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Signature Lynn Anthony Fremont
Date August 11, 1971

READABILITY LEVELS OF SELECTED GRADE ELEVEN LITERATURE

by

LYNN ANTHONY FREMONT

A professional paper submitted to the Graduate Faculty in partial
fulfillment of the requirements for the degree

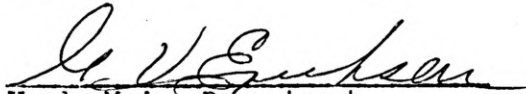
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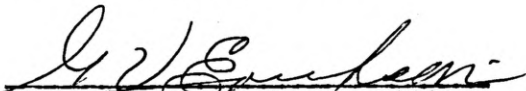
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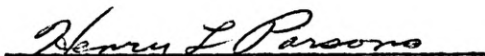
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ABSTRACT

The purpose of this study was to determine the readability levels of selected literature recommended for and taught in the grade eleven literature classes in the schools of Montana. To do this, fifteen literary works were chosen based on their inclusion in the English Study Guide for the state of Montana and in grade eleven literature anthologies. Using these criteria assured that the works analyzed were in fact those that were being taught in the schools of Montana.

The Dale and Chall and the Lorge readability formulas and the Fry Readability Graph were applied to each of the works, providing three estimates of a readability level for each work. The levels indicated by all three methods are based on answering correctly fifty percent of the questions concerning detail, appreciation, import, vocabulary, and concept. As few teachers consider fifty percent accuracy average, the readability levels found would probably tend to be an underestimate.

The Lorge Readability Formula and the Fry Readability Graph placed the fifteen literary works as having readability grade levels of grade eleven or less. The Dale and Chall formula placed two works, or thirteen percent at a readability grade level of grade eleven or above with eighty seven percent having an indicated readability level of less than grade eleven.

Readability levels based on the Lorge Formula were consistently lower than those obtained from the Dale and Chall Formula and the Fry Readability Graph. This was in keeping with other studies of this type which found up to eight grade level differences between grade levels indicated by the Lorge Formula and those indicated by the Dale and Chall Formula. The indicated grade level of sixty seven percent of the works was identical for the Dale and Chall Formula and the Fry Readability Graph. As it requires much less time to determine a readability level from the readability graph than from either of the formulas, the graph would appear to be the more efficient tool, one that could easily be implemented by teachers in all areas as a help in individualizing reading materials for their classes.

The writer feels that readability levels based on a higher percentage of correct answers would be more meaningful for most teachers. Research in this area, especially in relation to the readability graph, is recommended.

CHAPTER I

INTRODUCTION

The ability to read plays a major role in all academics; yet as students progress through the grades, the range of individual reading levels increases. In spite of the apparent differences, many English classes in grade eleven are presenting the same literary works to all students, based on recommendations made by the Montana Department of Public Instruction in a study guide for English published by this department. The objective of the study guide is to give students contact with various forms of literature at various levels of difficulty, but no indication of the level of each work is given.

Each student deserves the opportunity to become acquainted with various literary forms on a level commensurate with his individual reading level. By working in this project with readability formulas and a graph based on readability formulas, the researcher will be better informed about the strengths and limitations of the formulas as indicators of readability. By applying the formulas to a selected number of literary works of various forms, the researcher will have an indication of the readability level of the works considered. The deduced information can be used as an indication of whether or not materials as a whole for grade eleven literature are of suitable readability level for the "average" reader. The apparent readability level for each work can be used as a partial basis for deciding whether the work should be included in

the literature program for the class as a whole, for selected portions of the class, or excluded from the program.

STATEMENT OF THE PROBLEM

The problem of this study was to determine the readability level of selected works of literature recommended by the Montana Study Guide in English for grade eleven and included in selected grade eleven literature anthologies. The researcher was involved in determining readability levels through the application of readability formulas and a readability graph to selected works of literature.

NEED OR PURPOSE OF THE STUDY

This study is important because there is a need to diversify the curriculum in literature to meet the individual needs of all, rather than teaching the same thing to all students. Both students and teachers of English express dissatisfaction with the approach of teaching all students the same thing in the presentation of literature. The understanding and application of readability formulas can be a tool in the formulating of literature programs to challenge the high ability students or relieve frustrations for students with lower reading levels.

GENERAL QUESTIONS TO BE ANSWERED

The questions answered by this study are:

1. What is the readability level of the literary works selected for this study?
2. What percentage of the works being considered have a readability level higher than grade eleven?
3. What percentage of the works being considered have a readability level of grade eleven or less?

