

## Appropriateness of Language Usage by Elementary School Teachers as Measured against Readability Index

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### Abstract:

*The paper is an attempt to assess the readability of English language elementary teachers use while teaching. It covers only the written language they use on black board for teaching the subject matter. Readability has been assessed in terms of Flesch Reading Ease Scale (FRES), Flesch Kincaid Grade Level (FKGL) and Gunning Fog Index (GFI) measures. Data has been collected in the form of text sample from the notebooks of the pupils which they have copied from blackboard; supposedly represent text used by the teacher. Text data has been converted in to scale measures using online service available for free. The Findings revel that teachers are least concerned about readability of the text. Both primary and middle school teachers use language two to four grade levels above the actual grade they are teaching. Also they do not differ significantly on readability statistics in terms of teaching level as well as with gender difference with in the group. The findings are important due to the fact that language is communication and effective communication is necessary for maintaining interest in teaching as well as teacher.*

**Key words:** Readability index, Readability measure, Flesch reading ease, Flesch Kincaid Grade level, Gunning Fog Index

Teaching is an entrepreneur of knowledge transaction which depends on effective communication. Classroom communication

mainly depends on audio and visual means, besides gestures and clues. Language is a tool of communication which can be in the form of reading as and writing. Black board writing is the main source of written expression of teacher, which also serves as untold guidance to learners for language usage. Language has many dimensions for its usage as medium of expression; so is true for its written form. The most important issue is whether the learner understands, what has been intended by the teacher. Although it varies with intellectual ability of the learner, but there are some other issues involved in the subject. We are interested here from teacher's point of view that is s/he writes the content readable to the learner, we term it as readability. In lay man's language, how well the author succeeds in expressing his ideas in written form, depends on the readability of the text. An accomplished reader is likely to be bored by simple repetitive texts. A poor reader will soon become discouraged by the texts which he/she finds too difficult to read fluently. This is likely to happen when the text is poorly written, contains complex sentences, long words and too much material containing entirely new ideas. The term readability refers to all the factors that affect success in reading and understanding a text.

Readability is what makes some texts easier to read than others. It is often confused with legibility, which concerns typeface and layout. There are three parameters which determine the success of a reader and hence measure of readability. These three parameters are- Interest and motivation of the reader (psychological factors), the legibility of the print and illustrations, (physical factors) and complexity of words and sentences in relation to the reading ability of the reader (technical factor). The Third factor of readability is sentence structure, which is the subject of the present study. To clarify the concept we need some technical inputs in the form of definitions and measurements.

## Readability Definitions:

**George Klare (1963)** defines readability as “the ease of understanding or comprehension due to the style of writing.” This definition focuses on writing style as separate from issues such as content, coherence, and organisation. The creator of SMOG readability formula **G. Harry McLaughlin (1969)** defines readability as “the degree to which a given class of people finds certain reading matter compelling and comprehensible.” This definition stresses the interaction between the text and a class of readers of known characteristics such as reading skill, prior knowledge and motivation. **Edger Dale and Jeanne Chall’s (1949)** definition may be most comprehensive. “The sum total (including the interactions) of all those elements with in a given piece of printed material that affect the success of a group of readers have with it. The success in the extent to which they under stand it, read it at an optimal speed, and find it interesting”.

## Readability Measures:

All the formulae for assessing readability takes account of- number of sentences in a given paragraph, length of sentence (words per sentence), number of syllables per sentence/ per word, nature of sentence (active/passive).

Some of the popular formulae are given below:

**Flesch Reading Ease:** In the Flesch reading ease test, higher scores indicate material is easier to read. The formula for Flesch reading ease score (FRES) test is

$$(FRES) = 206.835 - 1.015\left(\frac{\text{Total Words}}{\text{Total Sentences}}\right) - 84.6\left(\frac{\text{Total Syllabue}}{\text{Total Words}}\right)$$

A score above 65 means plain English and is easily understandable. Also a score between 90 & 100 implies understandable by an average 11-year old student. Score between 60 & 70 imply text is understandable by 13-15 year old students. The score from 0 to 30 means passage is understandable to a college graduate.

**Flesch Kincaid Grade level:** It tells number of years of education generally required to understand a given text material. The grade level is calculated by the formula

$$FKGL = 0.39\left(\frac{\text{Total Words}}{\text{Total Sentences}}\right) - 11.8\left(\frac{\text{Total Syllables}}{\text{Total Words}}\right) - 15.59$$

Greater the value implies difficult is the passage i.e. low readability.

