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A READABILITY FORMULA FOR THE ELEMENTARY SCHOOL BASED UPON THE RINSLAND VOCABULARY

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CHAPTER I

THE PROBLEM: ITS BACKGROUND AND DEFINITION

Introduction

"Reading is one of the chief means by which persons gain information, skills and entertainment. The effectiveness with which books, newspapers, magazines and pamphlets convey this information remains an important problem."[1]

The study reported here is concerned with investigating easily identifiable elements in elementary school reading materials in terms of a readability formula. A specific statement of the problem will follow the identification of concepts and research in this area.

For many years, one of the areas of interest for educators has been this problem of reading difficulty. More than one hundred years ago, McGuffey began the attack on the problem of readability by compiling a series of graded

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[1]Edgar Dale and Jeanne S. Chall, "The Concept of Readability," Elementary English, XXVI (January, 1949), p. 23.

readers for school children.[2] Since the time of McGuffey, texts have been written with the idea of interest and appeal in mind. These factors, along with typography and vocabulary, have been recognized as factors which affect the ease with which material is read.

The Concept of Readability

Readability has been defined by Dale and Chall:[3]

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

The Basic Purpose of Research in This Area

The basic purpose of research in this area has been prediction and control of success with reading material. Although tools have not been devised that will control and predict a person's success with a particular piece of reading material, certain tools have been devised that will predict the success of certain groups of people with particular reading materials on the basis of interest, comprehension and speed.

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[2]William S. Gray, "Progress in the Study of Readability," The Elementary School Journal, XLVII (May, 1947), p. 492.

[3]Dale and Chall, loc. cit.

The Basic Research in Readability

The basic research of Vogel and Washburne[4] (1928) in estimating the grade placement of children's reading material provided not only the general method of measuring readability but also developed the fundamental concept. Vogel and Washburne considered the idea implicit in the readability index of the text as the average amount of reading ability needed to understand the text. Their attempts devolved into an empirical classification of books for particular grades based not only upon expressed preferences of children for certain books, but also upon the measured reading abilities of those children.

Vogel and Washburne used the paragraph meaning section of the Stanford Achievement Test in determining the measured reading ability of children. In addition to this, over thirty-six thousand children completed a ballot that indicated books they had read and liked during the preceding school year. At least twenty-five children indicated that they had both read and enjoyed approximately seven hundred different books. Vogel and Washburne assumed that the average reading ability of the children reading and enjoying the books would suggest the readability of the works. As a result

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[4]Mabel Vogel and Carleton Washburne, "An Objective Method of Determining Grade Placement of Children's Reading Material," The Elementary School Journal, XXVIII (January, 1928), pp. 373-381.

their publication of the Winnetka List[5] gives selections from grade two to grade eleven.

Basically, the contribution of Vogel and Washburne was to relate their grade placement index to some characteristics of the material read. Factors, other than commonness of vocabulary, were selected that would correlate as little as possible with one another and highly as possible with the median reading score of the children who read and enjoyed the books measured.

Below are the correlations of the various elements as they relate to the median reading score:[6]

	Element	Correlation
1.	Number of different words occurring in a sample of 1000 words (Based on Thorndike's Teachers Word Book)	.770
2.	Median Index Number (Thorndike's list) of 1000 word sampling	-.704
3.	Number of words in 1000 word sampling not occurring in Thorndike's list	.674
4.	Number of words in book	.592
5.	Number of phrases in 1000 word sampling	.576
6.	Number of verbs in 1000 word sampling	-.527
7.	Number of words per paragraph	.518
8.	Number of prepositions in 1000 word sampling	.518
9.	Number of phrases of all kinds in 75 sample sentences	.474
10.	Number of phrases and clauses of all kinds in 75 sample sentences	.467
11.	Number of adverbial phrases and clauses in 75 sample sentences	.467
12.	Number of adverbial phrases and clauses of all kinds in 100 word sampling	.463
13.	Number of adjectival phrases and clauses in 75 sample sentences	.458

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[5]Carleton Washburne and Mabel Vogel, Winnetka Graded Book List (Chicago: American Library Association, 1936).

[6]Vogel and Washburne, op. cit., p. 376.

14.	Number of adverbial phrases in 75 sample sentences	.458
15.	Number of words in 75 sample sentences	.453
16.	Number of simple sentences in 75 sample sentences	-.371
17.	Number of conjunctions in 1000 word sampling	.296
18.	Number of adverbial clauses in 75 sample sentences	.291
19.	Number of nouns in 100 word sampling	-.262

Various combinations of ten elements were found by a series of multiple correlations. The best multiple correlation made on the basis of a regression equation which predicted with the highest degree of reliability the reading score for any given book was:[7]

$$X_1 = .085X_2 + .101X_3 + .604X_4 + .411X_5 + 17.43$$

where:

X_1 = Reading score on the paragraph section of the Stanford Achievement Test
X_2 = Number of different words in 1000 words
X_3 = Number of prepositions in 1000 words
X_4 = Number of uncommon words (Thorndike's list)
X_5 = Number of simple sentences in 75 sample sentences

Vogel and Washburne indicated that their formula was not concerned with content difficulty, but, primarily, with measurable structural elements and the prediction of a criterion on the basis of observable variables. These structural difficulties are usually revealed by the number of prepositions, complicated sentence structure, uncommon or difficult words and the like. Their article concludes with the following statement: "Any book for use in the elementary school

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[8] Ibid., p. 379.

may be similarly analyzed. It is, therefore, possible to determine the correct grade placement for any book so far as structural difficulty is concerned."[8]

The basic research in this field has been summarized by Lorge in terms of the more usual items that are used in measuring readability:[9]

1. Some measure of vocabulary (always used)
   a. Number of running words
   b. Percentage of different words
   c. Percentage of different, infrequent, uncommon or hard words
   d. Percentage of polysyllabic words
   e. Some weighted measure of vocabulary difficulty
   f. Vocabulary diversity (related to b)
   g. Number of abstract words
   h. Number of affixed morphemes (prefixes, inflectional endings, etc.)
2. Some measure of sentence structure of style (usually used)
   a. Percentage of prepositional phrases
   b. Percentage of indeterminate clauses
   c. Number of simple sentences
   d. Average sentence length
3. Some measure of human interest (much less frequently used)
   a. Number of personal pronouns
   b. Number of words expressing human interest
   c. Percentage of colorful words
   d. Number of words representing fundamental life-like situations
   e. Number of words usually learned early in life (related to b)

Related Research in Readability

There are, generally, two lines of investigation in readability. The first emphasizes vocabulary and does not

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[8] Ibid., p. 380.

[9] Irving Lorge, "Predicting Readability," Teachers College Record, XLV (March, 1944), p. 405.

result in a readability formula as considered in this study. The results are in terms of elements, the presence of which indicate level of difficulty. The studies reported here are indicative of this type of investigation and are included as illustrative material. The second approach is an attempt to identify relationships among different variables in a passage and to determine readability. Three of these investigations of this type by Lorge, Flesch, and Dale and Chall, most nearly approximate the present investigation. The basic similarity is that of the criterion: namely, all of these studies employ the 1929 edition of McCall-Crabbs Standard Test Lessons in Reading.[10]

The studies in the first classification, employing vocabulary as the major element, are listed in Table 1.

TABLE 1

STUDIES EMPLOYING VOCABULARY AS THE MAJOR ELEMENT OF READABILITY

Author(s)	Date	Elements
Lively and Pressey[11]	1923	1. Vocabulary range (number of different words per 100) is related to reading difficulty.

[10]William A. McCall and Lelah Mae Crabbs, Standard Test Lessons in Reading (New York: Bureau of Publications, Teachers College, Columbia University, 1929).

[11]Bertha A. Lively and S. L. Pressey, "A Method of Measuring the 'Vocabulary Burden' of Textbooks," Educational Administration and Supervision, IX (October, 1923), pp. 389-398.

TABLE 1--Continued

Author(s)	Date	Elements
		2. Zero value words (words not on Thorndike list) are related to reading difficulty.
Keboch[12]	1927	1. The number of words listed in the second 5000 words of the Thorndike list is related to reading difficulty.
Lewerenz[13]	1929	1. Words beginning with w, h or b are indicative of reading ease and words beginning with i or e are related to reading difficulty.
Johnson[14]	1930	1. The number of polysyllabic words in a passage is related to reading difficulty.
Patty and Painter[15]	1931	1. The number of different words in a passage is related to difficulty. 2. The weighted index of words on the Thorndike list is related to reading difficulty.

[12]F. D. Keboch, "Variability of Word Difficulty in Five American History Textbooks," Journal of Educational Research, XV (January, 1927), pp. 22-26.

[13]Alfred S. Lewerenz, "Measurement of the Difficulty of Reading Materials," Educational Research Bulletin, Los Angeles Public Schools, VIII (March, 1929), pp. 11-16.

[14]George R. Johnson, "An Objective Method of Determining Reading Difficulty," Journal of Educational Research, XXI (April, 1930), pp. 283-287.

[15]W. W. Patty and W. I. Painter, "Improving Our Method of Selecting High School Textbooks," Journal of Educational Research, XXIV (June, 1931), pp. 23-32.

TABLE 1--Continued

Author(s)	Date	Elements
Washburne and Morphett[16]	1938	1. The number of different hard words; i.e., words which are not included on the Winnetka list are a measure of difficulty. 2. The Winnetka list is composed of words included in the 1500 most common words on the Thorndike list.
Yoakam[17]	1939	1. The weighted index figure based upon the Thorndike list is a measure of difficulty.
Dolch[18]	1948	1. Average sentence length in words, the upper tenth of long sentences, plus the first 1000 words on Dolch's "First 1000 Words for Children's Reading" are a measure of reading difficulty.

The studies in the second classification, employing relationships as major elements are listed in Table 2.

[16]Carleton Washburne and Mabel Morphett, "Grade Placement of Children's Books," Elementary School Journal, XXXVIII (January, 1938), pp. 355-364.

[17]G. A. Yoakam, "How Difficult Are Textbooks?" The Elementary English Review, XXII (December, 1945), pp. 304-309.

[18]E. W. Dolch, Problems in Reading (Champaign, Illinois: Garrard Press, 1948).