GENERAL PROCEDURE

The researcher reviewed literature pertaining to the general background and history of readability theory, the construction and validation of readability formulas, and the application of readability principles and formulas. The material to which these principles were applied was chosen from works recommended by the Montana Department of Public Instruction which are also included in grade eleven literature anthologies now being used in the public schools of Montana.

Two readability formulas, the Dale and Chall and the Lorge, and the Fry Readability Graph were then applied to each of the chosen works so the approximate grade readability level could be determined. The disclosed information is presented in a single table for ease of comparison. This information can be used as an indication of whether or not

literature recommended for and included in grade eleven anthologies has a readability level suitable for the "average" reader at this level.

A general summary of the effectiveness of readability formulas, possibilities for application by the classroom instructor, and possibilities for further research is included in the final chapters of the paper.

LIMITATIONS

The study was limited in that only selected works of the many recommended were included in the study. A further limitation is imposed in that the formulas chosen will determine a readability level based only upon the style of writing, ignoring legibility of writing and interest value, two factors that are included in some readability formulas.

DEFINITION OF TERMS

Readability: As used in this study, readability means an indication of the ease of understanding or comprehension of a work due to the style of writing. Readability levels for works used in this project were determined by application of the Dale and Chall readability formula, the Lorge readability formula, and the Fry Readability Graph.

Readability Formula: For purposes of this project, readability formulas are considered as a method of measurement intended as a predictive device to provide quantitative, objective estimates of the style

difficulty of writing. Interest and other such factors are not involved.

SUMMARY

Determining the readability level of selected recommended literary works was chosen as a project to obtain some indication of whether or not grade eleven literature courses based on these selections is appropriate for the "average" reader at this grade level. Other applications of the information educed are also possible.

After reviewing literature pertaining to the background and history of readability theory, construction and validity of readability formulas, and the applications of readability principles and formulas, two readability formulas and a readability graph were applied to the selected works. Based on the disclosed information, approximate grade readability levels for each work is given. A comparison is made to see if a significant percentage of the works considered have a readability level above grade eleven. The limitations of the study are the selected number of works included rather than all that are recommended and the fact the formulas and graph chosen are based only on style of writing, ignoring other factors that can contribute to readability. Based on the disclosed information, the researcher summarizes conclusions on the effectiveness and use of readability formulas and possibilities for further research.

CHAPTER II

REVIEW OF RELATED LITERATURE

INTRODUCTION

The review of literature first provides a brief history of the development of the concept of readability. Some of the earliest studies predating the development of readability formulas are discussed.

The next consideration is of the general methods used in developing formulas with special attention given to the Dale and Chall and the Lorge readability formulas. Consideration is also given to the Fry Readability Graph. The function of sampling in the application of readability formulas and the inter-correlation of the measures chosen for this study are considered. In addition, the recognized limitations of readability formulas is reviewed.

The final aspect of the literature review discusses findings of studies applying readability formulas in the areas of education. A consideration of possibilities for future research on the topic of readability is also considered.

The literature reviewed is pertinent in that the areas covered are directly related to the concept of readability and readability formulas. The reports and research considered are works submitted by pioneers and experts in the field of readability. The findings and opinions expressed by these experts are used in Chapter IV to compare this

study with results obtained by other researchers in applying readability formulas.

HISTORY OF READABILITY FORMULAS

Since before the written word, the ease of understanding of words has been of concern to people. Advocates of clear language often quote I Corinthians, 14:9, "Except ye utter by the tongue words easy to be understood, how shall it be known what is spoken? For ye shall speak into the air." This is an indication that clarity in communication was considered early in history.

Lorge (1944,b) tells that in 900 A.D. the Talmudists counted words and ideas in their scrolls to determine a comparison of words used in an unusual sense as opposed to word use in a usual sense. This concern with readability among religious writers is understandable, as they were among the few literate people of their time.

According to Lorge (1944,b) the first word count constructed on a scientific base for establishing a foundation for vocabulary, and relating vocabulary to reading difficulty was made in 1898 by a German, W. F. Kaeding. Word counts on a smaller scale were used in the United States for determining ease of understanding for books such as the McGuffey Readers.

These works were forerunners of the extensive word count made by Dr. Edward L. Thorndike and published in 1921 as The Teacher's Wordbook.