**Gunning Fog Index:** As name indicates the technique tries to point out the unnecessary complexities called as Fog. Greater the Fog index less clear is the text and hence lower readability. The formula of fog index is calculated for

$$GFI = .64(ASL+HW)$$

ASL = Average sentence length per 100 words.

HW = Hard Words i.e. number of words with more than two syllables per 100 words. It uses 90% correct criterion.

McLaughlin's SMOG formula instead uses 100% correct-answer criterion.

### **Objectives of the Study**

- To find out readability statistics for given texts written by teachers.
- To find discrepancy between grade level and readability.

- To compare primary and secondary school teachers for readability statistics.
- To compare primary & middle school teachers for their readability statistics.
- To compare the groups across gender variation.

## **Hypotheses**

H<sub>1</sub>: There exists no significant difference between actual grade being taught and the readability statistics of primary teachers' writing.

H<sub>2</sub>: There exists no significant difference between actual grade being taught and the readability statistics of middle teachers' writing.

H<sub>3</sub>: There exists no significant difference between readability statistics of primary and secondary teachers.

H<sub>4</sub>: There exists no significant difference in terms of readability statistics across gender variation of primary teachers.

H<sub>5</sub>: There exists no significant difference in terms of readability statistics across gender variation of middle teachers.

## **Methodology:**

The data has been collected in the form of text (a paragraph) from the notebooks of the pupils, supposedly copied from the black board which represents teachers' writing. The data in terms of numbers is obtained in terms of Flesch reading ease index, Flesch-Kincaid grade level index and Gunning fog index, using online service available for free (<http://www.Online,utility.org/English/readability>). The data so obtained is analyzed in terms of descriptive, comparative and correlational analysis.

### **Collection of Data**

Only authentic source of writing of a teacher is blackboard writing. The investigator collected this sample indirectly i.e. from notebooks of the learners, which was copied from the black board in class. A disproportionate stratified random sample was collected for 102 teachers in respect of variables under study. The investigator collected a sample of texts (at least ten lines) for each teacher. Every effort has been made to reduce the errors and distortion of the data.

### **Data Analysis Tool and Procedure**

Data has been analyzed in terms of three measures, namely

- i) Flesch Reading ease index
- ii) Flesch-Kincaid grade level index
- iii) Gunning Fog index

**Data Processing In MS Office and Online:** Select the text – go to standard tool bar – click tools – click options – click show readability statics. It will give FRES & FKGL values. On internet there are number of sites which provide this facility free of cost. The investigator used the site <http://www.Online,utility.org/English/readability>.

The procedure is copy the text to be assessed and paste in the space on the site page (online) kept for this purpose. Press the button “process the text”, in a moment the results are available. Save this result for further analysis. This process is repeated for each sample. The data so obtained has been analyzed in respect of hypotheses to be tested.

**Descriptive Analysis:** There are seven variables found out for readability analysis which is given below:

- i) ANSPW- Average number of syllables per word.  
Lesser the value of ANSPW more is the readability.
- ii) ANWPS- Average number of words per sentence.  
Lesser the value of ANSPW more is the readability.

iii) FRES- Flesch reading ease scale.

Greater the score on this scale easier is to read the text hence more readability.

iv) FKGL- Flesch-Kincaid Grade Level Index.

Lesser the value on FKGL index easier to read the text and hence greater the readability.

v) GFI- Gunning Fox Index.

Greater the Fog Index lesser is the clarity. Like FKGL it assesses the number of years of formal education (or GFI+5= Chronological age in years) is required for reading a text material).

**Discrepancy:** For both FKGL & GFI a discrepancy score has been calculated to understand the difference between actual grade of the learners and the grade required to read the text.

