

EVALUATION OF TEXTUAL READABILITY – AN ANALYSIS OF ITS VARYING APPROACHES

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ABSTRACT

Readability, as opposed to legibility is the ease with which we read and understand a particular written text. This paper takes into consideration the two different approaches to analyze the readability of written texts – the quantitative and qualitative analysis through a survey of subjective testing which involves the analysis of a number of reader characteristics such as degree of knowledge and interest in the subject researches on readability. The quantitative analysis focuses on text-specific objective testing which is solely based on linguistic factors such as word and sentence length which can be easily measured and quantified by using readability formulas. Qualitative analysis focuses on reader-specific, motivation, familiarity of the theme, etc. Detail analysis reveal that along with vocabulary and sentence structure, the reader's reading ability, prior knowledge, familiarity, interest and expertise on the subject or related field in which the text is written are powerful contributors to determine text readability.

KEYWORDS: Readability, Readability Formula, Linguistic Factors, Objective Testing, Subjective Testing

INTRODUCTION

The concept of readability is one of the most important factors that determine the efficacy of a written material. It is the ease with which we read and understand a particular text. But the concept is different from 'legibility', which is concerned only with typeface and layout. George Klare (1963) defines readability as "the ease of understanding or comprehension due to the style of writing." Edgar Dale and Jeanne Chall's (1949) gave a very comprehensive definition which says readability is: "The sum total (including all the interactions) of all those elements within a given piece of printed material that affect the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimal speed, and find it interesting."

The origin of the earliest readability study was the concept of studying literature from a statistical view point by English literature professor, L. A. Sherman in the 1880s (DuBay, 2004). He discovered that using shorter sentences and concrete terms increase the overall readability of the text. During the 1920s, Edward L. Thorndike of Columbia University published *The Teacher's Word Book* in 1921 which listed 10,000 words by frequency of use. Thorndike found that the more frequently a word is used, the more familiar it is and the easier to use (DuBay, 2007). This concept of vocabulary frequency lists proved to be a great help for teachers to evaluate the readability of reading materials for their students and classes. Gradually in U.S.A, the adult literacy studies were conducted to evaluate the reading ability of the general readers.

Still, the main concern of educators, writers, journalists, corporations and Government agencies was the issue of a lack of a generalized method for measuring textual readability. Thereafter, a series of research studies were conducted by a community of readability scholars such as Edgar Dale and Ralph Tyler (1934), Bernice Leary and William S. Gray (1935), Rudolf Flesch (1946, 1949, 1964), Edgar Dale and Jeanne Chall (1948), Robert Gunning (1952), Wilson Taylor (1953), George Klare (1963, 1975, 1980), G. Harry McLaughlin (1968), Edward Fry (1963, 1977) and many more. The readability

measurement techniques developed by these scholars proved to be a boon for those groups of people who were really concerned about the readability factors in their texts.

The present paper tries to highlight the two broad categories of readability tests – quantitative and qualitative tests used for evaluating readability of a particular text. This paper presents a survey of researches on readability, taking into consideration both the quantitative and qualitative approaches in the determination of readability of a particular text. Hence, the overall aim of the paper is to draw out a critical analysis of both the quantitative and qualitative approaches to the evaluation of readability of written texts.

READABILITY TESTS – QUANTITATIVE AND QUALITATIVE APPROACHES

The earliest forms of readability measurements were quantitative approaches to test readability of the concerned text through mathematical readability formulas. The basic process in these readability tests involves counting the number of some combination of syllables, words, sentences and paragraphs to estimate the difficulty of the language level used (Woods et. al., 1998). It contributes to text-specific objective testing of a given text taking into consideration the specific textual variables such as word length, sentence length, number of syllables, etc., and coming out with a quantifiable number after the applying the mathematical formula. This numerical value denotes the readability score of the given text.

Lorge formula is considered to be one of the earliest readability formulas for assessing textual readability. In 1944, Lorge published his new Lorge Index in the *Teachers College Record* in an article entitled, “Predicting Readability,” which uses three variables viz., average sentence length in words, number of prepositional phrases per 100 words, and number of hard words not on the Dale list of 769 easy words (DuBay, 2007). Lorge’s work established the principles for the readability research that would follow and set the stage for the Dale-Chall and Flesch Reading Ease formulae, which were introduced in 1948.

In 1948, Edgar Dale, Education Professor at Ohio State University, published the Dale-Chall formula he developed with Jeanne Chall, founder and director of the Harvard Reading Laboratory. Unlike most other modern formulas, the Dale-Chall formula uses a list of 3,000 easy words. Using the formula requires counting the number of “hard” words—those not on the list. In *Readability Revisited: The New Dale-Call Readability Formula*, Chall and Dale (1995) updated their list of 3,000 easy words and improved their original formula, then 47 years old.