This work listed the 10,000 most frequently used words based on the frequency of the occurrence of the word and consideration of the range or the number of different sources in which the word occurs. In 1932 the book was revised to include 20,000 words and in 1944 extended to include 30,000 words. These word lists as compiled by Thorndike have influenced the teaching of vocabulary in the schools and provided a base for the development of the early readability formulas.

Vocabulary was considered an important factor in reading difficulty, and most early attempts at regulating reading were focused on this factor. According to Lorge (1949), a second factor affecting reading ability was considered in 1889 by N. A. Rubakin, a Russian. He suggested that the excessive use of overlong sentences contributed to reading difficulty. Although sentence length as a factor contributing to reading difficulty was mentioned early, the first readability formulas didn't consider it as a factor at all.

The first interest in reading difficulty shown by religious writers moved from them to educators, publishers of magazines, industry, government, and librarians, who asked for readable material for adults. (Kingston, 1967) These early efforts for finding ways to provide readable material for all readers shows a concern by some for the literacy of all.

For this paper, a readability formula is by definition a method of measurement intended as a predictive device. According to Klare

(1963) readability measures which fall in this class must, without requiring a test of the reader, provide a quantitative and objective estimate of the difficulty of writing of a work, and be general enough to be used for estimations over a range of difficulty and applicability. Readability formulas will provide information similar to that measured by a reading test. Thus, many of the formulas developed over the years do not fall into this class. Although no developmental procedure applies to all formulas, there are certain guidelines or general procedures most formulas follow. It is generally considered that four general areas are related to reading ease: style, content, organization, and format. The development of readability formulas has centered on style, as the other three factors cannot be separated into measureable units. After determining elements of style that are measureable and might be useful in analysis, a series of tests with comprehension questions is then used to determine which elements are most predictive of difficulty. These elements are then combined into a regression equation formula, weighting elements used in proportion to each factor's contribution to the total score. This general approach is varied in detail, with the greatest variation being in the selection of criteria. (Klare, 1963)

Klare (1963), in his summary presentation of readability formulas, gives credit to Bertha A. Lively and S. L. Pressey for the first quantitative study of readability that was related to more modern readability formulas. Their formulas, as well as others developed in the

period from 1921-1934, were primarily based on predicting readability on the basis of vocabulary. Measurement of vocabulary difficulty was based on Thorndike's Teacher's Wordbook, and criteria of reading difficulty was generally crude.

The period from 1934-1938 brought forth several very detailed formulas based on more and different factors with less emphasis given to Thorndike's word count. The increased concern for adequate criteria for measuring readability made this period one in which some of the most extensive studies were made in readability.

Emphasis on efficiency and simplicity of use has characterized the general readability formulas developed from 1938 to the present. The first efficient formula was published by Lorge in 1939, and revised in 1948 and 1951. This formula uses as predictors average sentence length, vocabulary based on uncommon words not included on the Dale 769 word list, and sentence structure based on the relative number of prepositional phrases. (Lorge, 1944,a)

Edgar Dale and Jeanne Chall in 1948 developed a formula designed to correct certain shortcomings they felt were apparent in earlier formulas. Two counts are used for this formula--the average sentence length and vocabulary measured by unfamiliar words not included in the Dale list of 3,000. (Dale,1948) There is evidence (Powers,1958) this formula is somewhat more highly predictive than some popular formulas.

Edward Fry in 1968 developed a readability graph which gives the

same information provided by a formula, (a grade level placement) but which requires fewer samplings for long works than the application of formulas. This would result in a time saving when determining readability. The index from the readability graph is based on the factors of word length and sentence length. (Fry, 1968)

SAMPLING AND VALIDITY

Through the years, varying research has been done on sampling factors in relation to readability research. Although it is not essential, since the formulas can be applied to entire works, it is sometimes expedient to sample because of the time factor involved in considering an entire work. An early project related to sampling was one conducted by Edward Dolch in 1930. Using the percentage of difficult words as the comparison factor, he used three entire school readers as one element and samplings of every tenth page for the comparison element. The comparison showed that samplings tend to rate books considerably higher than the values placed on the entire book.

Klare (1952) conducted another sampling project in which he used various types of samples. He compared ratings based on a formula considering vocabulary in view of the repeated words used. In this study, the larger samples gave a "harder" rating, the opposite result of that found by Dolch. This suggests that the effect sampling has on the result will vary with the formula used.

As the Dale and Chall and the Lorge formulas are popular, they have been included in many of the comparison studies of validity that have been conducted. Consistently, the inter-correlation between the two formulas is recorded to range from .54 to .90. According to Fry, (1968) the correlation of the readability graph to the Dale and Chall formula is .94.

