ANNEXURE C

PUBLISHED PAPERS
Newspaper Coverage of Health and Fitness Related Sports News: A Textual Readability Analysis

Bidyarani Asem
PhD Scholar, School of Communication Studies, Panjab University, Chandigarh
& Assistant Professor, Vivekananda Institute of Professional Studies, GGSIP University, Delhi

Introduction

Newspapers are one of the most important sources of information on a variety of issues. They provide a daily dose of news happening all over the world. They constantly update peoples’ knowledge and awareness level through such types of information. Among the various mass media forms, newspapers provide maximum information. While other mass media forms such as television, radio, films and the internet orient themselves more on entertainment related issues, newspaper contents are mainly oriented to information on a diverse range of issues and themes such as politics, science and technology, national and international issues, business and economy, arts, culture, law and order, crime, sports, and many more. The “news” published in newspapers consists of reports of events collected from various sources.

Among all the variety of news information published in newspapers, sports news constitute a high coverage. In almost all newspapers, the last 2-3 pages of the newspaper are devoted exclusively to sports news. Sometimes, sports news can also come in other spaces in the newspaper apart from their own distinctive pages devoted at the end pages such as the front page, city page, editorial page, and so on depending on the importance of the news. A sports news article published on the front page or an editorial page denotes that it is of extreme importance and significance.

Apart from the wide variety of sports news coverage such as the popular sports information pertaining to ongoing sports updates, results and records, newspapers also feature health and fitness related sports news, which provides important knowledge in issues of sports related body illness, injury, treatment and precaution. Nonetheless, issues of doping and unethical practices among sports persons which induce a lot of side effects in the health are also one of the most common issues presented in sports news. Issues of eating behavior, diet and nutrition which influences the health and fitness of sports person are also other popular forms of news in sports section. Such types of health and fitness related sports news can be presented in various news presentation formats such as popular news reports, featured and editorials depending on the style of writing.

Still one of the most serious concerns among such sports news presented in newspapers is the issue of readability of such news. Readability, as opposed to legibility is the ease with which we understand a particular text. It is one of the most important factors that depict the comprehensibility of the concerned text. “Readability is what makes some texts easier to read and understand than others” (DuBay, 2004, 2007a, 2007b). George Klare (1963) defines readability as “the ease of understanding or comprehension due to the style of writing.” Edgar Dale and Jeanne Chall (1949) gave a very comprehensive definition of readability as: “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, 2007b). He discovered that using shorter sentences and concrete terms increases the overall readability of the text. During the 1920s, a new interest in the readability studies culminated in the field of education. Psychologist 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, 2007b). 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.

There was a great deal of development in research in the area of readability from 1920 to the middle of the 1990s. Through the beginning years of the study of readability, researchers focused on devising procedures and instruments that would reliably and validly distinguish easier from more difficult reading materials. Thereafter, a series of research studies were conducted by a community of readability scholars who were credited for developing formulas for measuring the readability of a given text. Some of the commonly used readability...
formulas are Flesch Reading Ease Formula, Flesch-Kincaid Grade Level, SMOG Readability Formula, Fog Index and Fry Readability Graph. The measurement of readability by using readability formulas focus solely on linguistic factors such as words and sentences, i.e. number of words and sentences, word complexity, word and sentence length which can be easily measured and quantified.

The present paper takes into consideration the coverage of health and fitness related sports news in the leading English national daily newspaper of India, The Times of India. The main objective of this study is to calculate the readability scores of such sports news covered in the newspaper by applying the popular readability formula Flesch Reading Ease Formula. Hence, the paper would try to analyze how well the health and fitness related sports news are written so as know their comprehensibility and understandability among its readers.

Rationale of the study

Sports news in newspapers have become one of the most prominent and demanding news among a wide variety of audience in India. Among the diverse range of audience for sports news, there are also a category of readers who starts reading the day’s news from the sports pages. Owing to the widespread popularity, demand and craze among the readers, the present study takes up the issue of sports news coverage in newspapers. Among the sports news also, health and fitness related issues constitute a major section. In order to analyze the overall coverage of such sports news, the study takes up a content analysis to explore the various categories of health and fitness related sports news covered and presented in newspapers.

The study takes up the case study of the leading English daily newspaper of India, The Times of India in regard to the coverage of health and fitness related sports news. The paper is particularly chosen in view of the fact that it is currently the most widely read and circulated English daily newspaper of India. According to the Indian Readership Survey (IRS) 2011, The Times of India is the most widely read English newspaper in India with a readership of 7.471 million. As per the latest ABC (Audit Bureau of Circulation) reports, The Times of India is the largest circulating English daily in India. The study would help us find out how much comprehensible the health and fitness related sports news presented in the newspaper are, considering the fact that it has the highest readership and circulation among all the English national dailies of India.

Issues of understandability and comprehensibility of written materials in print media have become one of the serious concerns among many writers and readers. Readability research became one of the most important and valuable considerations in newspapers because newspapers often require predictions of readability of their printed text prior to publication in order to make their audience understand the printed materials easily. If a printed text is not readable enough, the purpose of writing in its first place will be defeated. The writing needs to be linguistically structured in such a way that it fits the reading skills of the intended audience.