TABLE 2

STUDIES EMPLOYING RELATIONSHIPS AS THE MAJOR ELEMENTS OF READABILITY

Author(s)	Date	Elements
Dale and Tyler[19]	1934	1. The correlation between number of different technical words and the number of non-technical words, the number of prepositional phrases and the number of words beginning with the letter i are measures of difficulty
Gray and Leary[20]	1935	1. The relationship of structural elements; namely, sentence length, vocabulary, personal pronouns and prepositional phrases are a measure of difficulty.
Lorge[21]	1939	1. The relationship between a weighted vocabulary (Thorndike's list), average sentence length, the number of prepositional phrases, and the grade score of a child who answered one-half the questions correctly on the McCall-Crabbs Standard Test Lessons in Reading are a measure of reading difficulty.

[19]Edgar Dale and Ralph W. Tyler, "A Study of the Factors Influencing the Difficulty of Reading Materials for Adults of Limited Reading Ability," The Library Quarterly, IV (July, 1934), pp. 11-19.

[20]William S. Gray and Bernice Leary, What Makes A Book Readable (Chicago: University of Chicago Press, 1935).

[21]Irving S. Lorge, "Predicting Reading Difficulty of Selections for Children," Elementary English Review, XII (1939), pp. 220-233.

TABLE 2--Continued

Author(s)	Date	Elements
Flesch[22]	1943	1. The relationship between the number of affixed morphemes, number of personal references, and the grade score of a child who answered one-half the questions correctly on the McCall-Crabbs *Standard Test Lessons in Reading* are a measure of difficulty.
Dale and Chall[23]	1948	1. The relationship between average sentence length, relative number of hard words (words outside the Dale list of 3000 words) and the grade score of a child who answered one-half the test questions correctly on the McCall-Crabbs *Standard Test Lessons in Reading* are a measure of difficulty.

According to Klare and Buck,[24] the six most prominent, published studies measuring the readability of children's materials are those of Lively-Pressey, Johnson, Washburne and Morphett, Lorge, Dolch, and Vogel and Washburne. The work of Dale and Chall has been added by the writer as another promising method.

[22]Rudolf Flesch, "A New Readability Yardstick," *Journal of Applied Psychology*, CXXXII (June, 1948), pp. 221-233.

[23]Dale and Chall, *op. cit.*, pp. 11-20.

[24]George R. Klare and Byron Buck, *Know Your Reader* (New York: Hermitage House, 1954), pp. 100-101.

Since this study deals with the problem of readability, in the area of children's reading, it is necessary to note the basic vocabulary study employed by each of the major studies mentioned above. This material is found in Table 3.

TABLE 3

BASIC VOCABULARIES EMPLOYED IN OTHER READABILITY STUDIES

Study	Date	Vocabulary Study Employed
Lively and Pressey[25]	1923	In 1921, Thorndike first published his word list. He included counts of words from literature for children, words from elementary school textbooks, words from books about cooking, sewing, farming, the trades, words from daily papers and correspondence.
Vogel and Washburne[26]	1928	
Johnson[27]	1930	Johnson employed the 1921 edition of Thorndike's list in order to find the number of polysyllabic words he employed in his study.
Washburne and Morphett[28]	1938	In 1931, Thorndike made counts from over 200 additional sources and included these with the basic study. The 1500 most common words found in Thorndike's list are referred to as the Winnetka List.

[25]Lively and Pressey, op. cit.

[26]Vogel and Washburne, op. cit.

[27]Johnson, op. cit.

[28]Washburne and Morphett, op. cit.

TABLE 3--Continued

Study	Date	Vocabulary Study Employed
Lorge[29]	1939	The Dale List of 769 words is made up of words which are common to Thorndike's first thousand words known by children entering the first grade and determined through a series of interviews.
Dolch[30]	1948	The Dale List was increased to 1000 words by additions from interviews with children entering the fourth grade. Words known to 75 children out of 100 were included.
Dale and Chall[31]	1948	The Dale List (based upon Thorndike's and Dolch's work) was increased to 3000 words by testing fourth graders on their knowledge of approximately 10,000 words. If approximately eighty per cent of the children knew the word, it was included in the word list.

Statement of the Problem

Purpose

The purpose of this study is to develop a readability formula based upon Rinsland's A Basic Vocabulary of Elementary

[29]Lorge, "Predicting Reading Difficulty of Selections for Children."

[30]Dolch, op. cit., pp. 111-129.

[31]Dale and Chall, op. cit., pp. 11-20.

School Children.[32] Since previous readability formulae have been based upon Thorndike's word lists or adaptations of those lists, and since the lists were primarily from adult writings (Thorndike) or a combination of Thorndike's lists and children's vocabularies (Dale and Dolch), the statements which follow are basic to the purpose of this study.

The written vocabulary of an adult is not a valid criterion for a basic reading word list for elementary school children.

A combination of adult's and children's vocabularies is not a valid criterion for a basic reading word list. This method results in neither an adult's vocabulary nor a child's vocabulary. No one knows what the adding of children's and adults' word frequencies means. They are not addable.

Children, especially in the elementary school, do not choose words with the same frequency as adults, and adult usage is, therefore, a more or less invalid criterion.

The Rinsland study employs words used by children in their conversations and written expression in the first eight grades. Since the study is made up of children's words, the basic reading vocabulary derived will be valid in terms of children's basic vocabulary.

The Rinsland word list is a valid source for children's vocabulary, and the method of counting words is

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[32]Henry D. Rinsland, A Basic Vocabulary of Elementary School Children (New York: The Macmillan Company, 1945).

essential. The Rinsland study gives the syntactical form of each word. The basic reading vocabulary in this study is in order to total frequency of each word and word form. (See Appendix A for an explanation of the method used.)

The selection of approximately 3000 words of the highest frequency from the entire derived reading list of nearly 6000 words will serve as an adequate statistical device in computing level of difficulty. Precedence for this is established by Dale and Chall:[33]

> For purposes of computing a level of difficulty, however, the percentage of words outside this list of approximately 3000 words is a very good index of difficulty of reading materials. The terms 'familiar' and 'unfamiliar' describing words are therefore used here in a statistical sense.

Selection of Criterion

The tests selected to ascertain the average reading score of children are the McCall-Crabbs Standard Test Lessons in Reading.

Selection of Criterion Variables

The variables included in the study have been chosen to meet the following criteria:

1. Variables that are easily employed by teachers, writers, editors, and other interested in employing the formula. The implication of this limitation is that the elements must be easily identifiable.

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[33]Dale and Chall, op. cit., p. 18.

2. Variables that have been found, by previous investigators, to be correlated with the criterion employed and not highly correlated with one another. These variables, because of their relationship to the criterion, will be referred to as criterion variables.

Selection of Academic Level

This study is concerned with the elementary grades. Specifically, grades two through eight have been included. This limitation is set by the McCall-Crabbs Standard Test Lessons in Reading.

Selection of Lessons Employed

The selections employed in this study are chosen from standardized test lessons in reading. Since the instrument employed is standardized, the choice of these passages has been limited to a total of fifty lessons chosen at random with the aid of a table or random numbers.[34] The experimental nature of this study, the factors of time, expense, and staff determined this procedure.

Experimental Procedure

A description of the procedure followed will be presented. The results of the study as well as the interpretations, and findings will be presented in later chapters.

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[34]The Rand Corporation, A Million Random Digits with 100,000 Normal Deviates (Glencoe, Illinois: The Free Press, 1955).

Selection of Basic Material to Be Used

In determining the measured reading ability of children, the method employed by the study required a standardized test that would indicate not only grade level scores, but also would yield variables that would predict a given level of reading. The McCall-Crabbs Standard Test Lessons in Reading were used also by Lorge, Flesch, and Dale and Chall.

Studies cited above employed the 1929 edition of the McCall-Crabbs Standard Test Lessons in Reading, as previously mentioned. Since that time, a 1950 edition of the lessons has been issued and this edition has been used for this study.

The Testing Procedure

To set criterion data for grade placement of reading abilities of children in grades two through eight, tests were administered to a total of 406 children in the Midwest City, Oklahoma, school system. The writer contacted the principal of each school and a uniform method of testing was secured by preparation of directions for testing. (See Appendix B.) Recognizing the factors of time and age, each grade level from grade two through eight was given ten tests, with each test requiring three minutes for a total of thirty minutes for the testing program. The entire testing procedure, including fifteen minutes allowed for mechanics, required only one period of forty-five minutes for each group tested.

No attempt was made to select the pupils. The pupils

in each grade who were present at the time of the test administration were counted as the entire population of that grade. The only stipulation was that approximately sixty pupils in each grade level were to be tested since that number most nearly approximated the number of pupils in the grades of those schools. The group taking the tests represented ninety-seven per cent of all the pupils of the schools selected. The lowest individual per cent per grade was ninety-two in grade six. Because a large proportion of the total group took the tests and because the subjects were not selected in any way, the subjects were treated as the total population in dealing with this phase of the data.

Within a period of two weeks following the administration of the tests, the individual scores of the students taking the tests were reported to the co-operating schools as average reading scores.

Statistical Treatment of the Test Scores

The score (number of questions answered correctly) made by each pupil on this standardized test is in terms of grade scores. A frequency distribution was made of the grade level scores showing the total number of students taking the test in each grade. The Q_3, median, Q_1 and the range of scores were computed.

Treatment of the Basic Data

Dr. Irving Lorge of Teachers College, Columbia University completed the initial study involving a count of

reading variables in 1938 and his data sheets were the basis for similar work done by Flesch, and Dale and Chall. In order that this research technique might be more carefully analyzed, the writer contacted Dr. Lorge. His data sheets were made available.

Each of the data sheets was analyzed to determine the methodology employed, and sample criterion variables were re-computed on the basis of the 1929 edition of Book V of the McCall-Crabbs Standard Test Lessons in Reading.

Using the same basic technique as employed by previous investigators in this area, the criterion for the present study was established. This is, simply, the reading grade score of a pupil who could answer one-half of the test questions correctly as indicated by the standardized grade score. The value of the criterion is that the criterion variables found in the selections used, predict the level of reading difficulty.

In turn each of the criterion variables was examined in the light of the criteria established for their selection. As previously mentioned, these criteria were those elements easily identifiable, frequently employed and known to be of predictive value.

A distribution was prepared that showed the basic raw data obtained from the criterion variables and also the percentages based upon the raw data of each selected lesson.

Following the counting and tabulation, a readability

formula was calculated on the basis of a regression equation following the suggestion of Garrett:[36]

> In problems involving more than four variables, the mechanics of calculation become almost prohibitive unless some systematic scheme of solution is adopted. The Wherry--Doolittle test selection method . . . provides a method of solving certain types of multiple correlation problems . . . this method selects analytically and adds them one at a time until a maximum R is obtained . . . By use of the Wherry-Doolittle method, we can (1) select those tests which yield a maximum R with the criterion and discard the rest; (2) calculate the multiple R after the addition of each test; stopping the process when the R no longer increases; (3) compute the multiple regression equation from which the criterion can be predicted with the highest precision of which the tests are capable.