Rudolf Flesch in 1948 came out with one of the most famous readability formulas so far in the history of readability studies. It is calculated by using sentence and word length as variables. The formula produces a numerical score known as Reading Ease (Readability score), ranging from 0 to 100 where 60-70 is regarded as a standard or ideal score. The higher the score, the easier is the text to read. In *The Art of Readable Writing* (1949), Flesch also gave a Reading Grade Level with the corresponding readability score.

In 1975, in a project sponsored by the U.S. Navy, the Reading Ease formula was recalculated to give a grade-level score. The new formula is now called the Flesch–Kincaid Grade-Level formula produces a numerical score known as Flesch-Kincaid Reading Grade Level which indicates a grade school level. It is used to determine the difficulty of the text written between lower school grade and college level. Its standard grade score is 7-8th grade.

One of the simplest formulas for adult readability testing is the Fog Index developed by Robert Gunning in his *The Technique of Clear Writing* (1952). The formula uses variables such as sentence length and hard words and produces a score representing the number of education grade required to be able to read the written information. In 1969, G. Harry McLaughlin published his SMOG (Simple Measure of Gobbledygook) formula by using polysyllable word count. The

formula produces a score representing the number of education grade required to be able to read the written information.

Apart from these commonly used quantitative readability tests, there are still a large number of formulas which still find their application in various areas of readability studies. The idea of qualitative readability testing came much later after the popularity of the quantitative readability testing through readability formulas. Many researchers felt that mere testing of textual characteristics does not determine the readability of the text. They incorporated the idea that reader characteristics such as the reader's background knowledge, purpose of reading, personal interest and so on play undeniable role in determining the readability level of the text.

An attempt to “free up” readability measurement from word and sentence complexity was Taylor’s (1953) cloze procedure (Chall, 1998). A cloze test uses a text with regularly deleted words (usually every fifth word) and requires the subjects to fill in the blanks. The percentage of words correctly entered is the cloze score. The lower the score, the more difficult the text is. Even though it still has some amount of counting or quantitative techniques, the process does take into consideration an individual’s reading level, vocabulary level in a specific subject or topic area, language skills, and an estimate of the general comprehension level.

Armbruster and Anderson (1981; 1984) developed a “Textbook Evaluation Response Form” where evaluators can use this checklist to evaluate text quality through subjective judgments. The framework has four headings under content, format, utility and style which have its own open ended questions. For example, the content includes questions about the depth of the content, new or difficult vocabulary, new concepts, and appropriateness of the text and students’ prior knowledge. Format has questions about illustrations, introductions, summaries and index. Utility includes questions about activities, teacher’s manual and additional readings. The last part of the framework is style and it has questions about the complexity and cohesion of the text or book.

The “Leveling System” is another newer form of qualitative readability assessment. According to Gunning (2003), leveling systems are especially important at the beginning levels of reading where type size, number of words on a page, and helpfulness of illustrations can make a significant difference. This involves a subjective analysis of reading level that examines vocabulary, format, content, length, illustrations, repetition of words, and curriculum. Chall et. al., (1996) in their *Qualitative Assessment of Text Difficulty, A Practical Guide for Teachers and Writers* use graded passages, called “scales,” from published works along with layouts and illustrations for leveling of texts. One can assess the readability of documents by comparing them to these passages and using the worksheet in the book.

CRITICAL REVIEW OF READABILITY STUDIES

Knowing the readability level of a particular text helps us to predict how much suitable the texts are for the readers. It is a concept associated with every written text. William H. DuBay (2004) has rightly said that when text exceeds the reading ability of the readers, they usually stop reading. The early classic readability studies focuses on the pioneering works on the development of practical methods to assess the readability of written materials. It culminated in the development of various forms of quantitative assessment predominantly in the form of readability formulas.

The new readability studies, which began in the 1950s marked a period of deeper study and showed new developments in the study of readability. Researchers in the readability of written materials in various sectors such as education, science, business, law, journalism, etc., came to be conducted (Turksma, 1955). Readability formulas when applied appropriately to school textbooks can predict the suitability of books for students of various grades (Davis, 1962; Maddux & Candler, 1984; Kaul et. al., 1995).

One of the emerging areas in readability researches is the field of journalism. Raze (1969) found significant differences between front page readability level of metropolitan and non-metropolitan American newspapers. Fowler and Smith (1979, 1982) found that magazines were easier to read than newspapers and also found that in general, delayed-reward items were found to be more difficult to read than immediate-reward items. Phillip Meyer in *The Vanishing Newspaper – Saving Journalism in the Information Age* (2004) found that many newspapers are too hard to read.