A variety of print media forms such as books, newspapers, magazines, journals, etc. cater to the needs of its readers for satisfying their certain needs and desires. As such, the understandability of the printed messages values a lot for rating its effectiveness. Phillip Meyer in his book, The Vanishing Newspaper – Saving Journalism in the Information Age (2004) discusses about the issue of readability of newspapers and found out that many newspapers are too hard to read. Newspaper readability researches (Raze, 1969; Fowler and Smith, 1979, 1982; Smith, 1984; Murphy, Gamble and Sharpe, 1994; Hillbom, 2009) have been found to be an emerging trend in print media researches. Many researches have also been reported where increasing the readability of the printed materials directly leads to a steep increase in the readership and circulation of their printed medium (DiBay, 2004).

Hence, the study attempts to calculate the readability level of the printed sports news related to health and fitness issues by using one of the most popular and widely used readability formulas known as Flesch Reading Ease formula. Flesch’s Reading Ease formula became the most widely used formula and one of the most tested and reliable (Chall, 1958; Klare, 1963). The study would then try to predict the suitability of the printed sports news based on the results of the readability scores obtained after applying the readability measurement.

Objective

The main objective of the study is to explore the readability of health and fitness related sports news covered in The Times of India, the leading English national daily of India. In order to analyze the readability of health and fitness related sports news, the study tries to focus on the coverage of such sports news in the newspaper. Along with the main objective framed for the study, the following sub objectives are also framed which are as follows:

- To categorize the health and fitness related sports news covered in The Times of India newspaper into various categories by conducting a content analysis.
- To calculate the readability scores of such news articles by applying Flesch Reading Ease formula.
• To compare the average readability scores of the different categories of health and fitness related sports news published in the newspaper.
• To find out the suitability of the health and fitness related sports news presented in the newspaper among its wide variety of readers.
• To explore the trends in the coverage of different categories of health and fitness related sports news in the newspaper.

Methodology
The methodology for the study comprises of two parts which are discussed in detail below:

Part I: Content analysis
For the purpose of conducting a content analysis, the study undergoes a purposive sampling. The study purposively chooses The Times of India newspaper because of the fact that it has the highest readership and circulation among all English national daily newspapers of India. The content analysis pertains to the analysis of the coverage of health and fitness related sports news in the newspaper by categorizing the different forms of health and fitness related sports news published in the newspaper. The unit of analysis is every single news article appearing in every issue of the daily newspaper.

All the daily issues of the newspaper from July 28, 2012 to August 13, 2012 comprising 17 days are considered as the time frame for the study. The study specifically focuses on the coverage of health and fitness related sports news during the London Olympic Games 2012 which started from 27 July, 2012 and ended on 12 August, 2012. The successive dates of the starting and ending days of the games event are chosen for the study because news reports about the day’s event are published in the next day’s newspaper.

Phase II: Readability Measurement
The readability scores of the various categories of health and fitness related sports news is calculated by using the Flesch Reading Ease formula which is given as under:

\[
RE = 206.835 - (1.015 \times ASL) - (84.6 \times ASW)
\]

Where,

- \( RE \) = Reading Ease (Readability score)
- \( ASL \) = Average sentence length (i.e., the number of words divided by the number of sentences)
- \( ASW \) = Average number of syllables per word (i.e., the number of syllables divided by the number of words).

The formula produces a numerical score known as Reading Ease (RE), ranging from 0 to 100. The higher the number, the easier the text is to read. This means a score of 100 means the highest readability and a score of 0 means the lowest readability.

The interpretations of the Flesh Reading Ease scores are given in the table below.

<table>
<thead>
<tr>
<th>Reading Ease score</th>
<th>Category</th>
<th>Reading Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 to 100</td>
<td>Very Easy</td>
<td>5th Grade</td>
</tr>
<tr>
<td>80 to 89</td>
<td>Easy</td>
<td>6th Grade</td>
</tr>
<tr>
<td>70 to 79</td>
<td>Fairly Easy</td>
<td>7th Grade</td>
</tr>
<tr>
<td>60 to 69</td>
<td>Standard</td>
<td>8th and 9th Grade</td>
</tr>
<tr>
<td>50 to 59</td>
<td>Fairly difficult</td>
<td>10th to 12th Grade</td>
</tr>
<tr>
<td>30 to 49</td>
<td>Difficult</td>
<td>13th to 16th Grade</td>
</tr>
<tr>
<td>0 to 29</td>
<td>Very confusing</td>
<td>College Graduates</td>
</tr>
</tbody>
</table>

After calculating the readability scores of the individual articles of each category of health and fitness related sports news, the average readability scores (mean scores) of each category of health and fitness related sports news is calculated in order to conduct a comparative analysis of the readability level of each category of news.

Findings and discussion
After conducting the content analysis, it is revealed that during the entire course of London Olympic Games 2012, The Times of India covers four broad categories of health and fitness related sports news. The categories are:
Health and fitness related sports news under category (i) is operationally defined as those types of sports news which raise the issue of inborn, acquired and unforeseen illness and/or injury in concern with the Olympic Games event. The concept of inborn and acquired illness includes diseases, organ impairment and disability acquired by birth and/or developed during any course of a person’s lifetime. Unforeseen illness includes illness developed at any course of time due to improper functioning of the body which is usually unpredictable. Injury relates to any type of body injury acquired prior to and/or during the course of the Olympic Games events which leads to illness or hampers the performance in the games.

Health and fitness related sports news under category (ii) is operationally defined as those types of sports news which raise the issue of doping cases and banned drugs in concern with the Olympic Games event. Health and fitness related sports news under category (iii) is operationally defined as those types of sports news which raise the issue of mental and physical training that gives impact on the health and fitness in concern with the Olympic Games event. Health and fitness related sports news under category (iv) is operationally defined as those types of sports news which raise the issue of eating behavior, food, diet and nutrition which gives impact on the health and fitness of the sportspersons in concern with the Olympic Games event.