Overview of the Following Chapters

In Chapter II, the empirical data of the study are presented and analyzed. The regression equation is proposed. Chapter III presents the application of the formula to elementary reading material with illustrations and the basic reading word list.

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[36]Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1944), p. 404.

CHAPTER II

PRESENTATION AND ANALYSIS OF DATA

In this chapter, the empirical data of the study are presented and analyzed. These data are discussed in the following order: (1) the selection of the criterion and variables, (2) the tests administered in Midwest City and their relationship to the study, (3) the count and use of the variables in the tests employed, and (4) the correlations and regression equation.

Selection of the Criterion and Criterion Variables

The selected criterion against which all selected variables are compared was the reading score established for correct responses to one-half of the questions appended to each lesson. The computation of the criterion took two forms because it fell between two recorded scores when there was an even number of questions and on a specific score when there was an odd number of questions. Illustrative computations are described.

The determination of the criterion for a lesson having ten questions illustrates the first case. The score for zero

questions right was not considered. Half of the questions right fell between the score for five questions right (6.4), and six questions right (7.0). The difference between these scores is .6. This was divided by two in order to secure one-half the difference between the scores and .3 was added to 6.4. The criterion for this lesson was 6.7.

The determination of the criterion for a lesson having eleven questions illustrates the second case. The score for zero questions right was not considered. The grade score for half of the questions right fell on six questions right (6.4). The criterion for this lesson was 6.4.

The method used above was the one employed by Lorge. Since Flesch, and Dale and Chall employed the identical original counts, their computations for the criterion were the same.

The selection of criterion variables employed were required to meet the stipulations listed in the statement of the problem. The criteria were:

1. Variables that are easily employed by teachers, writers, editors, and others interested in employing the formula. The implication of this limitation is that the elements must be easily identifiable.
2. Variables that have been found, by previous investigators, to be correlated with the criterion employed and not highly correlated with one

another.

An examination of the research reported in the previous chapter reveals that the following variables are most frequently employed:

1. A basic vocabulary
2. Prepositions or prepositional phrases
3. Simple sentences
4. Polysyllabic words
5. Average sentence length
6. Some measure of difference in vocabulary

A basic vocabulary is defined in this study as one that has been prepared for the purpose of determining the words known by a group for which the formula is to be used. The function of the vocabulary, as in other studies, has been to determine an independent variable that could be used in a statistical sense to predict the level of difficulty of a given passage.

Each criterion variable employed in this study has the same significance: the ability of the criterion variable to predict the level of difficulty of a given passage.

Prepositions and prepositional phrases as considered in this investigation are defined as: "The group of words (without subject and predicate) that is introduced by a preposition is called a prepositional phrase."[1] A second

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[1]Bertha M. Watts, Modern Grammar at Work (Boston: Houghton Mifflin Company, 1944), p. 271.

definition states: "A prepositional phrase is a group of words that includes the preposition, . . . the noun or the pronoun that is its object, and other words that modify the noun or pronoun."[2]

Because the prepositional phrase includes the preposition, this study has employed a count of prepositions with the following limitations: An infinitive such as to go does not contain a preposition and is not counted. The consensus of opinion appears to follow this line of reasoning. "The word before an infinitive is not a preposition."[3] Fries states the same basic ideas as: "The significance of to has lost practically all meaning . . . except as a marker for the infinitive."[4] Cowdy states: "The infinitive is often preceded by to . . . but this is not (always) a true preposition but usually merely a mark or sign of the infinitive."[5]

Phrasal prepositions are to be considered as units and counted as such. For example, according to is counted as one preposition.

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[2]Alexander Stoddard, Matilda Bailey, and Rosamond McPherson, English (New York: American Book Company, 1951), p. 409.

[3]Mary C. Foley, et al., Language for Daily Use (Yonkers-on-Hudson, New York: Appleton Century Croft, 1940), p. 131.

[4]Charles Carpenter Fries, American English Grammar (New York: Appleton Century Croft, 1940), p. 131.

[5]Chestine Cowdy, English Grammar (Boston: Allyn Bacon, 1929), p. 206.

> Often prepositional groups may be considered as units and not separated into their component parts. They are then called phrasal prepositions. Among the phrasal prepositions are according to, as far as, as for, by means of, for sake of, in addition to, in case of, in contrast with, in lieu of, in place of, with reference to, by virtue of, in terms of.[6]

A simple sentence may be defined as a sentence that has but one subject and one predicate. The simple sentence may have a compound subject and/or a compound predicate. Kittredge and Farley define a simple sentence as: "A simple sentence has but one subject and one predicate, either or both of which may be compound."[7] Foley defines a simple sentence as: "A simple sentence has only one subject and one predicate, but either or both the subject and predicate may be compound."[8]

A polysyllabic word as defined in this study is a word that has more than three syllables. Webster's New Collegiate Dictionary defines polysyllabic as: "Having, or characterized by more than three syllables."[9]

Average sentence length may be defined as the average number of words in the sentences employed. For example, if

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[6]Bertha M. Watts, Modern Grammar at Work (Boston: Houghton Mifflin Company, 1944), p. 273.

[7]George Lyman Kittredge and Frank Edgar Farley, An Advanced English Grammar (Boston: Ginn and Company, 1913), p. 18.

[8]Foley, et al., op. cit., p. 166.

[9]Webster's New Collegiate Dictionary (Springfield, Massachusetts: G. & C. Merriam Co., 1951), p. 655.

there were three sentences in a given selection having a total of thirty words, the average sentence length would be ten words for the selection.

Some measure of difference in vocabulary may be a weighted index, the number of different words, and the like. A weighted index may be defined as a numerical value arbitrarily assigned to words of a given frequency. For example, the first five hundred most commonly used words in a vocabulary may be assigned a numerical value of one, and the next five hundred most commonly used words a numerical value of two. This weighting gives the weighted index number. This investigation employed different words found in each selection used.

Certain criterion variables were omitted because they did not meet the requirements set up for their selection. The following criterion variables were deleted on the basis that they were difficult to identify and used infrequently: abstract words, personal pronouns, words expressing human interest, colorful words, words representing fundamental life-like experiences, indeterminate clauses, words usually learned early in life, and affixed morphemes.

For purposes of illustration, affixed morphemes were dropped because it was found that it was difficult to be certain that all affixes were counted. Following the procedure of other investigators, two people were asked to count the number of affixes in a given passage. The count was not

the same. Much the same evidence was found by Dale and Chall:[10]

> On the whole we found the formula adequate (Flesch's formula). However, we also found some shortcomings. The most serious shortcoming was the count of affixes, which we found to be rather arbitrary, in the sense that two people making a count on the same sample would usually come out with a different number of affixes. If we were extremely careful and consulted a dictionary to be certain that all affixes were included and that no non-affixes were included, we found that the work was too time consuming.

A second illustration points out the reason for the omission of personal pronouns. Dale and Chall, in reporting upon the use of personal pronouns, state:[11]

> A recent article in the "American Psychologist" by S. S. Stevens and Geraldine Stone reported that Koffka's Principles of Gestalt . . . had a predicted Flesch score much lower than had been expected. In fact, it came out only a little higher than elementary textbooks in psychology. . . . This reference has 7 personal pronouns per hundred words.

A final point to be made here is that this study attempts to parallel the investigations of those using the same criterion. Under the section dealing with studies using relationships, these investigations have been covered.

Tests Administered in Midwest City, and Their Relationship to the Study

The McCall-Crabbs Standard Test Lessons in Reading are divided into five levels. These levels are: Book A for

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[10]Dale and Chall, op. cit., p. 2.

[11]Ibid., p. 4.

grades two and three, B for grade four, C for grade five, D for grade six, and E for grades seven and eight. Within each book are standardized lessons. The scores are grade scores based upon the number of questions answered correctly.

Each child answered questions based upon ten lessons in the booklet given him. As previously mentioned, the tests within each book were selected upon the basis of a random sample. This assured that each test had an equal opportunity of being selected. Since the tests are standardized, it may be assumed that the selection of the tests is valid. From the test results, an average reading score for each child was computed.

The distribution of grade scores is shown in Table 4. The table illustrates two significant points. The range of scores in each grade exceeds the grade limitations; that is, grade two, for example, has a range from 2.2 through 4.5, and grade three shows a range from 2.2 through 5.7. Examination of the other grades shows ranges that increase as the grade level increases. The point confirmed here is that there is rarely such a thing as an entire group of readers that could be classified as reading within a given grade level, unless specifically selected. Thus, a readability formula can be used to determine the grade level of material that could be used within the range of a given class.

The second point that Table 4 illustrates is that children within the grades tested do not progress at a grade

TABLE 4

DISTRIBUTION OF GRADE SCORES TAKEN FROM MCCALL-CRABBS (FORMS A-E)

Scores	Grade 2	3	4	5	6	7	8	Total
10.4							1	1
10.3								
10.2								
10.1								
10.0								
9.9							1	1
9.8								
9.7								
9.6								
9.5								
9.4								
9.3								
9.2						2	1	3
9.1								
9.0								
8.9						1		1
8.8						1	1	2
8.7						2	1	3
8.6							1	1
8.5						1	2	3
8.4					1		1	2
8.3						2		2
8.2						1	3	4
8.1						1	3	4
8.0					1	2	1	4
7.9						2	2	4
7.8				1				1
7.7				2	1		1	4
7.6					1	1	2	4
7.5					1	3		4
7.4							2	2
7.3				3	1	4	2	10
7.2				3		2	2	7
7.1				3		2		5
7.0				1	1	2	2	6
6.9			1	1	2	1	1	6
6.8				5			3	8
6.7			1	1	1	2	2	7
6.6				2			1	3
6.5			6	2	3	2	1	14
6.4			3		1		3	7
6.3			2		2		1	5
6.2			2	1		2		5
6.1			1	1	1		2	5
6.0				1	2	1		4
5.9			1	1	2	1		5
5.8			2		1	3	2	8
5.7		1		1	2	2	2	8
5.6			2		1			3
5.5			2		1			3
5.4		1				2	3	6
5.3			2	1	1		1	5
5.2			1	1	1	3	2	8
5.1				2	3	2	2	9
5.0				1	3	4		8
4.9		1	1	5	2			9
4.8			1	1	3		1	6
4.7					3		3	6
4.6		3	3					6
4.5	1	2		1	1			5
4.4	1		1		2	1		5
4.3	1	2	2			1	1	7
4.2		2	1	1	2	3		9
4.1		1	1	2	3	1		8
4.0		2	1					3
3.9	1	1		2	1			5
3.8		1	2	2	1			6
3.7	1	2	2	1	2			8
3.6	3	2	2	2				9
3.5	2	1	1	2	1			7
3.4	2	2	2	1				7
3.3	4	4	4	1				13
3.2	3	2	1					6
3.1	6	8	2	1				17
3.0	5	1	2					8
2.9	6	5						11
2.8	4	3	1					8
2.7	4	4	1					9
2.6	2	2	1					5
2.5	2	6						8
2.4	2	3	1					6
2.3	2							2
2.2	2							2
Total	54	62	59	56	55	60	60	406
Q_3	3.3	3.9	6.3	6.7	6.4	7.6	7.9	
Md	3.0	3.1	4.6	5.2	5.3	6.7	6.8	
Q_1	2.7	2.8	3.4	4.0	4.7	5.2	5.7	
Range	2.2 to 4.5	2.4 to 5.7	2.4 to 6.9	3.1 to 7.8	3.5 to 8.4	4.1 to 9.2	4.3 to 10.4	

level commensurate with the designation given to that grade. For example, the median grade score of grade two is 3.0, and the median grade score of grade three is 3.1. It is proposed that this small difference between medians is applicable to a readability formula. The formula can determine the approximate grade level of reading material to be used in terms of the group using the material.