**Percentage Analysis:** Percentage Analysis has been done in terms of cases with reference to parameters.

- a) FRES- how many cases out of maximum use plane English (Score>65)
- b) Discrepancy from needed grade level both on the basis of FKGL & GFI
- c) Suggestions- In how many cases suggestions have been given to improve readability

The Data is presented in Table 1 to 5

**Table 1 Percentage Data for Primary Teachers**

	FRES % Cases	FKGL Discrepancy % Cases		GFI Discrepancy % Cases		Suggestions % Cases	C.R. for FRES
		+ve	-ve	+ve	-ve		
Male	50	93	7	96	4	100	.85
Female	38	99.58	0.42	99.58	0.42	100	

**Table 2 Percentage Data for Middle School Teachers**

	FRES % Cases	FKGL DISC. % Cases		GFI DISC. % Cases		Suggestions % Cases	C.R. for FRES
		+ve	-ve	+ve	-ve		
Male	19	81	19	100	0	100	0.59
Female	13	87	13	90	10	100	

### Comparative Analysis using t-test

The analysis in respect of variables taken for study are compared in terms of FRES and FKGL

**Table 3 t-test analysis for Primary Teachers**

Variable	N	M		$\sigma$		SEd		t-ratio	
		FRES	FKGL	FRES	FKGL	FRES	FKGL	FRES	FKGL
Male	26	64.47	7.59	11.26	1.95	3.18	.61	1.15	1.20
Female	24	60.82	8.32	10.79	2.31				

Table Value  $t_{0.05}=2.01$

**Table 4 t-test analysis for Middle School Teachers**

Variable	N	M		$\sigma$		SEd		t-ratio	
		FRES	FKGL	FRES	FKGL	FRES	FKGL	FRES	FKGL
Male	21	53.70	9.68	11.66	2.22	3.62	0.83	0.47	0.53
Female	31	51.99	10.12	13.75	3.65				

Table Value  $t_{0.05}=2.01$

**Table 5 t-test analysis for Primary and Middle School Teachers**

Variable	N	M		$\sigma$		SEd		t-ratio	
		FRES	FKGL	FRES	FKGL	FRES	FKGL	FRES	FKGL
Primary Teachers	50	62.72	7.94	11.08	2.14	2.37	0.53	4.24**	3.77**
Middle Teachers	52	52.68	9.94	12.86	3.14				

Table Value  $t_{0.01}=2.63$

### Correlation Analysis

Correlation has been calculated for actual grade level and grade level obtained by FKGL and GFI for each group taken along with difference of relatedness between primary and middle teacher. The calculated data has been presented in Table 6, 7 & 8.



**Table 6 Correlation data for Primary School Teachers**

Group	Av. Actual Grade Level	Calculated Grade Level		Correlation (r)		Significance for difference	
		FKGL	GFI	FKGL	GFI	FKGL	GFI
Male (26)	4.58	7.59	9.15	.18	.25	.89	1.16
Female (24)	4.25	8.32	10.65	-.09	-.10		

**Table 7 Correlation data for Middle School Teachers**

Group	Av. Actual Grade Level	Calculated Grade Level		Correlation (r)		Significance for difference	
		FKGL	GFI	FKGL	GFI	FKGL	GFI
Male (21)	7.29	9.68	11.68	-.22	-.2	.199	.132
Female (31)	7.03	10.12	12.05	-.16	-.16		

Table value t 0.05=2.01

**Table 8 Correlation data for Comparison of Middle and Primary School Teachers**

Group	Av. Actual Grade Level	Calculated Grade Level		Correlation (r)		Significance for difference	
		FKGL	GFI	FKGL	GFI	FKGL	GFI
Primary Teachers (50)	4.42	7.94	9.87	-.01	-.02	.93	.98
Middle Teachers (52)	7.13	9.94	11.90	.18	.18		

## **Interpretations based on Descriptive Data Obtained for Readability Statistics**

Readability statistics highlights the following things-

- i). All the primary teachers used more than 1.5 syllables per word, which inhibits the readability of the text.
- ii). Average sentence length is not less than 13 words for almost all the primary teachers, which is again a hindrance to the good readability.
- iii). Readability score on Flesch reading ease scale falls between 60 and 65, which is nearly plain English. They fall little below the plain English criterion. However, it is assumed that for primary classes FRES should not be

lesser than 80 to make it readable. It is unfortunate that teachers are not aware that their text is not readable to the learners.