Table 2 presents the data obtained in regard to the coverage of different categories of health and fitness related sports news of the newspaper The Times of India during the entire course of London Olympic Games, 2012.

Table 2: Newspaper coverage of health and fitness related sports news.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Categories of health and fitness related sports news (no. of articles)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Illness/injury</td>
</tr>
<tr>
<td>28/07/2012</td>
<td>3</td>
</tr>
<tr>
<td>29/07/2012</td>
<td>2</td>
</tr>
<tr>
<td>30/07/2012</td>
<td>1</td>
</tr>
<tr>
<td>31/07/2012</td>
<td>1</td>
</tr>
<tr>
<td>1/08/2012</td>
<td>0</td>
</tr>
<tr>
<td>2/08/2012</td>
<td>2</td>
</tr>
<tr>
<td>3/08/2012</td>
<td>2</td>
</tr>
<tr>
<td>4/08/2012</td>
<td>1</td>
</tr>
<tr>
<td>5/08/2012</td>
<td>4</td>
</tr>
<tr>
<td>6/08/2012</td>
<td>1</td>
</tr>
<tr>
<td>7/08/2012</td>
<td>4</td>
</tr>
<tr>
<td>8/08/2012</td>
<td>1</td>
</tr>
<tr>
<td>9/08/2012</td>
<td>3</td>
</tr>
<tr>
<td>10/08/2012</td>
<td>0</td>
</tr>
<tr>
<td>11/08/2012</td>
<td>2</td>
</tr>
<tr>
<td>12/08/2012</td>
<td>0</td>
</tr>
<tr>
<td>13/08/2012</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

The findings revealed that sports news related to illness/injury finds maximum coverage in the newspaper. Doping related sports news occupies the second position, training related sports news the third position and diet and nutrition related sports news are given the least coverage among the different categories of health and fitness related sports news. In all, there are 59 health and fitness related sports news covered in the newspaper within the 17 days Olympic Games event duration. All the above categories of sports news are not only concentrated in the last pages devoted for covering sports news. Apart from the regular and specific sports...
pages, these sports news specifically published in regard to the London Olympic Games 2012 finds diverse coverage in front pages, city pages, editorial pages, and so on. This is because of the popularity and importance associated with the games event.

The readability scores of all the individual articles in each category of sports news are calculated by using Flesch Reading Ease formula. The formula measures certain linguistic features which can be quantified such as number of words, sentences and syllables within the concerned written text. The individual scores and average (mean) scores of each category of sports news are given below in Table 3.

Table 3: Readability scores of different categories of health and fitness related sports news.

<table>
<thead>
<tr>
<th>Articles</th>
<th>Illness/Injury</th>
<th>Doping</th>
<th>Training</th>
<th>Diet and Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Readability Score</td>
<td>Readability Score</td>
<td>Readability Score</td>
<td>Readability Score</td>
</tr>
<tr>
<td>1</td>
<td>71.6</td>
<td>96</td>
<td>69.3</td>
<td>79.7</td>
</tr>
<tr>
<td>2</td>
<td>59.6</td>
<td>77.4</td>
<td>86.6</td>
<td>61.5</td>
</tr>
<tr>
<td>3</td>
<td>42.9</td>
<td>62.2</td>
<td>79</td>
<td>47.2</td>
</tr>
<tr>
<td>4</td>
<td>61.2</td>
<td>48.9</td>
<td>72.9</td>
<td>65.8</td>
</tr>
<tr>
<td>5</td>
<td>51.7</td>
<td>45.2</td>
<td>65.8</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>56.4</td>
<td>71.5</td>
<td>76.3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>53.1</td>
<td>57.9</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>62.9</td>
<td>46.8</td>
<td>76.6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>51.5</td>
<td>61.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>62.1</td>
<td>51.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>49.3</td>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>55.7</td>
<td>51.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>54.9</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>44.7</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>50</td>
<td>53.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>53.8</td>
<td>47.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>62.7</td>
<td>62.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>61.6</td>
<td>55.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>55.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>48.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>59.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>66.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>69.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>70.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>53.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>67.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>51.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>52.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>48.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>56.9</td>
<td>58.9</td>
<td>76.2</td>
<td>62.8</td>
</tr>
</tbody>
</table>

The data presented in the above table suggest that training related sports news has the highest average readability score of 76.2 followed by diet and nutrition related sports news with a score of 62.8, then doping...
related sports news in the third position with a score of 58.9 and illness/injury related sports news with the least average readability score with 56.9. Training related sports news has the highest average readability score because these news articles comparatively uses shorter words and sentences than the other categories of sports news.

If we interpret the above results by correlating with the Flesch Reading Ease chart given in Table 1, we find that training related sports news with the highest readability score is “fairly easy to read” and is suitable for readers with 7th school grade level. Diet and nutrition related sports news falls under the category of “standard” readability which is suitable for 8th and 9th school grade reading level. Illness/injury and doping related sports news falls under the category of “fairly difficult” and is suitable for readers with 10th to 12th grade reading level.

Rudolf Flesch, who developed Flesch Reading Ease formula, considers a readability score of 60-69 as the “standard or ideal” score which means that a person with an average reading ability can easily read and understand a written material having readability level at the given level. This means that in our study, illness/injury and doping related sports news are written beyond the comprehensibility of the general audiences, considering the fact that people with an average reading level reads at 8th and 9th school grade reading level. Since newspapers are meant for the general audience, illness/injury and doping related sports news in regard to the London Olympic Games 2012 published in The Times of India newspaper are too hard to read for the readers.