LIMITATIONS OF READABILITY FORMULAS

As with any tool that can be used as an indicator, readability formulas have limitations. The first of these is the fact that a formula can be used to only measure style, a single aspect of writing. Other factors of writing such as content, imagery, organization, format, and word order are unaccounted for, as are the differences to be found in the individuals who will be reading the material. A second limitation is the fact that formulas measure only difficulty, just one aspect of style. Dramatic effectiveness or the ability to create mood are not considered. Difficulty is not measured perfectly by formulas, a third limitation. It appears that formulas are accurate to a grade level, but factors mentioned can effect the degree of accuracy. Furthermore, errors in sampling or application can cause inaccurate scores. Another factor of style not considered by formulas is whether or not the style used is good style. In spite of these limitations, style as related to reading speed, understanding, acceptability, and learning is an impor-

tant enough factor to make the use of a formula based on it as an indicator of reading difficulty acceptable as long as one remembers that the information obtained is an indication of an approximate readability level. (Klare, 1963)

APPLICATIONS OF READABILITY FORMULAS IN EDUCATION

Just as the origin and primary purposes of readability formulas were in and for education, so too have the majority of published applications of readability formulas been in the subdivisions of the education field. The writer surveyed abstracts of one hundred studies related to the application of readability formulas to determine which specific fields of education were involved in previous projects. In elementary education it was found that most studies were related to reading textbooks, but there were also studies in other areas including social studies, health, science, arithmetic, and various areas of English. Research on the secondary level involved materials primarily in science, with some studies to be found in mathematics, health, history, social studies, literature, and some vocational type materials. On the collegiate level, psychology texts were analyzed the most, with studies also being made in the sciences. Consideration of reading materials in adult education appears to concentrate on helping those with limited reading ability.

FUTURE RESEARCH IN READABILITY

Within the past few years, there has been a division among people interested in readability regarding the worth of further research in this area. Klare (1968) feels that new factor analysis studies of several dimensions of writing will provide new considerations in readability, and that research should continue, attempting to find ways of including organization of materials, conceptual difficulty, content, and format in the determining of a readability level. Furthermore, the readability factors and methods that now exist should be refined to make them more meaningful. One suggestion is a change of word lists, using specialized lists for specialized areas rather than use of the general lists that are now employed in the application of readability formulas. The change in word lists may make for greater accuracy, but it could cause an increase in the time needed to apply the formulas, causing people to avoid using them. Other factors that could be considered for refinement are variations in word meaning from those commonly used, the use of specific formulas for specific types of materials, and the compilation of different norms for varying materials and audiences.

Less optimism for the immediate future of readability research is expressed by Manzo. (1970) Because there is variability in the predictions of readability formulas, because reader purpose and experience are not included in them, because the information indicated by a formula

can be determined in other ways and because researchers keep going over the same ground, Manzo suggests this is the appropriate time to call a moratorium on readability research.

SUMMARY

The interest in clear expression and readability is ancient in origin. Earliest references to it and original studies relating to the topics were conducted by religious orders. Vocabulary was the earliest factor considered as an indicator of difficulty. Because researchers believed that vocabulary indicated difficulty, the late 1800's and early 1900's saw the publication of many word lists indicating the words most often used. Sentence length as a factor determining difficulty was suggested by a Russian in 1889, but wasn't seriously considered as a factor for readability until the period of the development of readability formulas.

Of the various classes of readability formulas, those considered and used in this project are the type that will provide a quantitative and objective estimate of the difficulty of a work without requiring a test of the reader, and are general enough to apply over a range of applicability and difficulty. Formulas of this type are developed using various aspects of writing style as the equated elements. Each chosen element is weighted in proportion to its contribution to the total score and based on this, becomes a part of a regression equation formula.

The first formulas were published in 1921, and since that time there have been many produced for those interested in readability to consider.

Two formulas with high predictability are the Dale and Chall and the Lorge formulas. The Lorge formula includes one more criterion for consideration than the Dale and Chall formula. The inter-correlational range of these two formulas is .54 to .90. The Fry Readability Graph supplies information on readability similar to that obtained from the two formulas with an apparent savings of time. The correlation of the readability graph to the Dale and Chall formula is .94.

Since readability formulas are based on only one aspect of writing, style, they do have limitations. Formulas leave many of the factors of writing that help to determine readability unaccounted for. A further limitation is the fact that difficulty is the only aspect of style measured by a formula, and then the information obtained is not perfect. In spite of the limitations, style is related to enough of the important aspects of reading to make it worthwhile to use a formula based on this single aspect as an indicator of a readability level.