Table 5 illustrates the overlap in grade reading level among the grades tested in this study. It will be noted that this overlap decreases as the distance between the grades increases. However, there is still as much as .3 of a grade overlap between grades two and eight. It is assumed that a readability formula applied to reading material used in any of these grades will serve as a basis for establishing the grade level of the material to be used.

TABLE 5

GRADE OVERLAP AMONG SELECTED GRADES ON BASIS OF MCCALL-CRABBS

Grades	3	4	5	6	7	8
2	2.2	2.2	1.5	1.1	.5	.3
3		3.4	2.7	2.3	1.7	1.3
4			3.9	3.5	2.9	2.7
5				4.4	3.8	3.6
6					4.4	4.2
7						5.0

The implication of this table is that graded similar material can be used, according to the evidence presented, in any grade from two through eight.

The Count and Use of the Criterion Variables in the Tests Employed

The first step in applying the criterion variables is recording the counts. The raw data, counts of criterion variables employed, were translated into per cents. This was done in order to facilitate computation. Flesch, in commenting upon his method of recording counts, states that he counted "the number of personal references per hundred words and the number of affixes per hundred words."[12] While this is much the same method, the term per cent is assumed to be more familiar to the average person applying the readability formula.

The first step in application of the criterion variables to the criterion was to make a count of the words in each selection. When this was completed, each sentence of each selection was listed according to a sequential number; that is, if a selection had ten sentences, each sentence was assigned a number from one through ten. Each word in the sentence was listed. The total number of words, by sentences, was checked against the total found in the tabulation of the

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[12]Rudolf Flesch, Marks of a Readable Style (New York: Bureau of Publications, Teachers College, Columbia University, 1943), p. 33.

total number of words in each selection. Each of these counts was checked against itself and cross-checked at least three times.

To find the average sentence length, criterion variable X_1, the number of sentences in each passage was divided into the total number of words in the selection.

The per cent of different words, criterion variable X_2, found in each selection was tabulated. Each different word in the selection was listed and the number of times that each word was found in a given passage was recorded. To avoid repetition of words, each word was checked individually and the total of the different words by frequency was checked against the total number of words. If the total number of words agreed with the total frequencies of different words, second and third tabulations of the different words were completed. Each tabulation was checked against the original tabulation and the tabulation that preceded it. Following each verification, the number of different words was divided by the total number of words in each selection and the quotient expressed in terms of per cent. This method was used by Lorge, Flesch, and Dale and Chall.

To find the per cent of prepositions, criterion variable X_3, each preposition in the selected passages was listed on a work sheet and was verified by reference to Webster's New Collegiate Dictionary and Roget's Thesaurus of the English

Language in Dictionary Form. When the use of any preposition was in doubt, the writer consulted the following references for verification: Watt's Modern Grammar at Work, Kittredge and Farley's Advanced English Grammar, and Stoddard, Bailey and McPherson's English. The number of prepositions was divided by the number of words in each passage and the quotient expressed in terms of per cent.

In recording the per cent of simple sentences, criterion variable X_4, each sentence in each passage was analyzed. Every sentence had been recorded on work sheets. The sources mentioned previously were used as references whenever the rule concerning the simple sentence was not clearly applicable. The number of simple sentences in each passage was divided by the number of sentences in each passage and the quotient expressed in terms of per cent.

To find the per cent of different words not on the basic list of approximately 3000 words, criterion variable X_5, it was first determined that the frequency on the reading list that approximated the first three thousand words was eighty-four. Each word had been previously listed under the total words in each selection. Each of these words was checked against the alphabetical listing of the words in the reading list to include those of a frequency of eighty-four or more. This provided an initial check. Each word was again verified by using work sheets. The number of different words not on the list was divided by the total number of different words

found in the passage and the result expressed in terms of per cent.

The final step was recording the per cent of words on the basic list, criterion variable X_7. By using the information obtained to find the number of words not on the basic list, the remainder of the words were those on the basic list. In order to verify the list of the words off the basic list, the total number of words, by frequency and individual tabulation, was checked. A final check was obtained by adding the number of words on and off the list. The number of different words on the list was divided by the total number of different words found in the passage and the result expressed in terms of per cent.

It was at this point that polysyllabic words, criterion variable X_6, were excluded from the computations on the basis that there were too few polysyllabic words in the selections used to yield adequate statistical results. This is substantiated by an actual count of polysyllabic words that yielded but one lesson in the entire series with as many as five polysyllabic words, and the majority of the lessons yielded no polysyllabic words as defined in this study.

Table 6 presents the raw data gathered from the selected lessons of the McCall-Crabbs Standard Test Lessons in Reading, together with the criterion and the percentages of each of the criterion variables. The following example taken from the first line of Table 6 will explain the actual

TABLE 6

RAW DATA AND PERCENTAGES OF CRITERION VARIABLES FROM MCCALL-CRABBS

				X_1	X_2		X_3		X_4		X_5		X_7		
Bk.	Lsn.	Sent.	Wds.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	C50
A	9	8	50	6.2	31	62.0	6	12.0	7	87.5	2	6.4	29	93.5	3.4
	10	6	105	16.0	76	72.4	10	10.5	3	50.0	5	6.6	71	93.4	3.6
	16	9	125	13.9	81	64.8	12	9.6	4	14.4	6	7.4	75	92.6	3.6
	31	11	144	13.1	85	59.0	11	7.6	5	45.4	5	5.9	80	94.1	3.9
	34	8	147	18.4	90	61.2	15	10.2	0	0	8	8.9	82	91.1	3.9
	40	7	76	10.9	49	64.5	6	7.9	5	71.4	1	2.0	48	97.9	3.9
	45	10	137	13.7	77	56.2	11	8.0	4	40.0	2	2.6	75	97.4	3.8
	48	9	124	13.8	78	62.9	11	8.9	4	44.4	4	5.1	74	94.9	3.7
	51	6	113	18.8	78	69.0	13	11.5	3	50.0	7	9.0	71	91.0	4.5
	75	10	138	13.8	74	53.6	16	11.6	7	70.0	1	1.3	73	98.6	4.3
B	3	11	129	11.7	73	56.6	14	10.8	2	18.2	8	10.9	65	89.0	4.2
	4	11	151	13.7	101	66.9	17	11.2	6	54.5	5	4.9	96	95.0	4.6
	31	9	106	11.8	77	72.6	8	7.5	4	44.4	6	7.8	71	92.2	4.5
	33	9	130	14.4	77	59.2	16	12.3	6	66.7	5	6.5	72	93.5	4.0
	35	6	108	18.0	75	69.4	14	13.0	2	33.3	3	4.0	72	96.0	4.5
	42	9	137	15.2	92	67.1	15	10.9	5	55.5	11	11.9	81	88.0	4.6
	53	10	121	12.1	81	66.9	12	9.9	5	50.0	4	4.9	77	95.1	4.6
	54	10	116	11.6	69	59.5	12	10.3	6	60.0	1	1.4	68	98.5	4.9
	65	8	145	18.1	91	62.7	16	11.0	4	50.0	5	5.5	86	94.5	6.2
	70	12	136	11.3	89	65.4	9	6.6	8	66.7	7	7.9	82	92.1	4.7

TABLE 6--Continued

Bk.	Lsn.	Sent.	Wds.	X_1	X_2		X_3		X_4		X_5		X_7		C50
				Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	
C	6	11	167	15.2	101	60.5	27	16.2	7	63.6	9	8.9	92	91.1	5.4
	13	10	122	12.2	74	60.6	17	13.9	8	80.0	5	6.8	69	93.2	5.1
	19	10	132	13.2	81	61.4	16	12.1	8	80.0	5	6.2	76	93.8	5.3
	32	12	165	13.7	96	58.2	18	10.9	6	50.0	5	5.2	91	94.8	5.6
	37	8	156	19.5	110	70.5	26	16.7	7	87.5	19	17.3	91	82.7	5.5
	42	11	136	12.4	89	65.4	7	5.1	5	45.4	13	14.6	76	85.4	5.4
	50	11	169	15.4	101	59.8	12	7.1	4	36.3	14	13.9	87	86.1	4.7
	56	10	126	12.6	79	62.7	14	11.1	4	40.0	7	8.9	72	91.1	4.7
	71	6	108	18.0	77	71.3	16	14.8	2	33.3	6	7.8	71	92.2	6.0
	73	8	152	19.0	108	71.0	22	14.5	4	50.0	9	8.3	99	91.7	6.3
D	2	15	190	12.7	117	61.6	26	13.7	10	66.6	23	19.6	94	80.3	4.1
	9	10	215	21.5	136	63.2	24	11.2	4	40.0	15	11.0	121	89.0	4.8
	25	8	206	25.7	127	61.6	19	9.2	3	37.5	16	12.6	111	87.4	5.2
	37	11	166	15.1	108	65.1	18	10.8	6	54.5	11	10.2	97	89.8	5.4
	40	12	205	17.1	125	61.0	16	7.8	1	8.3	20	16.0	105	84.0	5.6
	43	20	205	10.2	126	61.5	18	8.8	15	75.0	15	11.9	111	88.1	5.7
	61	13	220	16.9	102	46.4	25	11.4	2	15.4	15	14.7	87	85.3	5.9
	65	5	125	25.0	92	75.2	12	9.6	0	0	9	9.6	85	90.4	6.0
	75	10	204	20.4	137	67.1	27	13.2	5	50.0	18	13.1	119	86.9	6.4
	77	13	187	14.4	126	67.4	15	8.0	7	53.8	26	20.6	100	79.4	6.4