Considering the fact that illness/injury and doping related sports news covers more than 80% of the health and fitness related sports news, it can be inferred that majority of the health and fitness related sports news in regard to the London Olympic Games 2012 published in The Times of India newspaper have low readability and are not easily understandable by a person of average reading ability. Owing to the fact that The Times of India is the most readable and highest circulated English national daily newspaper in India, the results of the study contradicts the fact that the newspaper produces articles which are easily readable by the common people. In spite of the fact that Olympic Games are the greatest sports event which comes once in every four years and people all over the world are eager to read such news, the way health and fitness related sports news are written in regard to its comprehensibility in the newspaper is unsatisfactory.

Conclusion

From the above findings, analysis and discussions, we can conclude that the health and fitness related sports news covered in The Times of India newspaper during the whole course of the London Olympic Games 2012 can be divided into various categories. Issues related to illness and/or injury finds maximum coverage whereas diet and nutrition related issues finds least coverage in the newspaper. Illness/injury related sports news covers a diverse range of issues such as unforeseen sickness, inborn ailments, disorder and diseases, injury prior to or during the course of the games events leading to hampered performances among sportsperson. Owing to its diverse range of issues, this category of sports news finds maximum coverage.

Regarding the readability of these different categories of sports news, training related sports news have the highest readability and illness/injury related sports news have the least readability. This is because of the fact that training related sports news use easier linguistic structures such as shorter words and sentences while illness/injury related sports news resorts to longer words and sentences leading to linguistic complexity. On the whole, majority of the health and fitness related sports news published in The Times of India are very hard to read. Even though training and diet and nutrition related sports news are comparatively easier to read, their coverage in the newspaper are very low (lower than 20% of the overall health and fitness related sports news).

Knowing the readability level of a particular text helps us to predict how much suitable the texts are for the readers. William H. DuBay (2004) has rightly said that when text exceeds the reading ability of the readers, they usually stop reading. On the whole, the health and fitness related sports news published in the newspaper are not suitable to read for the readers because it is beyond the comprehensibility of a person of average reading ability. Especially in India where the overall literacy level is not satisfactory, public messages such as newspaper reports should always be written at a reading grade level which is highly acceptable by readers of average reading ability.

“Language can be very well written – and very plain – and yet written at the wrong reading level” (DuBay, 2007a). Most written messages fail to give an impact on their readers because of the fact that they (the written materials) are written for the wrong audience. Hence, the reading level of the health and fitness related sports news articles should be preferably written at a lower reading level in order to suit the reading level of maximum readers.
References

READABILITY ASSESSMENT OF PRINTED MATERIALS: GOING BEYOND 
READABILITY FORMULAS

BIDYARANI ASEM 
Assistant Professor, Vivekananda Institute of Professional Studies, 
Guru Govind Singh Indraprastha University, Delhi, India

ABSTRACT

Readability is the ease with which we read and understand a particular written text. The measurement of 
readability of a written text by using readability formulas is solely based on linguistic factors such as word and sentence 
length which can be easily measured and quantified. But as researches in readability gained grounds, researchers depicted 
that qualitative analysis involving the readers of the text is also one important feature for measuring the difficulty level and 
readability of the text. This paper presents a survey of researches on readability, taking into consideration the limitations of 
quantitative approaches and importance of inculcating the qualitative approaches to readability studies which involves the 
addition of readers’ analysis in the determination of readability of a particular text. Moreover, the paper also features a 
critical evaluation of readability by analyzing the objective and subjective testing of a literary poetic text. 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, Quantitative Measurement, Objective Testing, 
Subjective Testing, Reading Ability, Prior Knowledge

INTRODUCTION

Readability is a term used to determine the ease with which people read and understand a particular text. It is one 
of the most important factors that depict the comprehensibility of the concerned text. “Readability is what makes some 
texts easier to read and understand than others” (DuBay, 2004, 2007a, 2007b). The concept is different from “legibility”, 
which is concerned with typeface and layout. George Klare (1963) defines readability as “the ease of understanding or 
comprehension due to the style of writing.” This definition focuses solely on writing style which focuses on the semantic 
and syntactic elements and excludes such issues as content, coherence, and organization within the written text. Edgar Dale 
and Jeanne Chall (1949) gave a very comprehensive definition of readability as: “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 
and concrete terms increases the overall readability of the text. During the 1920s, a new interest in the readability studies 
culminated in the field of education. Psychologist 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, 2007b). 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 USA, 
the adult literacy studies were the first studies conducted to evaluate the reading ability of the general readers. The first
systematic testing of the reading ability of the adult civilians began in 1937 in Chicago (DuBay, 2004). The respondents were graded accordingly on the basis of their different reading abilities.

Still, the main concern of educators, writers, journalists, corporations and government agencies was the issue of a lack of a generalized method for measuring readability of a particular text. 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), Irving Lorge (1938), Rudolf Flesch (1946, 1949, 1964, 1979), Edgar Dale and Jeanne Chall (1948), Robert Gunning (1952), Wilson Taylor (1953), George Klare (1963, 1975, 1976, 1980), G. Harry McLaughlin (1968), Edward Fry (1963, 1968, 1969, 1977) and many more (DuBay, 2004, 2007b). These scholars were credited for developing formulas for measuring the readability of a given text and it proved to be a boon for those groups of people who were really concerned about the readability factors in their texts. Some of the commonly used readability formulas are Flesch Reading Ease Score, Flesch-Kincaid Grade Level, SMOG Readability Formula, Fog Index and Fry Readability Graph.