Opinions among persons interested in readability differ concerning future research in the area. Some feel that research should continue, both to refine the formulas and methods previously completed and to consider development of specialized formulas and word lists for use in specialized areas. Others feel that research in this area has too long been channeled in one area, and the inability of formulas to consider

all aspects of reading coupled with the admitted weaknesses of the formulas are reasons valid enough to justify a moratorium on research in the area.

CHAPTER III

PROCEDURES

INTRODUCTION

The problem of this study is to determine the readability level of selected works of literature recommended by the Montana Study Guide in English for grade eleven. This chapter explains how the fifteen literary works used in the study were chosen.

The method of determining readability levels is explained with descriptions of the two formulas and the readability graph that were used given. The information obtained is presented in table form for ease of comparing variations in data.

DESCRIPTION OF LITERARY WORKS

The literary works investigated were chosen from the list of recommended literary works for grade eleven in the study guide for English published by the Montana Department of Public Instruction. A survey of grade eleven literature anthologies by Ginn and Company, American Book Company, and Houghton, Mifflin Company was made, and the recommended works from the study guide included in two or more of these anthologies were selected for the study. The works chosen include two of each of the following categories: short stories, novels, lyric poems, narrative poems, and American folklore songs. One work from each of the following categories is included: drama, biography, autobiography, formal essay,

and informal essay.

INVESTIGATION

The investigation for this paper was limited to determining the readability levels of the selected literary works.

METHOD OF COLLECTING DATA

Data was compiled by applying the Dale and Chall and the Lorge readability formulas and the Fry Readability Graph to the selected literary works, providing a quantitative and objective estimate of their reading difficulty. Data from the Dale and Chall formula is based on vocabulary of unfamiliar words and average sentence length. Data from the Lorge formula include the two factors mentioned plus sentence structure based on the relative number of prepositional phrases. The Fry Readability Graph data is based on word length and sentence length. Three grade readability levels were determined for each work based on the two formulas and the graph. On shorter works, the entire work was taken into consideration; data was determined on ten percent of the novels, short stories, drama, biography, long narratives, and autobiography. The inter-correlational range of the two formulas is .54 to .90. The correlation of the Dale and Chall formula and the Fry Readability Graph is .94.

ORGANIZATION OF DATA

The readability level of each literary work was tabulated using two formulas and a readability graph. The information is presented in a single table for ease of comparing variations among the results of the data. The percentage of works with readability levels greater than grade eleven and the percentage with levels less than grade eleven was computed for each measure and included in the table.

STATISTICAL HYPOTHESES

No statistical hypotheses was forwarded for this work as all analysis will be based on descriptive statistics.

ANALYSIS OF DATA

The data was hand calculated and a summary of findings and possible applications of these is presented in addition to the table summary of resultant data.

SUMMARY

In determining the readability levels of literary works, the central problem of this study, the writer chose to compute data using two different readability formulas and a readability graph. The application of three different methods of determining readability levels provides

material for comparisons among them as to which if any would be practical for the classroom teacher to use as a tool for determining readability approximations. By including works from the various areas of literature as well as from different literature anthologies and the Montana study guide for English, analysis is made of those works and types of literature which are being taught in grade eleven literature classes in the schools of Montana. Presentation of data in table form aids in ease of making comparisons and drawing conclusions from the resultant data of the three methods.

CHAPTER IV

FINDINGS AND INTERPRETATIONS

Three specific questions were presented in Chapter I as the basis of this study. The questions presented were:

1. What is the readability level of the literary works selected for this study?
2. What percentage of the works considered have a readability level higher than grade eleven?
3. What percentage of the works considered have a readability level of grade eleven or less?

Findings from the research pertaining to these three questions are summarized in Table I.

