smart s ed ing er
 est ly
 smell s ed ing y
 smile s ing

smiled	stand s ing	tail s ed ing	thump s ed ing
smoke s 's d ing y	star s 's red ring	take s ing	thunder s ed ing
smooth s ed ing er	stare s d ing	taken	Thursday s 's
est ly	start s ed ing	talk s ed ing	tickle s d ing
snake s 's d ing	state s 's d ing ly	tall er est	tie s d
snap s ped ping	stay s ed ing	tap s ped ping	tiger s 's
sneaker s ed	step s ped ping	tape s d ing	tight s er est ly
sniff s ed ing y	stick s ing y	taste s d ing	till ed ing
snow s 's ed ing y	still s ed er	tea s	time s 's d ing ly
so	stomach s 's	teach es ing	tinkle s d ing
soap s ed y	stone s 's d	teacher s 's	tiny ier iest
sock s ed	stood	team s 's ed	tiptoe s d ing
soft er est ly	stop s ped ping	tear s ing y	tire s d ing
soil s 's ed	store s 's d ing	teeth	to
sold	storm s 's ed ing y	telephone s d ing	toad s 's
some	story ies 's ied	tell s ing	toast s ed ing y
someday	stove s 's	ten s 's	today s 's
somehow	straight er ly	tent s 's	toe s d ing
someone 's	strange st ly	terrible	together
something 's	stranger s 's	test s ed ing	told
sometime s	straw s	than	tomorrow s 's
somewhere	stream s 's ed ing	thank s ed ing	tonight 's
son s 's	street s 's	that	too
song s	stretch es ed ing	that's	took
soon er	strike s ing	the	tool s ed
sorry ier iest	string s ed ing y	their s	top s 's ped ping
sound s 's ed ing er	stripe s d	them	toss es ed ing
ly	strong er est ly	themselves	touch es ed ing y
soup s	stuck	then	toward s
south 's	stuff s 's ed ing y	there	towel s
space s d ing	such	there's	town s 's
spaceship s 's	sudden ly	these	toy s ed ing
speak s ing	sue d ing	they	track s ed ing
special s ly	suit s 's ed ing	they'll	trail s ed ing
spell s 's ed ing	summer s 's y	they're	train s 's ed ing
spend s ing	sun s 's ned ning	thin s ned ning ner	trap s ped ping
spent	Sunday s	nest ly	travel s ed led ing
spill s ed ing	sunny iest	thing s 's	tree s 's
spin s ning	super	think s ing	trick s 's ed ing y
splash es ed ing y	supper s 's	third s ly	tried
spoke s	suppose d ing	this	trip s ped ping
spoken	sure r st ly	those	trot s ted ting
spoon s 's ed ing	surprise s d ing	though	trouble s 's d ing
spot s ted ting	swam	thought s	truck s 's ed ing
spread s ing	sweet s er est ly	three s 's	true r st
spring s 's ing y	swim s ming	threw	trunk s
squirrel s 's	swing s ing	through	truth s
stack s ed ing	swung	throughout	try ies ing
stage s d ing	table s	throw s ing	tub s
stair s	tag s ged ging	thumb s ed ing	Tuesday

tug s ged ging	walk s ed ing	where	wonderful ly
tuna	wall s ed	where's	wood s ed y
turn s 's ed ing	wander s ed ing	wherever	wooden ly
turtle s 's	want s ed ing	which	wool ly y
TV 's	warm s ed ing er	while s d	word s 's ed ing y
twig s	est ly	whisper s ed ing	work s ed ing
two s 's	was	whistle s d ing	worker s 's
ugly ier iest	wash es ed ing	white s 's d r st ly	world s 's ly
umbrella s	wasn't	who	worm s ed ing y
uncle s 's	watch es ed ing	who's	worn
under	water s 's ed ing y	whole	worry ies ied ing
understand s ing	wave s d ing	why	worth y ily
understood	way s 's	wide r st ly	would
unhappy ier iest	we	wife 's	wouldn't
unite d ing	we'd	wild s er est ly	write s ing
untie s d	we'll	will s ed ing	writer s 's
until	we're	win s ning	written
up s ped	we've	wind s 's ed ing y	wrong s ed ly
upon	wear s ing	window s 's ed	wrote
upset s ting	weather s 's ed ing	wing s 's ed ing	yard s 's
upside	Wednesday s	wink s ed ing	year s 's ly
upstairs	weed s ed ing y	winner s 's	yell s ed ing
us	week s 's ly	winter s 's ed ing	yellow s ed ing er
use s d ing	welcome s d ing	wire s d ing	est y
valley s 's	well s ed ing	wise r st ly	yes
van s 's	went	wish es ed ing	yet
vegetable s	were	with	you
very	weren't	without	you'd
village s 's	west	woke	you'll
vine s	wet s ting ter ly	wolf 's ed	you're
visit s ed ing	what	woman 's ly	you've
voice s d ing	what's	women 's	young er est
wag s ged ging	whatever 's	won	your s
wagon s 's	wheel s 's ed ing	won't	yourself
wait s ed ing	when	wonder s ed ing	youth s 's
wake s d ing	whenever		zoo s

VITA

Judith C. Linn graduated from Duke University with a Bachelor of Arts degree in Elementary Education. After graduation, she taught second grade for three years in Tucson, Arizona. She has also taught fifth grade in Plano, Texas and substituted at all levels from kindergarten through sixth grade.

Her most recent full-time teaching assignment was at a private school for learning disabled students in Costa Mesa, California, where she worked at the primary level. This experience stimulated her interest in pursuing her master's degree in special education. She will receive a Master of Science degree in May 1989.