Full-fledged research in readability began in the 1920s. There was a great deal of development in research in the area of readability from 1920 to the middle of the 1990s. According to Gilliland (1975), matching the reader and the text has come to be called “readability”. In the past, research on readability has focused on the development of practical methods to match reading materials to the abilities of students and adult readers. Through the beginning years of the study of readability, researchers believed that reading difficulty was related to reading material. Readability research focused on devising procedures and instruments that would reliably and validly distinguish easier from more difficult reading materials. Hence, the study of readability was concerned with the search for factors in reading material which could be easily counted and measured. The results of these investigations led to the formulation of “readability formulas” which were used to count, measure and quantify the difficulty level of a given text.

The measurement of readability by using readability formulas were quantitative approach. They focus solely on linguistic factors such as words and sentences, i.e. number of words and sentences, word complexity, word and sentence length which can be easily measured and quantified. As such, this shows that readability was totally conceptualized from a paradigm found outside the reader where reading difficulty or comprehension were predicted by looking through reading material instead of looking through the reader. But as researches in readability gained grounds, researchers counter depicted that linguistic structure cannot be the sole criteria for knowing the readability of a particular text. They were of the opinion that involving the readers of the text is also one important feature for measuring the difficulty level and readability of the text. Since the idea of measuring readability is meant exclusively for the readers, it is imperative to know the reader’s varying reading skills for depicting how much readable a concerned text is.

Readability research became one of the most important and valuable considerations in mass communication process, i.e. in the printed sector. Various forms of print media such as newspapers, magazines, journals and books require predictions of readability of their printed text prior to publication in order to make their audiences understand the printed materials easily. If a printed text is not readable enough, the purpose of writing in its first place will be defeated. The writing needs to be linguistically structured in such a way that it fits the reading skills of the intended audience. Hence, the issue of readability factor in printed media is a serious concern for journalists, writers, editors, publishers, and all those who are involved in the print media industry in order to increase the readership and circulation of their printed materials. Many researchers have also been reported where increasing the readability of the printed materials directly leads to a steep increase in the readership and circulation of their printed medium (DuBay, 2004).
This paper presents a survey of researches on readability, taking the term in a much more general and wider sense than it is usually taken. There are wider and narrower senses in which the term readability can be taken. In the narrower sense, it refers to the development and use of readability formulas and related objective methods which use a small number of measures of variables such as average number of words, syllables, etc., in a sentence or text. This is where readability research has started. In the wider sense, readability is discussed by inculcating the qualitative approaches to its study. This involves the addition of readers' analysis in the determination of readability of a particular text. Through a series of reviews on readability researches conducted on a wider sense, the paper will explore interesting insights into different aspects of readability researches. Moreover, the paper will also feature a critical evaluation of readability by analyzing the text-specific objective (quantitative) and reader-specific subjective (qualitative) testing of a literary text. This will take into consideration the efficacy of the readability formulas in regard to reading grade and subject specific reader analysis.

READABILITY RESEARCHES WITH A QUALITATIVE APPROACH: A CHRONOLOGICAL REVIEW

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. Readability is an interaction between texts and readers and that difficulty in reading stems from locating and maintaining relationships between ideas. 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. 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. Clearly, the reader's purposes and interest are important considerations in learning and in alteration of learning behavior. This corresponds to the fact that readability is much related to the reading and learning behavior of the reader. According to Selzer (1981), reading is a highly individualistic activity and the readability formulas cannot be applicable to a generalized set of readers. Since the formulas are typically based on two variables – sentence length and word length, text often limit themselves to two simple stylistic tenets – “use short words and short sentences”. This becomes a very over simplistic approach for predicting readability. The formulas, in fact, have not been calibrated for highly skilled adult readers.

Spiro et al. (1981) compared the efficacy of comprehension test (cloze procedure) and readability formulas in order to examine the readability of marketing texts. It was found that the comprehension test which focuses on reader analysis provides a better measure than does the readability formulas which focus solely on textual characteristics in evaluating the readability. The cloze procedure is a better measure of text difficulty because it was actual reader comprehension as the base upon which it estimates text difficulty. It is the reader who decides how easily a text can be understood but not the text that decides how easily it can be understood by the reader.

Davison (1985) pointed out that the other aspect of readability research which does not make use of readability formulas cannot be ignored. This aspect takes into consideration features or variables 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. This fact is supported by Nunan (1985) by stating that content familiarity and background knowledge of the readers have an important effect on the levels
of comprehension. Readers with different background knowledge (including different cultural knowledge) may read an identical text in quite different ways.

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. Communication involves not only the elements of text difficulty but also elements of reader ability. That is, the formula scores do not assess the interactive nature of reading comprehension. Reading readers is a way of assessing readability according to Steinke (1995). He noted that the reader’s impression of a particular text such as individual predispositions, social affiliations and information processing ability can influence the comprehensibility of the text. So, understanding reader’s response and addressing their concerns can make writers and journalists prepare more readable articles, attract more readers and invoke greater interest from readers.

Oliver et al. (1998) found out that quantitative measurement of text by using Flesch readability formula cannot capture the holistic evaluation of readability. For example, readers’ individual interest in a specific subject may influence familiarity with the concerned topic and written text, thereby affecting the perception of readability of the text. This implies that along with objective testing (quantitative measurement) to examine readability by calculating the readability scores using readability formulas, subjective testing (qualitative measurement) by analyzing the responses of the readers in regard to subject specific characteristics is equally important for assessing a holistic view of readability of the concerned text.