The art of readability studies came to be looked from a wider perspective by 1970s. Critics and researchers expressed discontent over the readability formulas stating that they measured "mere surface factors," not real sources of difficulty. The difficulty lies not in words and sentences but in ideas. Some critics acknowledged that the classic formulas had practical validity and value, but were essentially a theoretical and purely quantitative approach (Chall, 1996). Many researchers too came up with the idea that prediction of readability should go beyond readability formulas.

Urquhart (1979) found out that comprehension, learning and creative thinking appear to be closely linked in reading. According to Selzer (1981), reading is a highly individualistic activity and the readability formulas cannot be applicable to a generalized set of readers. The formulas, in fact, are too simple and have not been calibrated for highly skilled adult readers. Davison (1985) pointed out that the other aspect of readability research such as the type of readers involved, abilities of the reader, as well as the reader's background knowledge, purpose of reading, the reader's personal interest in the text and perception of the situation in which reading a particular text is taking place which does not make use of readability formulas cannot be ignored.

Stevens et al. (1992) pointed out a serious limitation of readability formulas by stating that the formulas do not consider the prior knowledge, language ability or motivation of the reader. Reading readers is a way of assessing readability according to Steinke (1995). Woods et al. (1998) indicated that comprehensibility tests and directly asking for reader's comment were much more valuable in revising text than the readability measures examined. In one of the recent studies, Janam et al. (2010) predicted a new and a qualitative approach known as "Interpretative Paradigm" where the researcher tries to find out what is in the reader's mind when they are reading by interpreting what these reader's say. The authors hope this new paradigm will open new doors to readability research.

DISCUSSIONS AND ANALYSIS

Readability formulas in one way or the other are statistical measurements which takes into consideration only the textual and linguistic factors. Formulas only give us an estimated grade difficulty score based solely on the length of the sentence or word difficulty but the scores do not assess the interactive nature of reading comprehension. They do not (and cannot) measure such reader specific factors as "motivation, interest, competitiveness and purpose". They do not consider the varied backgrounds of the readers but instead compute a reading score for an "average" reader (Stevens et al., 1992).

According to Gilliland (1975), matching the reader and the text has come to be called readability. Reading process requires an in depth interplay between the texts and its readers and that difficulty in reading stems from locating and maintaining relationships between ideas that are embedded in the text. This is best shown by the increased time needed to read the material, by the amount recalled of the material read, and the time per unit of information recalled. As Selzer (1981) had already depicted that reading is a highly individualistic activity, the readability of a particular text will absolutely differ among different readers. No two readers have the same reading skills and psychological makeup.

Subjective analysis of readability based on qualitative measures by judging the reader characteristics do have some drawbacks in sense that they cannot be subjected to quantitative validity test in researches. At times, it may be hard to come out with a generalization as it becomes too subjective in its approach. Quantitative methods of analysis at the

objective level are suitable especially for young readers at school level which gives more stress on textual factors whereas qualitative methods at the subjective may find more suitability among adults and higher level readers where reading is highly a matter of cognitive tendencies and ideas.

Readability hence, is a complex issue especially when it is a concern of public reading. So, the new trend that is in would be a combined technique of both the quantitative and qualitative analysis. Even though this trend is in its infancy, it is a highly recommended technique by many emerging researchers. In this trend, a readability formula can be used as a beginning estimate and then, text judgment based on a checklist and leveling can be done at subjective levels. So, readability research has begun to open its door to a new paradigm by inculcating subjective treatment within the reader and the text.

CONCLUSIONS

Readability formulas were originally developed with the aim of ranking school textbooks in terms of difficulty in order to assist teachers in the selection of appropriate texts for children of different ages. The most common criticism of readability tests is that they are too simple and fail to consider, or examine, any of the many other variables which may influence reading or comprehension (Klare, 1974 & 1976). Readability tests do not measure how interesting the material will be to the intended audience and a readability score can be computed even for random sequences of words or sentences that have no meaning.

Considering the diversity of public printed texts in different fields, the readers for such printed messages are also diverse in nature. So, quantitative approach to readability measurements which focus on the textual characteristics should always be accompanied by qualitative approach which focuses on reader's characteristics such as reading skills, educational, social and cultural background, interest, motive of reading, etc. The combined approach in analyzing the readability of printed texts would prove to be a wider approach because it touches both the textual and reader aspects. In this way, they can write according to the likes of their readers. Hence, this approach would yield more productive results in future.

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