TABLE I

GRADE READABILITY LEVELS

Literary Type and Work	Lorge Formula	Dale and Chall Formula	Fry Readability Graph
<u>American Folklore Songs</u>			
"Let My People Go"	6	9-10	7
"Paul Bunyan's Big Ox"	6	7-8	7
<u>Autobiography</u>			
<u>Deliver Us From Evil</u>	7	11-12	9
<u>Biography</u>			
<u>Death Be Not Proud</u>	7	9-10	9

TABLE I (continued)

Literary Type and Work	Lorge Formula	Dale and Chall Formula	Fry Readability Graph
<u>Drama</u>			
<u>Our Town</u>	5	5-6	5
<u>Formal Essay</u>			
"Walden" (Thoreau)	6	9-10	9
<u>Informal Essay</u>			
"Walden" (White)	7	9-10	9
<u>Lyric Poems</u>			
"The Fire of Driftwood"	7	9-10	9
"Stopping by Woods on a Snowy Evening"	4	5-6	8
<u>Narrative Poems</u>			
"Battle of the Kegs"	8	9-10	9
"Snowbound"	10	13-15	9
<u>Novels</u>			
<u>Old Man and the Sea</u>	5	5-6	6
<u>The Red Badge of Courage</u>	6	7-8	7
<u>Short Stories</u>			
"The Pit and the Pendulum"	7	9-10	8
"To Build a Fire"	6	7-8	7
Readability Level Greater than Grade Eleven	0%	13%	0%
Readability Level of Grade Eleven or Less	100%	87%	100%

Note--The grade level given for all measures is based on answering correctly fifty percent of the questions concerning detail, appreciation, import, vocabulary, and concept.

The readability of the works in terms of grade level placement based on the Dale and Chall and the Lorge readability formulas ranged from the same grade placement on one work only to a difference of four grade levels. This difference of grade levels is based on the highest grade level of the range given for the Dale and Chall formula. In all cases, the lower grade level indication was from application of the Lorge formula. The findings shown are not unusual, as Klare (1963) found that the Dale and Chall and the Lorge formulas would place lower level materials at nearly the same grade levels, but with higher level materials, differences of as much as eight grade levels is found between the placements of the two formulas.

The range comparison of the Lorge Formula and the Fry Readability Graph varies from the same grade placement on one work to a maximum difference of four grade levels. Again, in all cases of differences, the grade level indication resulting from the use of the Lorge Formula was lower.

In comparing the readability levels as indicated by the Dale and Chall Formula and the Fry Readability Graph, the results were the same on ten of the fifteen works analyzed. In one instance, the grade level placement of the readability graph was two grade levels higher than the formula. In four cases, the level placement indicated by the formula was higher than that indicated by the graph with a maximum difference of four grade levels.

The data presented suggests that the materials considered in this study might not present a challenge to the "average" grade eleven reader, as only one formula places any of the works at grade eleven or above, and then only thirteen percent fell in this range. As the grade level placements presented are based on answering correctly fifty percent of the questions concerning detail, appreciation, import, vocabulary and concept, the grade levels given in most cases would be an underestimate of the grade level placement, as few teachers consider fifty percent correctness average. Lorge has provided a means for determining an alternate grade level placement based on answering seventy-five percent of the questions correctly. (see Appendix, page 32) Neither the Dale and Chall Formula or the Fry Readability Graph provides information for determining such an alternate grade level placement.

The writer feels that both formulas and the graph tend to underestimate the readability levels of the works for the most effective teaching. The Dale and Chall Formula and the Fry Readability Graph with their higher grade level placements would seem to be more accurate than the grade levels obtained by using the Lorge Formula. As the majority of the grade placements found by using the Dale and Chall Formula and the Fry Readability Graph were the same, the writer recommends the use of the Fry Readability Graph on the basis of the time factor involved in the use of the two methods. Readability levels for all fifteen works being considered were figured with the Fry Readability Graph in less

time than it took to determine the readability level for a single novel using the Dale and Chall Formula. As the resulting information is the same, this suggests that the Fry Readability Graph is the more efficient method of determining a readability level. Although the data for this study has been limited to literary works, the writer feels that knowledge of readability levels of materials could be beneficial in all areas of education. It appears the Fry Readability Graph could be an efficient tool for all instructors to employ for determining readability levels of materials used in their classes. It is a basis for helping the instructor provide materials for all students that are at a level easy enough for the individual student to master, but difficult enough to challenge him.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

SUMMARY

The Lorge Readability Formula and the Fry Readability Graph placed the fifteen literary works as having readability levels of grade eleven or less. The Dale and Chall Formula placed two works or thirteen percent at a readability level of grade eleven or above with eighty seven percent having an indicated readability level of less than grade eleven. Findings for all three methods are based on answering correctly fifty percent of the questions concerning detail, appreciation, import, vocabulary, and concept. Since few teachers consider fifty percent correctness "average," it would appear that all indicated grade levels tend to be an underestimate for the most effective teaching.