Woods et al. (1998) indicated that comprehensibility tests and directly asking for readers’ comment were much more valuable in revising text than the readability measures examined. They also stressed on the importance of reader analysis in predicting how readable a concerned text is. Friedman et al. (2006) found out that none of the readability instruments (readability formulas such as Flesch Reading Ease formula, Flesch-Kincaid formula, Fog Index, Fry Readability Graph) were designed to determine the effects of visuals on design factors that could influence readability and comprehension of print and web-based cancer information. They made a point that readability formulas are too much oriented on the linguistic characteristics and fail to acknowledge other visual factors necessary to understand the overall text.

In one of the recent studies on the development of readability studies and researches over the years, Janam et al. (2010) pointed out that most of the earlier readability studies were conducted in a quantitative manner (measuring readability scores by using readability formulas) known as “Positivist Paradigm” which was not at all adequate and effective because such measurements were focused outside the readers only. So, the researchers predicted a new and a qualitative approach to readability studies known as “Interpretative Paradigm” where the researcher will try to find out what is in the readers’ mind when they are reading by interpreting what these readers say. The authors hope this new paradigm will open new doors to the development of readability research.

READABILITY ANALYSIS: A CRITICAL EVALUATION

Quantitative measurement of readability focuses mainly on two aspects – word length and sentence length within the application of well defined readability formulas. This means that using shorter words and sentences will yield higher readability of the text. Now how do we explain the readability of poetries? Poetries, which are a product of pure literary work, tend to use extremely short words and sentences, but the ideas contained in poems are too complex and multidimensional to understand in the first instance. With very few words and sentences, poetries do give us a lot of
connotative and denotative meaning. They are also embedded with a lot of latent meaning which otherwise needs a lot of
tinking, imagination and analysis to decode and extract the intended meaning of the text.

Let us consider the famous poem “Blow, Blow, Thou Winter Wind” written by William Shakespeare. We shall try
to measure the readability of the following poetic text by using four most widely used readability formula. Thereafter, we
shall also conduct a subjective testing by analyzing its readers’ comprehensibility through a survey.

Blow, blow, thou winter wind

Blow, blow, thou winter wind
Thou art not so unkind
As man’s ingratitude;
Thy tooth is not so keen,
Because thou art not seen,
Although thy breath be rude.

Heigh-ho! sing, heigh-ho! unto the green holly:
Most friendship if feigning, most loving mere folly:
Then heigh-ho, the holly!
This life is most jolly.

Freeze, freeze thou bitter sky,
That does not bite so nigh
As benefits forgot:
Though thou the waters warp,
Thy sting is not so sharp
As a friend remembered not.
Heigh-ho! sing, heigh-ho! unto the green holly:
Most friendship is feigning, most loving mere folly:
Then heigh-ho, the holly!
This life is most jolly.

- William Shakespeare

The four most widely used readability formulas for measuring text difficulty i.e., Flesch Reading Ease Score,
Flesch-Kincaid Grade Level, Gunning Fog Index and SMOG (acronym for Simple Measure of Gobbledygook) Index
are used to calculate the readability score of the poetic text. These readability formulas when applied to the written text
produces a numerical score based on certain textual variables such as word and sentence length, number of syllables, etc.
Each readability score has a specific description such as easy, standard, difficult, and so on, along with the corresponding
reading grade level. The mathematical formulas are given below:

(i) Flesch Reading Ease Score

\[ RE = 206.835 - (1.015 \times ASL) - (84.6 \times ASW) \]
Where,

\[ \text{RE} = \text{Reading Ease (Readability score)} \]
\[ \text{ASL} = \text{Average sentence length (i.e., the number of words divided by the number of sentences)} \]
\[ \text{ASW} = \text{Average number of syllables per word (i.e., the number of syllables divided by the number of words)} \]

The formula produces a numerical score known as Reading Ease (RE), ranging from 0 to 100. The higher the number, the easier the text is to read. This means a score of 100 means the highest readability and a score of 0 means the lowest readability. A score of 60-70 is regarded as a standard or ideal score which means highly readable by all people.

(ii) Flesch-Kincaid Grade Level

\[ \text{FKRGL} = (0.39 \times \text{ASL}) + (11.8 \times \text{ASW}) - 15.59 \]

Where,

\[ \text{FKRGL} = \text{Flesch-Kincaid Reading Grade Level (Grade-school level)} \]
\[ \text{ASL} = \text{Average sentence length (i.e., the number of words divided by the number of sentences)} \]
\[ \text{ASW} = \text{Average number of syllables per word (i.e., the number of syllables divided by the number of words)} \]

The 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-th grade.

(iii) Gunning Fog Index

\[ \text{Fog Index} = 0.4 (\text{ASL} + \text{PHW}) \]

Where,

\[ \text{Fog Index} = \text{Grade level} \]
\[ \text{ASL} = \text{Average sentence length (i.e., the number of words divided by the number of sentences)} \]
\[ \text{PHW} = \text{Percentage of hard words (i.e., percentage of words with three or more syllables)} \]

The formula produces a score representing the number of education grade required to be able to read the written information. Gunning Fog Index assesses the readability level of text ranging from grade 4 to collegiate level. Its ideal score is 7-th grade level.

(iv) SMOG Index

\[ \text{SMOG Index} = 3 + \text{Square Root of Polysyllable Count} \]

Where,

\[ \text{SMOG Index} = \text{Grade Level} \]
\[ \text{Polysyllable Count} = \text{Number of words with three or more syllables per 30 sentences}. \]

The formula produces a score representing the number of education grade required to be able to read the written information. SMOG Index assesses the readability level of text ranging from grade 4 to collegiate level. Its ideal score is 7-8th grade level.
The readability score of the poetic text is given below in the table.