- iv). FKGL scores reveal that no group of Primary Teachers teaching lesser than 7.7 grade level. Thus the discrepancy of grades falls between 3 to 4 grades, which is truly injustice with learners. Females are more at fault compare to male primary teachers
- v). GFI show similar results as that of FKGL and also consistently greater values compare to FKGL. This leads to even greater discrepancy (from 4.5 to 6.4 grade level).
- vi). In case of Middle School Teachers no group uses lesser than 1.60 syllables per word which is not good.
- vii). The sentence length for Middle Teachers fall between 15.7 to 16.6 words per sentence. Again this number is big enough to cause increase in fog index.
- viii). The FRES falls well below (51.5 to 54.3) the plane English criterion (FRES>65).
- ix). FKGL for Middle School Teachers fall between 9.6 and 10 which means the grade discrepancy lie between 2.3 to 3.0 grades. This value even increases for GFI (4.3 to 5.1). Again the discrepancy is very high.
- x). As far as comparison between Primary and Middle Teachers is concerned the grade discrepancy is found to more in case of Primary Teachers (FKGL=3.52 and GFI=5.45) compare to Middle School Teachers (FKGL=2.81 and GFI=4.77). This means Primary Teachers are doing more injustice compare to Middle Teachers, which should never be the case.

### **Percentage Analysis**

- i). More Male Primary Teachers (50%) score on FRESS compare to Female Teachers. But the difference is not a significant.

- ii). Grade discrepancy both in terms of FKGL and GFI is significantly to positive deviation. This is true for all the subgroups. It implies all the groups teach more on the higher grade side compare to actual grade. However, difference amongst the groups is insignificant.
- iii). Trend for Middle School Teachers are exactly same as that of Primary Teachers. Males score insignificantly better than Females Teachers respectively.
- iv). Middle School Teachers score insignificantly better than primary school teachers on FRES.
- v). The readability measure gave suggestions for all the teachers (100%) irrespective of teaching level and other attribute variables.

### **Comparative Analysis**

- i). For FRES & FKGL scores t-test computations revealed that Primary Teachers are significantly better equipped on readability skills compare to Middle School Teachers.
- ii). Across variable Sex no difference has been found both for Primary and Middle School Teachers.

### **Correlation Analysis**

The calculated  $r$ 's are  $r_1(\text{Male}) = .18$  (FKGL);  $.25$  (GFI) and  $r_2(\text{Female}) = -.09$  (FKGL);  $-.10$  (GFI). Firstly all the  $r$  values are insignificant. It implies for both male and female groups serious discrepancy exists as far as ideal readability of the text is concerned. The C.R. for difference between two  $r$ 's are  $.89$  (FKGL) and  $1.16$  (GFI) which are again far below the table values (C.R.  $0.05 = 2.01$ ;  $df = 48$ ). Thus we conclude difference is not real and is a matter of chance only.

The calculated  $r$ 's are  $r_1(\text{Male}) = -.22$  (FKGL);  $-.2$  (GFI) and  $r_2(\text{Female}) = -.16$  (FKGL);  $.16$  (GFI). All the negative values are discouraging which suggest teachers are moving in altogether different direction than the expected one. The actual grades are certainly true, but the observed ones are needed to

be modified by improving readability. Further the calculated C.R. for assessing the difference are .199 (FKGL) and .132 (GFI) against the table value C.R.  $0.05=2.01$ ;  $df= 48$ . This indicates the difference is not real and is only a matter of chance.

The calculated  $r$ 's are  $r_1(\text{Primary})= -.01(\text{FKGL})$ ;  $-.02(\text{GFI})$  and  $r_2(\text{Middle})= .18(\text{FKGL})$ ;  $.18(\text{GFI})$ . The negative (although insignificant) values for Primary Teachers indicates they need to be very carefully while writing a text. It has to be brought under the comfortable zone of readability statistics. For middle teachers  $r$ 's are positive but insignificant. As far as C.R. for two  $r$ 's is concerned has been found to be insignificant, both for FKGL (.93) and GFI(.98). This indicates the difference is not real and is a matter of chance only.

### **Educational Significance of the Study**

The present study was aimed at highlighting the importance of the concept vis-à-vis assessment of teachers in the art of writing readable text. But to astonishment of the investigator we rather discovered depth of ignorance among teachers about importance and skill of writing readable text. The study indicated that majority of teachers teach at 2-4 grade higher than the actual grade level of pupils. This becomes hindrance in communication; as a result learner loses the interest in learning and teacher as well. Language is a tool to learn other subjects, it should facilitate the learning rather than retarding it. The present study thus assumes huge significance in its application in educational setting. Teacher should be trained in this art of plane writing to make learning a joyful enterprise.

### **Suggestions for further Study**

- i). Similar tool development for Indian Languages
- ii). Designing a course for training in writing a readable text

- iii). Assessing readability of text books, daily routine documents, instructions, directions, and exams etc.
- iv). Relating the concept to some psychological variables like- Intelligence, personality, achievement motivation, emotional intelligence and the like.

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