Comparison of the data showed that the Lorge Formula consistently gave lower readability ratings than the Dale and Chall Formula or the Fry Readability Graph. The Dale and Chall Formula and the Fry Readability Graph provided the same rating of grade levels on the majority of the works considered. Because use of the Fry Readability Graph is less involved and less time-consuming than the use of the Dale and Chall Formula, it appears the graph is the most efficient means of the three methods considered to use in determining an indication of the readability level of written materials.

RECOMMENDATIONS

The writer recommends that:

- (1) a study be made to determine a constant to be added to the raw scores obtained from the Dale and Chall Formula and the Fry Readability Graph to give a readability level based on answering seventy five percent of the questions concerning detail, appreciation, import, vocabulary, and concept correctly.
- (2) prospective teachers be made aware of the existence of the Fry Readability Graph and ways in which it could be employed as a beneficial tool for helping to individualize instruction.

APPENDIX

Dale and Chall Readability Formula

Work Sheet

Article: _____ Page No. _____
 Author: _____ From _____
 Publisher: _____ Date: _____ To _____

1. Number of words in the sample. _____
2. Number of sentences in the sample. _____
3. Number of words not on Dale list. _____
4. Average sentence length. (Divide 1 by 2) _____
5. Dale score. (Divide 3 by 1, multiply by 100) _____
6. Multiply average sentence length (4) by .0496 _____
7. Multiply Dale score (5) by .1579 _____
8. Constant 3.6365
9. Formula Raw Score (add 6, 7, and 8) _____

Average raw score of _____ samples. _____

Average corrected grade level. _____

Date of analysis _____

Checked by _____

Complete directions for applying the Dale and Chall Readability Formula are found in: Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability," Educational Research Bulletin, XXVIII,(1948), pp.11-20,28.

Lorge Readability Formula

Work Sheet

Title of book or article: _____ Edition _____
 Name of author: _____
 Magazine _____ Volume and No. _____
 Publisher _____ Date of publication _____
 Location of sample in text: _____

Basic Data

1. The number of words in the sample. _____
2. The number of sentences in the sample. _____
3. The number of prepositional phrases in the sample. _____
4. The number of hard words in the sample. _____

Item 6, average sentence length: Divide 1 by 2 = . _____ X .06 = _____

Item 8, ratio of prepositional phrases:
 Divide 3 by 1 = . _____ X 9.55 = _____

Item 2, ratio of hard words: Divide 4 by 1 = . _____ X 10.43 = _____

Constant 1.9892

Add 6, 8, 2, and C.

Readability Index _____

Date of analysis _____

Checked by _____

Complete directions for applying the Lorge Readability Formula are found in: Irving Lorge, "Predicting Readability," Teacher's College Record, (1944), 45:404-419.

Alternate Readability Level--Lorge Formula

By adding the constant 1.866 to the readability index found by using the Lorge Formula, an alternate readability grade level based on answering seventy five percent of the comprehension questions correctly is obtained. Table II gives the grade readability levels of the fifteen works used in this study for correct answers on fifty percent of the comprehension questions and for correct answers on seventy five percent of the comprehension questions based on the Lorge Formula and use of the alternate constant.

TABLE II

LORGE FORMULA GRADE READABILITY LEVELS

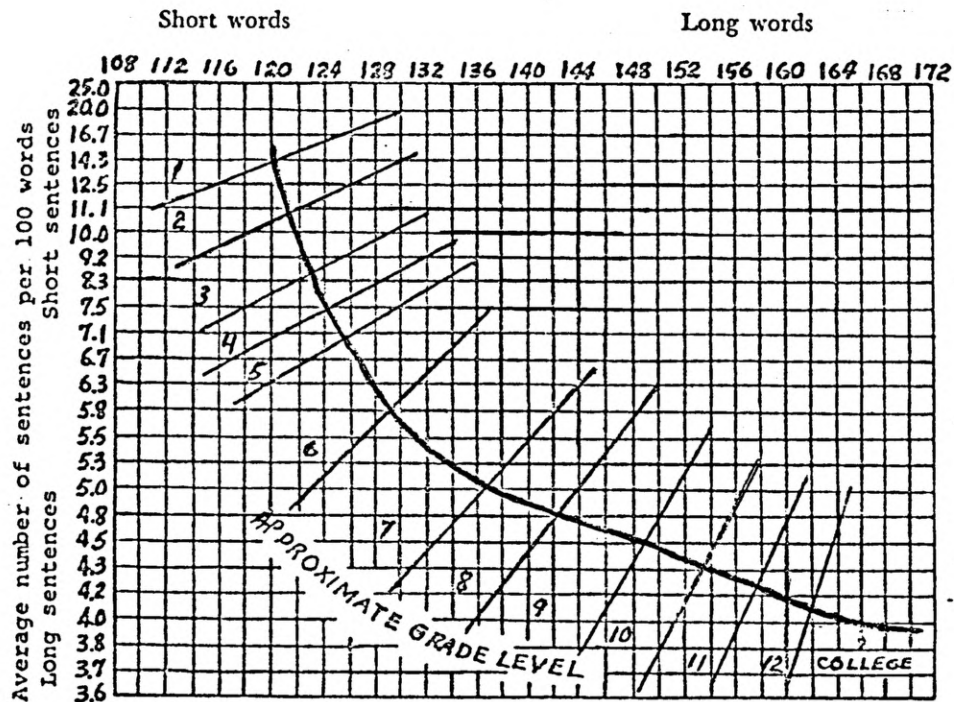
Literary Type and Work	Fifty Percent Correct Response	Seventy five Percent Correct Response
<u>American Folklore Songs</u>		
"Let My People Go"	6	8
"Paul Bunyan's Big Ox"	6	8
<u>Autobiography</u>		
<u>Deliver Us From Evil</u>	7	9
<u>Biography</u>		
<u>Death Be Not Proud</u>	7	9
<u>Drama</u>		
<u>Our Town</u>	5	7