Table 1: Readability Score of the above Text

<table>
<thead>
<tr>
<th>Readability Formula</th>
<th>Readability Score</th>
<th>Description</th>
<th>Reading Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesch Reading Ease Score</td>
<td>88</td>
<td>Easy to read</td>
<td>6th grade</td>
</tr>
<tr>
<td>Flesch-Kincaid Grade Level</td>
<td>3.9</td>
<td>Easy to read</td>
<td>4th grade</td>
</tr>
<tr>
<td>Gunning Fog Index</td>
<td>5.7</td>
<td>Easy to read</td>
<td>6th grade</td>
</tr>
<tr>
<td>SMOG Index</td>
<td>3.6</td>
<td>Easy to read</td>
<td>4th grade</td>
</tr>
</tbody>
</table>

By applying the four popular readability formulas, i.e. Flesch Reading Ease Score, Flesch-Kincaid Reading Grade Level, Gunning Fog Index and SMOG Index on the above poetic text, it is found that on an average, the text is easy to read, in fact, much easier than the ideal or standard level score of readability assigned for each readability formula. For instance, Flesch formula considers a score between '60 to 70' as a standard score which means highly acceptable by all the people (Flesch, 1948, 1949, 1974). Considering the average score of the four readability formulas, we get an average grade level of 5. This means a 5th grader would be easily able to understand the above poetic text. We get a high readability score because the whole poetic text consists only of short words and sentences.

Let us evaluate the comprehensibility and understandability of the above poetic text practically through a subjective testing on 5th school grade readers (the results of the earlier quantitative analysis depicts that the text is best suited for 5th graders). A random sample of 100 students of 5th grade standard based in Delhi (India) is collected from four Delhi schools (picked up randomly from East, West, North and South Delhi government schools). After the students were made to read carefully the above poetic text, only 2% of the respondents replied that they understood the text. Majority of the respondents, i.e. 95% promptly replied that they cannot understand the meaning of the text at all and a meager 3% replied that they are not sure whether they are understanding the meaning of the text or not. Regarding the degree of understandability of the given text, out of the 2 students who replied that they understood the text, 1 of them understood the text moderately and the other student slightly understood the text. So, this implies that even though the poetic text is meant to be easily understood by lower school grade students, in practical terms it may not be easily understood by them so easily. So, readability formulas have a lot of counterproductive aspects in certain circumstances in regard to semantic and subject specific factors.

In another instance, a survey was again conducted among 200 college going students of Delhi University (India) north campus, picked up randomly irrespective of age, gender, culture and religion. However, the students are picked up and grouped into four different categories on the basis of their subject specialization. Hence, 50 students each from literature, science, social science and commerce disciplines are selected as sample of the study. The students were made to read the poetic text to know their understandability of the text. Out of 50 students from literature discipline, 48 responded that they understood the text clearly. 24, 38 and 32 students respectively from science, social science and commerce stream responded that they understood the poetic text clearly. This means that out of all these college students from different subject backgrounds, maximum number of students with specialization in literature discipline has the understandability regarding the poetic text while least number of the students from the science background understood the text.

This finding suggests that predicting readability is not just a product of interplay of numbers by applying readability formulas on the concerned text. Determination of readability depends a lot on the reader's prior knowledge, familiarity, interest and expertise on the subject or related field in which the text is written. Since students with literature
discipline have more interest, knowledge, familiarity, expertise and motivation in regard to literature specific text, the readability of the poetic text was highest among literature students. Along with vocabulary and sentence structure, the reader’s reading ability, prior knowledge and motivation are powerful contributors to text readability (DuBay, 2004).

The results of the above study on college students indicated that the same poetic text has different levels of readability among students of same grade level (college students). This is because of the fact that the students have different interest, knowledge level and motivation regarding the concerned text. Moreover, the depiction of the readability scores by applying four popular readability formulas stating that the poetic text was meant for 5th grade students was totally refuted by the results of the survey conducted on its readers. This makes a point that reader-specific analysis (subjective testing) is also one of the most important undeniable factors in evaluating textual readability. The above study depicts that text-specific objective analysis (quantitative testing) is not enough to predict a holistic view of how much readable the text is for the readers unless and until we undergo reader-specific subjective analysis (qualitative testing) in regard to the concerned text.

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. Moreover, the psychological nature of two or more readers will not be the same. A reader with a high educational background and perception on science subject will find a scientific article highly readable than a reader with a strong literature background (and having little or no educational background on science subject). Readability, hence, is a complex issue especially when it is a concern of public reading such as books, magazines and newspapers. Public concerns should always be focused in mind while preparing public messages. This will, to some extent, make texts more readable for public.

DISCUSSIONS

Reading process involves a considerable amount of interplay and blending between the text and the reader. Reading habit of the reader is very much dependent on the reader’s reading ability and comprehensibility of the text. William H. DuBay (2004) has rightly said that when text exceeds the reading ability of the readers, they usually stop reading. The creator of the SMOG readability formula G. Harry McLaughlin (1969) defines readability as: “the degree to which a given class of people find certain reading matter compelling and comprehensible.” This definition stresses the interaction between the text and readers of known levels of reading skill, knowledge, and interest. There are two contributors to easy reading – the reader and the text.