TABLE 6--Continued

Bk.	Lsn.	Sent.	Wds.	X_1 Per Cent	X_2 No.	X_2 Per Cent	X_3 No.	X_3 Per Cent	X_4 No.	X_4 Per Cent	X_5 No.	X_5 Per Cent	X_7 No.	X_7 Per Cent	C50
E	5	11	167	15.2	108	64.7	27	16.2	5	45.4	18	16.7	90	83.3	6.0
	18	12	190	15.8	120	63.1	21	11.0	8	66.7	18	15.0	102	85.0	6.5
	19	10	199	19.9	112	56.3	22	11.1	4	40.0	28	25.0	84	75.0	7.0
	24	12	193	16.1	121	62.7	21	10.9	7	58.3	25	20.7	96	79.3	6.3
	26	10	201	20.1	146	72.6	26	12.9	5	50.0	25	17.1	121	82.9	6.5
	49	9	188	20.9	119	63.3	20	10.6	2	22.2	19	16.0	100	84.0	7.1
	55	11	217	19.7	134	61.7	28	12.9	5	45.4	29	21.6	105	78.3	7.0
	60	6	174	29.0	118	67.8	26	14.9	0	0	36	30.5	82	69.5	7.5
	62	15	273	18.2	163	59.7	23	8.4	6	40.0	37	22.7	126	77.3	7.1
	71	15	202	13.5	119	58.9	27	13.4	6	40.0	34	28.6	85	71.4	7.9

X_1 = Average Sentence Length

X_2 = Per cent of Different Words

X_3 = Per cent of Prepositions

X_4 = Per cent of Simple Sentences

X_5 = Per cent of Different Words Off Basic List (first 3000 words)

X_7 = Per cent of Different Words On Basic List (first 3000 words)

C_{50} = Criterion

computation and the method employed.

Criterion variable X_1 (Average sentence length). Lesson 9 was chosen from Book A. The total number of words in the lesson was 50. The number of sentences was 8. The average sentence length was 6.2. The method for this variable is dividing the total number of sentences into the total number of words.

Criterion variable X_2 (Per cent of different words). The total number of different words in this lesson was 31. The total number of words in the passage was 50. This variable is found by dividing the total number of words in the passage into the number of different words.

Criterion variable X_3 (Per cent of prepositions). The total number of prepositions in this lesson was 6. This variable is found by dividing the number of prepositions by the total number of words in the passage.

Criterion variable X_4 (Per cent of simple sentences). The total number of simple sentences in this lesson was 7. The total number of sentences was 8. This variable is found by dividing the number of simple sentences by the total number of sentences.

Criterion variable X_5 (Per cent of words not on the basic list). The total number of different words off the basic list in this lesson was 2. The total number of different words was 31. This variable is found by dividing the number of different words in the lesson not found on the

basic list by the total number of different words.

Criterion variable X_7 (Per cent of words on the basic list). The total number of different words on the basic list was 29. This variable is found by dividing the number of different words on the basic list by the total number of different words.

C_{50} (The Criterion). The number of scores on this lesson was 10. The average reading score for this lesson fell between five questions right and six questions right. By dividing the difference between the scores for five questions right and six questions right by two, the number to be added to the lower score is obtained. The sum is the criterion.

The Correlations and Regression Equation

To find the relationships between the criterion and the criterion variables and among the criterion variables, correlations were run. This material is presented in Table 7.

Based upon the intercorrelations found, the next step was to apply the Wherry-Doolittle selection method.[13]

From Table 7, the highest correlation among the criterion and the criterion variables was .7305. This was the criterion variable X_5 or the per cent of different words not on the basic list. By the Wherry-Doolittle method of

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[13]Garrett, op. cit., pp. 404-418.

TABLE 7

INTERCORRELATION OF CRITERION AND CRITERION VARIABLES

	1	2	3	4	5	7
C	.5295	.1066	.3131	-.2127	.7305	-.6496
1		.2797	.2879	-.5612	.4451	-.4331
2			.0451	.0029	-.0199	.0367
3				.1596	.2028	-.1825
4					-.2735	.2754
5						-.9956

Where: C = Criterion
1 = Average sentence length
2 = Per cent of different words
3 = Per cent of prepositions
4 = Per cent of simple sentences
5 = Per cent of different words not on the basic list
7 = Per cent of different words on the basic list

selection, the first criterion variable to be applied was the variable that correlated most highly with the criterion. This provided the first criterion variable, X_5, or the per cent of words not on the basic list and gave a correlation of .730.

Since the criterion variable X_7, or per cent of words on the basic list correlates -.9956 with the first selected criterion variable, it was automatically excluded from the

regression equation. This is based upon the stipulation that states that criterion variables should not correlate too highly with one another.

By further application of the Wherry-Doolittle method, the second selected criterion variable, X_1, or average sentence length, the multiple correlation was increased from .730 to .761.

With the addition of the third most significant criterion variable, X_4, per cent of simple sentences, the multiple correlation was increased to .764. This was not a significant increase and the selection of further criterion variables stopped with a multiple correlation of .761.

The final result of the method employed was the following multiple regression equation, which represents the reading formula:

$$C_{50} = .0719X_1 + .1043X_5 + 2.9347$$

By using this equation, one may predict the approximate reading level of material for the elementary school.

CHAPTER III

SUMMARY, EXPLANATION AND IMPLEMENTATION OF THE USE OF THE FORMULA AND THE WORD LIST

The following divisions are used in this chapter: (1) summary, (2) explanation and implementation of use of the formula, and (3) the basic word list.

Summary

The formula developed here is a statistical device. As such, it is a method by which the difficulty of written materials can be estimated. A readability formula, by the very nature of its derivation, can not account for all the factors that constitute difficulty in reading.

The evidence presented in this study indicates that the two major factors of structural difficulty contributing to readability are the vocabulary employed and average sentence length. As far as vocabulary is concerned, it appears that the familiarity of the vocabulary is the most prominent element.

The second point revealed by this study is that average sentence length contributes to readability. The shorter

the sentence, from the evidence presented, the more readable.

It is not claimed that this formula is definitive. The very nature of the multiple correlation makes this point obvious. The formula is a method for judging the approximate grade level of written material. It may also be used to assist writers in preparing graded material by using simpler vocabulary and shorter, clearer sentences.

Explanation and Implementation of the Use of the Formula

The method for using the formula recorded below is in accordance with that used by previously mentioned investigators:

Selection of samples.--Use approximately one hundred words from about every tenth page in a book. If a more exacting sample is needed, choose about two hundred words from every tenth page.[1] Do not begin or end a sample in the middle of a sentence.

Counting the number of words.--Count the total number of words in each sample. Count contractions as one word, and compound hyphenated words as two words. Count initials as part of a word if followed by a word. For example, J. W. Smith is counted as one word, but John B. Smith is counted as two words. Count the number of complete sentences in each

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[1]Bertha Leifeste, "An Investigation of the Reliability of the Sampling of Reading Material," Journal of Educational Research, XXXVII (February, 1944), pp. 441-501.

selected sample.

Familiar and unfamiliar words.--To distinguish between familiar and unfamiliar words (words on the basic list and words not on the basic list), the following rules are to be observed:

Common and proper nouns: All regularly formed plurals and possessives are included as familiar if the singular form is on the list. If the singular is not on the list, use the form recorded or consider as unfamiliar. An example of the recording of regular forms is: girl. Girl's, girls and girls' are recorded under the singular form girl. An example of the recording of irregular noun forms is: child. The forms of child and child's is recorded under the form child. The forms children and children's is recorded under the form children.

Adjectives: All regularly formed comparatives and superlatives are to be considered as familiar if the root word is listed. If not, each form listed is considered as familiar. All irregularly formed comparatives and superlatives are listed separately. An example of regularly formed comparatives and superlatives is: tall, taller, tallest. Each form is listed under tall, and considered familiar when listed. An example of irregularly formed comparatives and superlatives is: good, better, best. These forms are listed separately. Adjectives formed by adding n are considered familiar when listed. An example of irregularly formed adjectives of this formation is: American.

Verbs: All regular verb forms are listed under the present tense of that verb if the present tense is recorded. If the present tense is not recorded, the forms that are familiar are listed separately. All irregular verb forms are listed separately. An example of regular verb forms is guess. All forms of the verb are listed under the present tense and are considered as familiar. An example of irregular verb form is: go, went, gone. Each form is listed separately.

Abbreviations and hyphenated words: All abbreviations are considered as familiar if listed. 1 All hyphenated words are considered as familiar if the hyphenated word is listed or both parts of the hyphenated word are listed.

Dale and Chall carried on experiments which compared the results of their formula with experienced teachers' and reading experts' judgments. In addition, they compared the results with comprehension scores and found that "the judgments of experienced teachers, 'experts' in readability, and actual comprehension scores"[2] indicated a level at which the material graded by the raw score of the readability formula ". . . would give a more usable means of placing the materials within the comprehension of the various grades."[3] Comparing their results with Table 4 (page 29) in this study, which

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[2]Dale and Chall, op. cit., p. 8.

[3]Ibid., p. 9.

shows that the median grade scores are, for example, from 1.3 grades to 2.2 grades below the levels indicated for grades seven and eight at the end of the school year, it is assumed that Table 8 is valid for this study. This table may be used to indicate the level at which material may be read with ease.

TABLE 8

READING EASE LEVEL AS DERIVED FROM DALE AND CHALL[4]

Scores	Level
4.9 and below	Grade 4 and below
5.0 to 5.9	Grades 5 and 6
6.0 to 6.9	Grades 7 and 8
7.0 to 7.9	Grades 9 and 10
8.0 to 8.9	Grades 11 and 12
9.0 to 9.9	Grades 13 to 15
10.0 and above	Grade 16 and above

The two following selections are taken at random from the selected stories and illustrated on a work sheet prepared for this purpose.

The first selection is taken from The Swiss Family Robinson by Jean Rudolf Wyss. Each underlined word is not on the basic list of words.

[4]Ibid., p. 8.

