a. The Dale-Chall Formula

The Dale-Chall formula is the result of the collaboration of two researchers who had been working on the problem of readability for several years prior to their successful joint venture; they are Edgar Dale and Jeanne Chall. This formula utilizes a number of specific rulers but it is based on just two counts; (1) average sentence length, and (2) percentage of unfamiliar words.[16]

According to Foulger, the pattern of the Dale-Chall formula is as follows:

Raw Score = 0.1579 PDW + 0.0496 ASL + 3.6365

Where **Raw Score** = Reading Grade of a reader who can answer one-half of the test questions on the passage

PDW = Percentage of Difficult Words

ASL = Average Sentence Length in Words.[17]

The Dale-Chall raw score can be converted into corrected grade-level score which range from approximately fourth and below grade to sixteenth grade (college graduate). To interpret the score, it's presented in the following table:

[16] www.ReadabilityFormula.com
[17] Davis Foulger, loc.cit.

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Table 2.1 Table of Dale-Chall Score

RAW SCORE	ADJUSTED SCORE
4.9 and below	Grade 4 and below
5.0 to 5.9	Grade 5-6
6.0 to 6.9	Grade 7-8
7.0 to 7.9	Grade 9-10
8.0 to 8.9	Grade 11-12
9.0 to 9.9	Grade 13-15 (College)
10 and above	Grade 16 and above (College Graduate)

b. The Fry Graph Readability Formula

The Fry Graph Readability Formula is one of the most popular reading formulas and it is developed by Edward Fry. Fry developed readability test based on graph. This graph-based test determined readability through high school; it was validated with materials from primary and secondary schools and with results of other readability formulas.[18]

Expanded directions for working the fry graph readability formula is:

1. Select three samples of 100-words passages randomly (eliminate the numbers from word count).

[18] www.ReadabilityFormula.com

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2. Count the number of sentences in all three 100-word passages, estimating the fraction of the last sentence to the nearest 1/10th.
3. Count the number of syllables in all three 100-word passages. Make a table as follows:

	Number of sentences	**Number of syllables**
First 100 words		
Second 100 words		
Third 100 words		
Total		
Average		

4. Enter the graph with average sentence length and number of syllables. Plot dot where the two lines intersect. Area where dot is plotted signifies the approximate reading grade level of the content.
5. If a great deal of variability is found in syllable count or sentence count, putting more samples into the average is desirable.[19]

To estimate reading ages by fry graph and the average of words, sentences and syllables, see the figure below.

[19] Paul C. Burns et al., op.cit., p. 309

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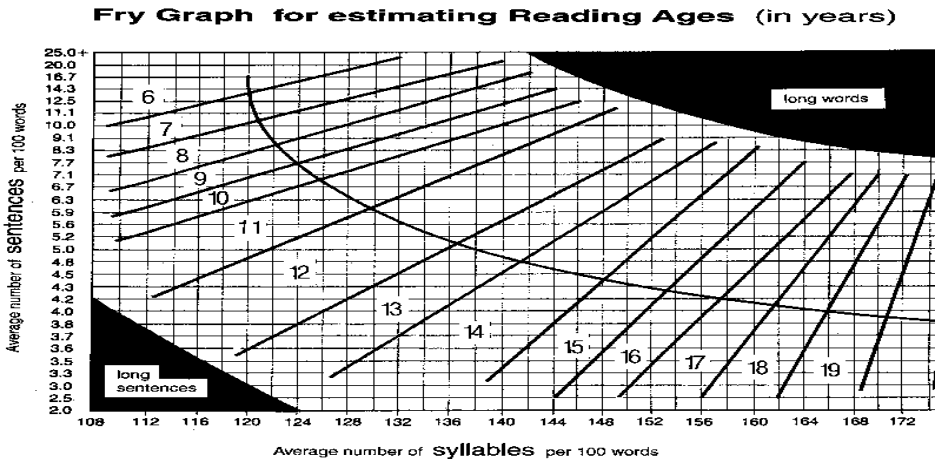
Figure 2.1 Graph for Estimating Readability*



* Source: Edward Fry, "Fry's Readability Graph: Clarifications, Validity, and Extension to Level 17"*Journal of Reading* 21(December, 1977):249, as quoted by Burns et al. (1984:309).

c. SMOG Grading

Another formula delivering a general estimated of readability is SMOG Grading that's created by G. Harry McLaughlin; this formula is created as an improvement over other readability formulas. SMOG is an acronym for Simple Measure of Gobbledygook. Like other formulas, it samples words and sentences length.[20]