Those features of the “reader” that make reading easy are:
- Prior knowledge
- Reading skill
- Interest
- Motivation

Those features of the “text” that make reading easy are:
- Content
- Style
- Design
- Organization (DuBay, 2007a).
Readability formulas, in one way or the other are mere statistical measurements which takes into consideration only the textual and linguistic factors. If readability is a result of the interaction of the text and the reader, then prediction of readability should obviously take into account the reader's perspective also. Readability formula scores do not assess the interactive nature of reading comprehension. Formulas only give us an estimated grade difficulty score based solely on the length of the sentence or word difficulty. They do not (and cannot) measure such reader specific factors as “motivation, interest, competitiveness and purpose” (Davison, 1985; Nunan, 1985). They do not consider the varied backgrounds of the readers but instead compute a reading score for an “average” reader. These scores are particularly inadequate measures of the comprehension ability of highly educated adult readers who possess a specialized vocabulary and knowledge base not held by the “average” reader (Stevens et al., 1992).

We have already seen that most of the critics focused on the fact that the readability formulas use only two features of style – the length of words and sentences. Within the textual structure also, there are also certain areas apart from the writing style which require attention while preparing the text. While the formulas are highly predictive of the difficulty of a text, they do not use other readability features such as design and organization (DuBay, 2007a). According to Klare (1984), one of the reasons for the weakness of classic readability formulas is because of the fact that certain factors relating to organization, format and illustrations (verbal and pictorial) are missing in readability formulas. Design in the written text includes elements of typography, format and illustration while organization refers to structuring of chapters, headings and navigation. Word and sentence variables are not the only contributors to readability. Elements of design and organization also contribute a lot in making the reader easily understand the text. In fact, they help the reader in enhancing the reading speed and retention of the written text. So, apart from word and sentence length used in readability formulas, it is important to use broader considerations and techniques of good writing for judging the readability of a text (DuBay, 2007a).

Today, many writers and scholars use the readability formulas as standards for testing readability. They are widely used in education, publishing, business, health care, law, the military, industry and government organizations. In spite of the success of the readability formulas, they were always the center of controversy (DuBay, 2007b). “The major discontent with the classic readability formulas expressed by the critics was that they measured ‘mere surface factors’, not real sources of difficulty. Some critics acknowledged that the classic formulas had practical validity and value, but were essentially a-theoretical” (Chall, 1996). “Another reason why readability studies are now considered unrelated to the comprehension process stems from research in cognitive science in the 1980s that identified problems with texts that had been manipulated or written to satisfy readability constraints” (Janam et al., 2010). Cognitive research, which has marked a paradigm change in readability research claims that meanings reside in the cognitive nature of readers. Interpretation and construction of meanings therefore, comes from the readers’ mind in an interaction with the text depending a lot on the cognitive capabilities of the reader.

Research in readability has gone through tremendous changes during the last 50 years. Quantitative measurement of written text by using readability formula is not enough to provide a holistic evaluation of readability (Oliver et al., 1998). A qualitative technique of readability assessment by analyzing certain characteristics of the reader such as reading skills, knowledge and interest level, purpose of reading, etc. is found to be acceptable by many researchers. The new transformation in readability research tends to focus on what is happening in the readers’ mind during reading (Janam et al., 2010). Readability, with a holistic consideration should always be the “ease of reading” created by the choice of
CONCLUSIONS

As evident from the series of literature reviews and critical evaluation presented above, readability formulas still cannot be the sole reliable factor for predicting the understandability of a particular text. 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 (DuBay, 2004, 2007a, 2007b). 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, 1975, 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. It is certainly true that a positive readability score does not guarantee that a piece of text can in fact be successfully read.

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. 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. Authors, writers, journalists, editors, publishers and academicians who are the main producers of public messages should not ignore their readers’ varying characteristics such as reading skills, educational, social and cultural background, interest, motive of reading, etc. In this way, they can write according to the likes of their readers. Hence, this approach would yield more productive results.

“Language can be very well written – and very plain – and yet written at the wrong reading level” (DuBay, 2007a). Most written messages fail to give an impact on their readers because of the fact that they (the written materials) are written for the wrong audience. Public instructions such as medical information leaflets, child safety traffic instructions, legal rules on tax payment, social awareness campaign, and so on, are found to be ineffective as many researches indicated that they are beyond the comprehensibility of the intended audiences. Even though such instructions are not badly written, they still fail to make people understand. So, many experts recommended that materials for public instructions should be written taking into consideration the reading level and reading skills of the readers. Writers should carefully adjust the readability of their text to the reading ability of the audience.

Effective communication is all about making the receiver/audience understand the sender’s intended meaning of the message. One of the most important factors that cannot be ignored while preparing a message is that the sender should know the target audience first. The type of reader, the purpose of reading (by the reader), the nature of the language and text involved, the reader’s impression about the subject are certain factors that need to be considered while preparing a written text. The linguistic considerations such as vocabulary, word length, sentence structure, etc. while preparing a written text should follow after analyzing the above characteristics of readers. This will ultimately facilitate greater public understanding of the concerned text. Writing for the right audience will expand the readership and efficacy of the written materials. It is high time that researches in readability should go beyond formulas to explore more practical factors concerned with the readers also.
REFERENCES


EVALUATION OF TEXTUAL READABILITY – AN ANALYSIS OF ITS VARYING APPROACHES

BIDYARANI ASEM
Assistant Professor (Journalism and Mass Communication), Vivekananda Institute of Professional Studies, Guru Gobind Singh Indraprastha University, New Delhi, India

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 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 takes 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.

REFERENCES