> On this occasion we made another agreeable discovery: my wife took up the residue chips of the bark for lighting a fire, supposing they would burn easily; we were surprised by a delicious aromatic scent which perfumed the air. On examining the half-consumed substance, we found some of the pieces to contain turpentine, and others gum-mastich, so that we might rely on a supply of these ingredients from the trees which had furnished the bark. It was less with a view to the gratifying our sense of smell than with the hope of being able to secure these valuable drugs for making a sort of pitch to complete our meditated boat, that we indulged our earnestness in the pursuit.

In applying the formula to this passage, the following information is recorded: (1) there are 121 words in the passage, (2) there are three sentences in the selection, (3) there are 18 different words not on the basic list. After computation, the information is entered on the work sheet. The approximate grade level of the passage is then determined.

The second selection is taken from Alice's Adventures in Wonderland by Lewis Carroll. Each underlined word is not on the basic list of words:

> Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do; once or twice she peeped into the book her sister was reading, but it had no pictures or conversations in it, "and what is the use of a book," thought Alice, "without pictures or conversations?"
>
> So she was considering in her own mind (as well as she could, for the hot day made her feel very sleepy and stupid) whether the pleasure of making a daisy-chain would be worth the trouble of getting up and picking daisies, when suddenly a White Rabbit with pink eyes ran close by her.

In applying the formula to this passage, the following information is recorded: (1) there are 113 words in the passage, (2) there are two sentences in the selection, (3) there

are five different words not on the basic list. By entering this information on the work sheet, the approximate grade level of the passage is determined.

The following computations are for the selections mentioned.

WORK SHEET

Title: Swiss Family Robinson Page(s) 257

Author: Wyss From word On to pursuit

1.	Number of words in sample 121	
2.	Number of different words not on list 18	
3.	Basic list score (Divide item 2 by item 1. Multiply by 100 and the product by .1043)	1.5420
4.	Number of sentences in sample 3	
5.	Average sentence length score (Divide item 1 by item 4. Multiply the result by .0719)	2.8760
6.	Enter constant (2.9347)	2.9347
7.	Raw grade score: the sum of items 3, 5, and 6	7.3527
8.	Enter reading ease grade level (From Table 8)	9 or 10

WORK SHEET

Title: Alice's Adventures in Wonderland Page(s) 1

Author: Carroll From word Alice to her

1.	Number of words in sample 113	
2.	Number of different words not on list 5	
3.	Basic list score (Divide item 2 by item 1. Multiply by 100 and the product by .1043)	.4615
4.	Number of sentences in sample 2	
5.	Average sentence length score (Divide item 1 by item 4. Multiply the result by .0719)	4.0983
6.	Enter constant (2.9347)	2.9347
7.	Raw grade score is the sum of items 3, 5, and 6	7.4945
8.	Enter reading ease grade score (From Table 8)	9 or 10

The words on the following pages are the basic word list as developed by the process shown in Appendix A. (See pages 74-77. To use this list, count all the different words in the selected passage and enter the number on the work sheet.

BASIC WORD LIST

a
able
aboard
about
above
absent
accept
accident
account
ache
acquainted
acre
across
act
action
activity
add
addition
address
adjective
adopt
advantage
adventure
adverb
advertisement
affair
afraid
after
afternoon
afterward
again
against
age
ago
agree
agreement
agriculture
ahead
aid
aim
air
airplane
airport
aisle
alarm
alfalfa
alike
alive
all
alley
alligator
allow
all right
almost
alone
along
already
also
although
altogether
always
am
amendment
American
among
amount
amuse
amusement
an
ancient
and
angel
angry
animal
ankle
announce
another
answer
ant
anxious
any
anybody
anyone
anything
anyway
anywhere
apart
apartment
ape
apiece
appear
appearance
apple
apply
appoint
appreciate
appreciation
approach
April
apron
are
area
aren't
argument
arithmetic
arm
army
around
arrange
arrive
arrow
art
article
artist
as
ash
ashamed
aside
ask
asleep
assembly
assignment
association
at
ate
attach
attack
attempt
attend
attention
attic
attractive

auditorium
August
aunt
auntie
author
auto
automobile
autumn
ave.
avenue
average
aviator
awake
away
awful
awfully
awhile
awoke
baby
back
backward
bacon
bacteria
bad
badly
bag
bait
bake
bakery
balance
ball
balloon
banana
band
bandage
bang
bank
banking
bar
bare
bark
barley
barn
barrel
base
baseball
basement
basket
basketball
bat
bath
bathe
battle
bay
be
beach
bead
bean
bear
beat
beautiful
beautify
beauty
beaver
became
because
become
bed
bedroom
bee
beef
been
beat
before
beg
began
begin
begun
behind
being
believe
bell
belong
below
belt
bench
bend
beneath
bent
berry
beside
besides
best
bet
better
between
Bible
bicycle
big
bike
bill
bird
birth
birthday
bit
bite
black
blackboard
blacksmith
blanket
bleed
blew
blind
block
blood
bloom
blossom
blow
blue
bluebird
board
boat
body
boil
bone
book
booklet
boot
border
born
borrow
boss
both
bother
bottle
bottom
bought
bounce
bound
boundary
bow
bowl
bowwow
box
boy
bracelet
brake

branch
brand
brave
bravely
bread
break
breakfast
breast
breath
breathe
breeze
brick
bridge
bridle
bright
bring
broke
brook
broom
brother
brought
brown
brownie
brush
bubble
buck
bucket
bud
buffalo
bug
buggy
build
building
built
bulb
bull
bulldog
bullet
bump
bunch
bundle
bunny
burn
burnt
burst
bury
bus
bush
bushel

business
busy
but
butter
butterfly
button
buy
by
cabbage
cabin
cabinet
cafeteria
cage
cake
calendar
calf
call
calves
came
camel
camera
camp
campfire
can
canal
canary
candle
candy
cane
cannon
cannot
canoe
can't
canyon
cap
capital
capitol
captain
capture
car
caravan
card
cardboard
care
careful
carefully
careless
carnival
carol

carpenter
carriage
carrot
carry
cart
carve
case
cast
castle
cat
catch
caterpillar
cattle
caught
cause
cave
cedar
celebrate
celery
cell
cellar
cement
cent
center
central
century
cereal
certain
certainly
chain
chair
chalk
chance
change
chapter
character
charge
chart
chase
cheap
check
checker
cheek
cheer
cheerful
cheese
chemical
cherry
chest

chew
chick
chicken
chicken pox
chief
chiefly
child
children
chimney
china
chocolate
choir
choose
chop
chore
chose
Christ
Christian
Christmas
Christmas Eve
Christmas tree
chum
church
churn
circle
circus
citizen
citizenship
city
civil
claim
clan
class
classmate
clay
clean
clear
clerk
cliff
climate
climb
clock
close
closet
cloth
clothes
clothing
cloud
cloudy
clover
clown
club
coach
coal
coast
coat
cocoa
coconut
cocoon
coffee
coin
cold
collar
collect
collection
college
collie
colonial
colonist
colony
color
colt
comb
come
comfortable
comical
command
commerce
commercial
committee
common
community
companion
company
complete
compose
composition
concern
concert
condition
cone
confederation
congress
connect
conquer
consent
consider
consist
constitution
contain
contest
continent
continue
control
convention
cook
cookie
cool
copper
copy
corn
corner
correct
cost
costume
cottage
cotton
cough
could
couldn't
council
count
country
couple
courage
course
court
cousin
cover
cow
cowboy
crab
crack
cracker
cradle
cranberry
crash
crawl
crazy
cream
creature
creek
creep
crept
crew
crime
criminal

cripple
crop
cross
crow
crowd
cruel
crumb
cry
cub
cup
cupboard
cure
curl
curly
current
curtain
custom
cut
cute
dad
daddy
daily
dairy
dam
damage
dance
dandy
danger
dangerous
dare
dark
dash
date
daughter
dawn
day
dead
deal
dear
death
debate
Dec.
December
decide
deck
declare
decorate
decoration
deed
deep
deer
defeat
degree
delicious
delighted
deliver
demand
den
department
depend
deposit
derrick
describe
desert
design
desire
desk
destination
destroy
determine
develop
development
diamond
dictionary
did
didn't
die
difference
different
differently
difficult
dig
dike
dime
dine
dinner
dip
direction
dirt
dirty
disappear
disappoint
discover
discovery
disease
dish
distance
district
ditch
dive
divide
division
do
dock
doctor
does
doesn't
dog
doing
doll
dollar
dolly
done
donkey
don't
door
dot
double
down
downstairs
downtown
dozen
Dr.
drag
dragon
drain
drank
draw
drawer
dream
dress
dresser
drew
dried
drift
drill
drink
drive
driver
drop
drove
drown
drug
drum
dry
duck
due

dug
dull
dump
during
dust
duty
dwarf
dye
each
eagle
ear
early
earn
earth
easily
east
Easter
eastern
easy
eat
edge
educate
education
effect
egg
eight
eighteen
eighth
eighty
either
elect
election
electric
electricity
elephant
elevator
eleven
else
embroidery
employ
empty
enclose
end
enemy
energy
enforce
engine
engineer
English
enjoy
enough
enter
entertainment
envelope
equal
equipment
eraser
escape
especially
establish
etc.
eve
even
evening
event
ever
eversharp
every
everybody
everyday
everyone
everything
everywhere
exactly
exam
examination
example
excellent
except
exchange
excite
excitement
exclaim
excuse
executive
exercise
exhibit
expect
expensive
experience
experiment
explain
explore
export
express
extend
extra
extremely
eye
face
fact
factory
fail
faint
fair
fairy
fairyland
fall
family
famous
fan
far
farm
farmer
farther
fashion
fast
fasten
fat
father
fatten
favor
favorite
fear
feast
feather
Feb.
February
fed
feed
feel
feet
fell
fellow
felt
fence
fever
few
field
fierce
fifteen
fifth
fifty
fight
figure
fill
finally

find
fine
finger
fingernail
finish
fir
fire
firecracker
fire engine
fire-escape
firemen
fireplace
fireworks
first
fish
fisherman
fit
five
fix
flag
flame
flash
flashlight
flat
flax
flew
flight
float
flock
flood
floor
flour
flow
flower
fly
fog
fold
folk
follow
fond
food
fool
foot
football
for
force
ford
foreign
forest
forever
forget
forgive
forgot
forgotten
fork
form
fort
forth
fortune
forty
forward
fought
found
fountain
four
fourteen
fourth
fox
fraction
frame
free
freedom
freeze
freight
fresh
Friday
friend
friendly
fright
frog
from
front
frost
froze
fruit
fry
Ft.
fuel
full
fun
funny
fur
furnace
furnish
furniture
further
future
gain
gallon
game
gang
garage
garden
garters
gas
gasoline
gate
gather
gave
gay
gee
geese
general
generally
gentle
geography
germ
get
ghost
giant
gift
girl
give
glad
glance
glass
glove
go
goal
goat
god
gods
gold
golden
goldfish
gone
good
good-bye
good-by
goodness
goods
goose
got
gotten
govern
government
governor