The SMOG formula is considered appropriate for secondary age (4th grade to college level) readers, and the pattern is:

SMOG Grade = 3 + Square Root of Polysyllable Count

[20] www.ReadabilityFormula.com

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The directions for working SMOG grading are:

1. Count 10 sentences in a row near the beginning of selection to be assessed, 10 in the middle, and 10 near the end.
2. In the 30 selected sentences, count every word of three or more syllables.
3. Estimate the square root of the number of the syllabic word counted. This is done by taking the square root of the nearest perfect square, for example, if the count is 95, the nearest perfect square is 100, if the count is 110, take the square root 100 rather than of 121.

d. Reading Ease Formula (Flesch Readability Formula)

Flesch readability formula is considered as one of the oldest and most accurate readability formulas. It was developed by Rudolph Flesch in 1948. This formula is a simple approach to assess the grade level of the reader. It's also one of the few accurate measures around that we can rely on without too much scrutiny.[21]

According to Foulger, the formula is considered easier to use, requiring no comparisons with word lists. The computations involve only the counting of syllables, words, and sentences. The formula is the best combination of simplicity and meaningfulness.[22] Moreover, Flesch

[21] Ibid.
[22] Davis Foulger, loc.cit.

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readability formula is the best used and appropriate on school text (to assess the difficulty of a reading passage written in English), whereas the other formulas are practical and can be used for other written form, for example newspaper, articles, and journalism.

Flesch readability formula measures length: the longer the words and sentences, the harder the passage to read. Like most of readability formulas, it involves the sampling of 100-word sample. Based on the Flesch, there are three directions to measure the readability. The first step is count the sentences. Second is count the words, hyphenated words, abbreviations, figure, symbols, and either combination are count as single words. Then measure with the Flesch readability formula and find the readability level.

The specific mathematical pattern for the formula is:

RE = 206.835 - (1.015 X ASL) – (84.6 X ASW)

Where **RE** = Readability Ease

ASL = Average Sentence Length (the number of words divided by the number of sentences)

ASW = Average Number of Syllables per Word (the number of syllables divided by the number of words)

Flesch sets directions to use the formula by giving series of steps:

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Step 1: Count the sentences

Count a sentence of full units of speech marked by a period, colon, semicolon, dash, question mark, or exclamation point as one sentence. Sometimes a 100-word mark falls in the middle of a sentence. Count such a sentence as one of those in the sample if the 100-word mark falls after more than half of words in it; otherwise disregarded.

Step 2: Count the words

Count each word in the up to 100. After the 100^{th} word, put a mark. Count as one word for numbers, symbols, contractions, hyphenated words, abbreviations, figures, and their combination that are surrounded by one space. For example, count the following as a single word; 1980, $ 17.2, e.g., C.O.D, hasn't, week-end.

Step 3: Count the number of syllables

Count the syllables as they are pronounced, for example: *asked* has one syllable, *seven* consists of two, *determined* has three, *pronunciation* consists of four syllables. If a word has two accepted pronunciations, use the one with fewer syllables. For example, the word *beloved* has two kinds of pronunciation (*bilavd* and *bilavId*), choose the fewer one. Count the number of syllables in symbols and figures according to the way they are normally

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pronounced, two syllables for $ (*dollar*), three for C.O.D (*si-o-di*), and four for 1980 (*nineteen eighty*).

Step 4: Find the readability score

Find the average number of score and word length of the text in the readability table. The instruction of readability score shows on the reading ease score (see table 2.2).

The Flesch reading ease formula is a number from 0 to 100, with a higher score indicating easier reading. If we were to draw a conclusion from the formula, then the bets text should contain shorter sentences and words. The score between 60 and 70 is largely considered acceptable, it has standard as the description of style and the estimated reading grade is eighth to ninth grade. If we find a result of readability with other score, we can compare it with the other criteria in the table. The following table is helpful to assess the ease of readability in a reading text:

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Table 2.2 Table of Reading Ease Score*

Description of Style	Average Sentences Length	Average Number of Syllables per 100 Words	Reading Ease Score	Estimated Reading Grade
Very Easy	8 or less	123 or less	90 – 100	Fifth Grade
Easy	11	131	80 – 90	Sixth Grade
Fairly Easy	14	139	70 – 80	Seventh Grade
Standard	17	147	60 – 70	Eighth to Ninth Grade
Fairly Difficult	21	155	50 – 60	Tenth to Twelfth Grade
Difficult	25	167	30 – 50	Thirteenth to sixteenth Grade (College)
Very Difficult	29 or more	192 or more	0 – 30	College Graduated

* Quoted from Wahyuni (2006:21)

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