TABLE II (continued)

Literary Type and Work	Fifty Percent Correct Response	Seventy five Percent Correct Response
<u>Formal Essay</u>		
"Walden" (Thoreau)	6	8
<u>Informal Essay</u>		
"Walden" (White)	7	9
<u>Lyric Poems</u>		
"The Fire of Driftwood"	7	9
"Stopping by Woods on a Snowy Evening"	4	6
<u>Narrative Poems</u>		
"Battle of the Kegs"	8	9
"Snowbound"	10	11
<u>Novels</u>		
<u>Old Man and the Sea</u>	5	7
<u>The Red Badge of Courage</u>	6	8
<u>Short Stories</u>		
"The Pit and the Pendulum"	7	8
"To Build a Fire"	6	7

PLATE I

THE FRY READABILITY GRAPH



Directions for Using the Readability Graph

1. Select three one-hundred-word passages from near the beginning, middle and end of the book. Skip all proper nouns.
2. Count the total number of sentences in each hundred word passage (estimating to nearest tenth of a sentence). Average these three numbers.
3. Count the total number of syllables in each hundred-word sample. There is a syllable for each vowel sound. Average the total number of syllables for the three samples.

4. Plot on the graph the average number of sentences per hundred words and the average number of syllables per hundred words. Most plot points fall near the heavy curved line. Perpendicular lines mark off approximate grade level areas.

The Fry Readability Graph is taken from: Edward Fry, "A Readability Formula That Saves Time," Journal of Reading, (1970), 11:513-16, 575-77.

BIBLIOGRAPHY

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BIBLIOGRAPHY

- Dale, Edgar and Jeanne S. Chall. "A Formula for Predicting Readability." Educational Research Bulletin, 1948. 23:11-20,28.
- Dolch, E. W. "Sampling of Reading Matter." Journal of Educational Research, 1930. 22:213-15.
- Fry, Edward. "A Readability Formula That Saves Time." Journal of Reading, 1968. 11:513-16, 575-77.
- Kingston, A. J. and W. W. Weaver. "Recent Developments in Readability Appraisals." Journal of Reading, 1967. 11:44-47.
- Klare, G. R. "Measures of the Readability of Written Communication; An Evaluation." Journal of Educational Psychology, 1952. 43:385-99.
- _____. The Measurement of Readability. Ames: The Iowa State University Press, 1963.
- _____. "The Role of Word Frequency in Readability." Elementary English Journal, 1968. 65:12-22.
- Lorge, Irving. "Predicting Readability." Teacher's College Record, 1944. 45:404-419.
- _____. "Word Lists as Background for Communication." Teacher's College Record, 1944. 45:543-52.
- _____. "Reading and Readability." Teacher's College Record, 1949. 51:90-97.
- Manzo, Anthony V. "Readability, A Postscript." Elementary English Journal, 1970. 66:963-65.
- Powers, R. D., W. A. Sumner and B. E. Kearl. "A Recalculation of Four Readability Formulas." Journal of Educational Psychology, 1958. 49:99-105.
- Thorndike, E. L. The Teacher's Wordbook. New York: Teacher's College, Columbia University, 1921.