grab
graceful
grade
grader
graduate
grain
grammar
grand
grandfather
grandma
grandmother
grandpa
grant
grape
grass
grasshopper
grave
gray
graze
grease
great
greatly
green
greet
grew
grey
grind
grocery
ground
group
grove
grow
growl
growth
guard
guess
guest
guide
gum
gun
gym
gymnasium
ha
habit
had
hadn't
hail
hair
half
halfway
hall
Halloween
ham
hammer
hand
handkerchief
handle
hang
happen
happily
happiness
happy
harbor
hard
harden
hardly
hardship
harm
harness
harvest
has
hasn't
hat
hatch
hate
haul
haunt
have
haven't
hawk
hay
he
head
health
healthy
heap
hear
heard
heart
heat
heaven
heavy
heel
height
held
hello
help
helper
hen
hers
herd
here
here's
hero
herself
he's
hid
hidden
hide
high
high school
highway
hike
hill
him
himself
hind
hire
his
history
hit
hitch
ho
hobby
hoe
hog
hold
holder
hole
hollow
holly
holy
home
honest
honey
honor
hook
hoop
hop
hope
horn
horse
horseback
hose
hospital
hot
hotel
hour
house
how

however
howl
hug
huge
hum
human
hundred
hung
hungry
hunt
hunter
hurry
hurt
husband
hut
hygiene
I
ice
iceberg
ice cream
icicle
icy
I'd
idea
if
igloo
I'll
ill
I'm
imagine
immediately
import
importance
important
impossible
improve
improvement
in
inch
include
increase
indeed
independence
independent
index
Indian
industry
information
injure
ink
inkwell
inn
inquire
insect
inside
instance
instead
instrument
intelligent
intend
interest
interesting
into
introduce
invent
invention
invitation
invite
iron
irrigate
irrigation
is
island
isn't
it
itch
it's
its
itself
I've
jack
jacket
jack-o-lantern
jail
jam
Jan.
janitor
January
jar
jelly
jerk
Jesus
jewel
job
join
joke
jolly
journey
joy
judge
juice
July
jump
June
jungle
junior
junk
just
justice
keen
keep
keeper
kept
kerosene
kettle
key
kick
kid
kill
kind
kindergarten
king
kiss
kitchen
kite
kitten
kitty
knee
knew
knife
knight
knit
knives
knob
knock
knot
know
knowledge
labor
lace
lack
lad
ladder
lady
laid
lake
lamb

lame
lamp
land
language
lantern
lap
lard
large
last
late
lately
laugh
law
lawn
lawyer
lay
lazy
lb.
lead
leader
leaf
league
leak
lean
leap
learn
least
leather
leave
led
left
leg
legislative
lemon
length
less
lesson
let
let's
letter
lettuce
level
liberty
library
lick
lie
life
lift
light
lightning
like
likely
lily
limb
lime
limit
line
linen
link
lion
lip
liquid
list
listen
lit
little
live
living room
load
locate
lock
log
lonely
lonesome
long
look
loose
lose
lost
lot
loud
love
lovely
lover
lovingly
low
luck
lucky
lumber
lunch
lung
lying
ma
ma'am
machine
machinery
mad
made
magazine
magic
maid
maiden
mail
mailbox
main
make
mama
mamma
man
manage
manager
manger
manner
mansion
manual
manufacture
many
map
maple
Mar.
marble
March
march
mark
market
marry
mash
mask
mass
master
mat
match
mate
material
matter
May
may
maybe
me
meadow
meal
mean
meaning
meant
measles
measure
meat

medicine
meet
meeting
melt
member
memory
men
mend
mention
merchant
merry
merry-go-round
mess
message
messenger
met
metal
method
mew
mice
middle
midnight
might
mile
military
milk
mill
million
mind
mine
miner
mineral
minister
minute
mirror
mischief
Miss
miss
mission
mistake
mistress
mitten
mix
model
modern
modify
moisture
mold
moment
Monday
money
monkey
month
moon
moonlight
mop
more
morning
mosquito
moss
most
mostly
moth
mother
motion
motor
mount
mountain
mountainous
mouse
mouth
move
movement
movie
Mr.
Mrs.
Mt.
much
mud
muddy
mule
multiply
mumps
murder
muscle
museum
music
musical
must
mutton
my
myself
mystery
nail
name
nap
napkin
narrow
nation
national
native
natural
nature
naughty
navy
near
near-by
nearly
neat
necessary
neck
necklace
necktie
need
needle
Negro
neighbor
neighborhood
neither
nephew
nervous
nest
net
never
new
news
newspaper
New Year
next
nice
nicely
nickel
niece
night
nine
nineteen
ninety
ninth
no.
no
noble
nobody
noise
none
noon
nor
north

northern
nose
not
note
notebook
nothing
notice
noun
Nov.
November
now
number
nurse
nut
o
oak
oar
oasis
oat
oatmeal
obey
object
obtain
occupation
occupy
occur
ocean
o'clock
Oct.
October
odor
of
off
offense
offer
office
officer
often
oh
oil
O. K.
old
olive
on
once
one
onion
only
open
opera
operate
operation
operetta
opportunity
opposite
or
orange
orchard
orchestra
order
ore
organ
organize
ornament
other
ought
our
ourselves
out
outdoor
outline
outside
oven
over
overalls
overcoat
overflow
overshoe
owe
owl
own
owner
oxen
oxygen
oyster
pack
package
pad
paddle
page
paid
pail
pain
paint
painting
pair
pajamas
pal
palace
palm
pan
pants
papa
paper
parade
paragraph
pardon
parent
park
parliament
parlor
parrot
part
particular
partner
party
pass
passage
passenger
past
paste
pasture
pat
patch
path
patient
pattern
pave
paw
pay
pea
peace
peach
peak
peanut
pear
pearl
peasant
pecan
peck
peep
pen
pencil
penmanship
penny
people
pepper

per
per cent
perfect
perfume
perhaps
period
permission
person
pet
petroleum
phone
phrase
piano
pick
pickle
picnic
picture
pie
piece
pier
pig
pigeon
pile
pilgrim
pillow
pilot
pin
pine
pink
pioneer
pipe
pirate
pistol
pit
pitch
pitcher
place
plain
plan
plane
planet
plant
plantation
plate
play
player
playful
playground
playhouse
playmate
plaything
pleasant
please
pleasure
pledge
plenty
plow
plum
plural
P. M.
pocket
pocketbook
poem
poet
point
poison
polar
polar bear
pole
police
policeman
policy
polish
polite
pond
pony
pool
poor
pop
popcorn
popular
population
porch
port
position
possession
possible
post
poster
postman
postoffice
pot
potato
pound
pour
powder
power
practice
prairie
pray
prayer
prepare
preposition
present
president
press
pretend
pretty
prevent
price
prince
princess
principal
principle
print
prison
prisoner
private
prize
probably
problem
process
produce
product
production
program
progress
project
promise
promote
pronoun
proper
property
protect
protection
protein
proud
prove
provide
P. S.
public
publish
pudding
puddle
puff
pull
pump

pumpkin
punish
pup
pupil
puppy
purchase
pure
purple
purpose
purse
push
put
puzzle
quack
quail
quantity
quarrel
quart
quarter
queen
queer
question
quick
quickly
quiet
quietly
quilt
quit
quite
rabbit
race
radio
raft
rag
rail
railroad
rain
rainbow
rainy
raise
raisin
rake
ran
ranch
rang
range
rank
rapidly
rat
rate
rather
rattle
raw
reach
read
reader
ready
real
realize
really
reason
receive
recess
recognize
record
recreation
red
refuse
regard
region
regular
reindeer
relative
religion
religious
remain
remember
remove
rent
repair
reply
report
represent
representative
request
require
rescue
respect
rest
result
return
revolution
reward
ribbon
rice
rich
rid
riddle
ride
rider
rifle
right
ring
ripe
rise
river
road
roam
roar
roast
rob
robber
robe
robin
rock
rod
rode
roll
roller
roller skate
roof
room
rooster
root
rope
rose
rough
round
route
row
rub
rubber
rug
ruin
rule
ruler
rum
run
runner
rush
sack
sad
saddle
safe
safely
safety
said

sail
sailor
salad
sale
salmon
salt
salute
same
sample
sand
sandwich
sandy
sang
santa
Santa Claus
sat
Sat.
satisfy
Saturday
saucer
save
saw
sawed
say
scale
scarce
scare
scarf
scatter
scene
scenery
school
schoolhouse
schoolmate
schoolroom
science
scientist
scissors
scold
scooter
score
scout
scrap
scrape
scratch
scream
screen
scrub
sea
seal
seaport
search
season
seat
second
secret
secretary
section
secure
see
seed
seek
seem
seesaw
seldom
select
self
sell
semester
send
sense
sent
sentence
separate
Sept.
September
serious
servant
serve
service
set
settle
settlement
settler
seven
seventeen
seventh
seventy
several
sew
shade
shadow
shake
shall
shape
share
sharp
she
shed
sheep
sheet
shelf
shell
shelter
shepherd
she's
shine
ship
shirt
shock
shoe
shone
shook
shoot
shop
shore
short
shot
should
shoulder
shouldn't
shout
shovel
show
shower
shut
sick
sickness
side
sidewalk
sight
sign
signal
silent
silk
silly
silver
simple
since
sincerely
sing
singer
single
sink
sir
sister
sit

six
sixteen
sixth
sixty
size
skate
ski
skin
skip
skirt
skunk
sky
slave
slavery
sled
sleep
sleepy
sleeve
sleigh
slept
slid
slip
slipper
slippery
slow
slowly
small
smallpox
smart
smell
smelt
smile
smoke
smooth
snake
snap
sneak
snow
snowball
snowman
snowy
so
soap
social
sock
soda
soft
softly
soil
sold
soldier
solid
some
somebody
someone
something
sometime
somewhere
son
song
soon
sore
sorry
sort
sound
soup
sour
source
south
southern
space
spade
spank
spare
spark
sparrow
speak
spear
special
speech
speed
spell
spend
spent
spice
spider
spill
spin
spinach
spirit
splash
splendid
split
spoil
spoke
spool
spoon
sport
spot
spread
spring
spy
square
squeeze
squirrel
St.
stable
stack
stage
stair
stake
stalk
stamp
stand
star
starch
stare
start
starve
state
statement
station
stationery
statue
stay
steal
steam
steel
steep
steer
stem
step
stick
stiff
still
stir
stock
stocking
stole
stomach
stone
stood
stool
stoop
stop
store
storm

