

## Readability measures for print materials

A readability test can determine the level of reading difficulty of print materials. It is done **before** materials are pretested with the target audience. Print materials with lower reading levels are easier to understand and remember even for highly literate audiences.

Several readability measures are available to determine the reading ease of print materials. Some notable examples are the Flesch formula, the Fog Index, the Smog procedure and cloze procedure.



Materials with lower reading levels are easier to understand.

### I. The Fog Index

The **Fog Index** is one method of analyzing written material to see how easy it is to read and understand. The resulting number is an indication of the number of years of formal education that a person requires in order to easily understand the text on the first reading.

So if a passage has a fog index of 12, it has the reading level of a U.S. high school senior. The fog index is generally used by people who want their writing to be read easily by a large segment of the population. Texts that are designed for a wide audience generally require a fog index of less than 12.

The steps you can use to calculate the Fog Index are outlined below. The numbers in the right column are based on this paragraph.

#### Calculating the Fog Index

The Fog index can be calculated using the procedure below:

1. Take a full passage that is around 100 words (do not omit any sentences).
2. Count the number of words in your sample, then the number of sentences. Divide the word total by the sentence total to obtain the average number of words per sentence.
3. Count the number of words of 3 syllables or more (polysyllables) per 100 words. Don't count words that are:
  - a) capitalized
  - b) combinations of short easy words (like *bookkeeper* and *butterfly*)
  - c) verbs that are 3 syllables by adding -ed or -es
4. Add the two factors and multiply by 0.4

$$\text{Fog Index} = \left[ \begin{array}{l} \text{Average No.} \\ \text{of Words/} \\ \text{Sentence} \end{array} + \begin{array}{l} \text{[No. of Polysyllabic} \\ \text{Words]} \end{array} \right] \times 0.4$$

#### Gunning's Readability Table

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Fog Index	Grade	Typical Magazine
17	college graduate	(No popular magazine this difficult)
16	college senior	
15	college junior	
14	college sophomore	
13	college freshman	(danger line)
12	high school senior	Atlantic Monthly
11	high school junior	Harper's
10	high school sophomore	Time
9	high school freshman	Reader's Digest
8	eight grade	Ladies Home Journal
7	seventh grade	True Confessions
6	sixth grade	Comics

The Fog Index corresponds roughly with the number of years of schooling a person would require to read a passage with ease and understanding. While the index is a good indication of reading difficulty, it still has flaws. Not all multisyllabic words are difficult. For example, the word spontaneous is generally not considered to be a difficult word, even though it has four syllables.

For more information on technology transfer, check the fact sheet "Checklist for Creating Impact" found at the Rice Knowledge Bank: <http://www.knowledgebank.irri.org>

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