story
stove
straight
strange
stranger
strap
straw
strawberry
stream
streamline
street
streetcar
stretch
strike
string
strip
stripe
strong
struck
stuck
student
study
stuff
stubble
stump
stunt
style
subject
substance
subtract
succeed
success
successful
such
sudden
suddenly
suffer
sugar
suggest
suit
sulphur
sum
summer
sun
Sunday
Sunday school
sunny
sunset
sunshine
supper
supply
support
suppose
sure
surely
surface
surprise
surrender
surround
swallow
swam
swamp
sweater
sweep
sweet
swell
swept
swift
swiftly
swim
swing
Swiss
sword
system
table
tablet
tack
tadpole
tag
tail
take
tale
talk
tall
tallow
tame
tan
tank
tap
tar
tardy
tariff
taste
taught
tax
tea
teach
teacher
team
tear
tease
teaspoon
teepee
teeth
telegraph
telephone
tell
temperature
temple
ten
tend
tennis
tent
tenth
term
terrible
territory
test
than
thank
thankful
Thanksgiving
Thanksgiving Day
that
that's
the
theater
theft
their
them
themselves
then
there
therefore
thermometer
these
they
they're
thick
thin
thing
think
third
thirsty
thirteen
thirty
this

those
though
thought
thousand
thread
three
threw
thrifty
thrill
throat
throne
through
throughout
throw
thunder
Thursday
thus
ticket
tickle
tie
tiger
tight
till
timber
time
tin
tiny
tip
tire
title
to
toad
toast
tobacco
toboggan
today
toe
together
toilet
told
tomato
tomorrow
ton
tongue
tonight
tonsil
too
took
tool
tooth
top
tore
torn
touch
toward
towel
tower
town
toy
track
tractor
trade
trader
traffic
trail
train
tramp
transportation
trap
travel
traveler
treasure
treat
treaty
tree
tribe
trick
tricycle
trim
trip
troop
trouble
trousers
truck
true
truly
trunk
truth
try
tub
tube
tuberculosis
Tuesday
tulip
tumble
tune
tunnel
turkey
turn
turnip
turtle
twelve
twenty
twenty-five
twenty-one
twice
twin
two
type
typewriter
ugly
umbrella
uncle
under
understand
unhappy
union
unit
unite
university
unknown
unless
unload
untie
until
up
upon
upstairs
uptown
us
use
useful
usual
usually
vacant
vacation
valentine
valley
valuable
value
various
varnish
vase
vegetable
verb
verse
very

vessel
vice-president
view
village
vine
violet
violin
visit
visitor
vitamin
voice
vote
voyage
wade
wagon
wait
wake
walk
wall
walnut
walrus
wander
want
war
warm
warn
was
wash
wasn't
waste
watch
water
waterfall
watermelon
wave
wax
way
we
weak
wealth
wealthy
weapon
wear
weather
weave
wedding
Wednesday
weed
week
weigh
weight
weird
welcome
we'll
well
went
we're
were
weren't
west
western
wet
we've
whale
what
whatever
what's
wheat
wheel
when
whenever
where
whether
which
while
whip
whisper
whistle
white
who
whole
whom
whose
why
wide
wife
wigwam
wild
will
willow
win
wind
windmill
window
windy
wine
wing
winter
wipe
wire
wise
wish
witch
with
within
without
woke
wolf
wolves
woman
won
wonder
wonderful
won't
wood
wooden
woodpecker
wool
word
work
worker
world
worm
worn
worry
worse
worship
worst
worth
would
wouldn't
wound
wrap
wreath
wreck
wrist
write
writer
written
wrong
wrote
Xmas
yard
yarn
year
yell
yellow

yes
yesterday
yet
you
you'll
young
your(s)
you're
yourself
yr.
zebra
zero
zone
zoo

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APPENDIX A

A READING WORD LIST FROM A BASIC VOCABULARY OF ELEMENTARY SCHOOL CHILDREN

A READING WORD LIST FROM A BASIC VOCABULARY OF ELEMENTARY SCHOOL CHILDREN[1]

While the list is primarily a spelling list, the problem is to derive a reasonable, logical list of words that would be a basic reading list for the elementary grades. The proposed problem, when completed, would provide such a list in order of word frequency.

METHOD: TO COMBINE THE VARIOUS FORMS OF THE WORDS LISTED

In order to provide an accurate frequency of the words in the list, the following method is proposed:

1. When the plural noun form is obtained by adding "s" or "es", or changing "y" to "i" and adding "es", the singular form will be recorded. This recording will include the plural form of the noun. If the plural noun form is other than those endings, the frequency for each form will be recorded.

   All noun forms in the possessive case will be recorded as follows: If the plural ends in "s", "es", or changing "y" to "i" and add "es", the possessive case will be recorded under the singular form. If, however, the plural noun form is obtained by adding other than "s" or "es", the possessive singular form will be recorded under the singular form and the possessive form of that noun under the plural form.

1.1 Example: Noun forms, the plurals of which are formed by adding "s" or "es".

Noun	Frequency
girl	6,312
girl's	245
girls	3,668
girls'	104
Total	10,149

Form will be recorded as:

girl	10,149

1.2 Example: Noun forms, the plurals of which are formed by adding other than "s" or "es".

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[1]Henry D. Rinsland, A Basic Vocabulary of Elementary School Children (New York: The Macmillan Company, 1945).

Noun	Frequency
child	973
children	6,943
children's	134
child's	50
	8,100

Forms will be recorded as:

child	1,023	(This total is reached by combining the singular and singular possessive of that noun.)
children	7,077	(This total is reached by combining the plural and plural possessive of that noun.)

2. If the verb form is a regular verb, (endings of "s", "es", "d", "ed", "ing" or past participle formed by adding "n") all forms of that verb will be recorded under the present tense of that verb. If no present tense is recorded, the regular verb forms will be listed by frequency. In the case of irregular verbs, all forms will be recorded by frequency.

2.1 Example: Regular verb forms ending in "s", "es", "d", "ed", "ing" or past participle formed by adding "n".

Verb	Frequency
guess	2,479
guessed	44
guesses	23
guessing	17
Total	2,563

Form will be recorded as:

guess	2,563

2.2 Example: Irregular verbs

Forms will be recorded as:

go	23,898
went	25,190
gone	1,874

3. In case of comparatives and superlatives, each form will be recorded by frequency total.

3.1 Example: Regular forms

Forms will be recorded as:

tall	845
taller	78
tallest	54
Form will be recorded as:	Total 927

3.2 All irregular comparatives and superlatives will be recorded separately.

good	15,138
better	3,123
best	5,591

4. All abbreviations will be recorded separately.

4.1 Example:

Sept. 135

5. All proper nouns will be recorded separately.

5.1 Example:

September 145

The reading list is to be arranged in order of <u>total</u> frequency of each word or word form. The Rinsland total may be used as a spelling criterion and this list as a reading criterion because the original list is arranged in order of easy syntactical form as recorded by Rinsland.

APPENDIX B

TEST ADMINISTRATION -- MIDWEST CITY SCHOOLS

TEST ADMINISTRATION -- MIDWEST CITY SCHOOLS

Each of the tests in the McCall-Crabbs Standard Test Lessons in Reading is timed for 3 minutes. At the bottom of this sheet, you will find the tests selected for administration with your group.

It is suggested that you use approximately 45 minutes for giving these selected tests. This will give you about 15 minutes for distribution of tests, directions and any other time consuming details.

Just to help you out a little, the following suggestions may be of assistance:

1. Be sure that each student fills out the name and grade blanks at the top of his answer sheet.

2. You will notice that each answer sheet is divided into blocks that indicate the lesson to be answered across the top and the number of the answer along the side. BE SURE THAT THE CHILDREN KNOW WHICH LESSON THEY ARE ANSWERING AND RECORD THE ANSWERS IN THOSE SQUARES. Perhaps you will prefer to encircle each test number on the answer sheet in order to avoid confusion. The lessons, in the booklet, are numbered in Arabic numbers at the top of each page.

3. The manual of directions suggests that you draw a sample of the answer blank on the board to show the students how to record the answers. This appears to be the best way to insure accurate results and the best way to avoid confusion among the students. SEE PAGE 8 IN THE MANUAL.

4. Be sure that you observe the time limit of 3 minutes for each test. By doing this, we shall be able to give you a more accurate grade paragraph score for each child.

5. If you will turn in the answer sheets and the test booklets to your principal when you are finished, we shall be glad to score the tests for you and return the scores AS SOON AS POSSIBLE.

6. The following directions adapted from the Teacher's Manual may be of assistance to you:

> Listen carefully, for we shall learn today how to do the lessons in the book. I shall give each of you a copy of this book. (Hold up a copy) Do not open

your book until I tell you what to do. Here is an answer sheet for each of you. It is the one we shall use today, so write your name and grade at the top. Be careful not to tear or soil your book and blank. Place the blank so it is ready for you to write a, b, c, or d in the little squares under (Here give them the number of the test you are going to give.)

Open your book to Lesson (Give the number again). Make sure that it says (Number of test) at the top of the page. Close the book but keep your finger there so that you can find the page again quickly when I give the signal . . .

When I say GO--but not before--open your book, read the story in Lesson (Give the number). Then read the first question under the story. Decide which answer is best -- a, b, c, or d and write the LETTER in the first square under (Give the test number again!). Go on answering the questions in this way, writing the letter you choose in the proper square on your answer sheet. You may look back at the story as many times as you wish. Do not mark in your booklet. Write all letters with PENCIL on your answer sheet.

Get ready so you can start without losing a second. Open your books . . . . GO!

7. Continue with the same idea throughout the Lessons indicated below:

LESSONS TO BE USED BY GRADES:

Book A (GRADES 2 AND 3) Test lessons selected:	Book B (GRADE 4) Test lessons selected:
9	3
10	4
16	31
31	33
34	35
40	42
45	53
48	54
51	65
75	70

Book C (GRADE 5)
Test lessons selected:

6
13
19
32
37
42
50
56
71
73

Book D (GRADE 6)
Test lessons selected:

2
9
25
37
40
43
61
65
75
77

Book E (GRADES 7 AND 8)
Test lessons selected:

5
18
19
24
26
49
55
60
62
71

THANK YOU VERY MUCH!