Health Literacy Innovations Newsletter

Volume 1, Issue 1

Focus on Readability and Readability Indices

Defining the Problem: The U.S. health care system maintains one of the most sophisticated health care delivery systems in the world. However, in spite of the many advances in treatment and technology, one major barrier exists--nearly half all U.S. adults lack the skills necessary to understand and act on basic health information--how to take medications or follow doctor's directions. This problem is known as low health literacy.

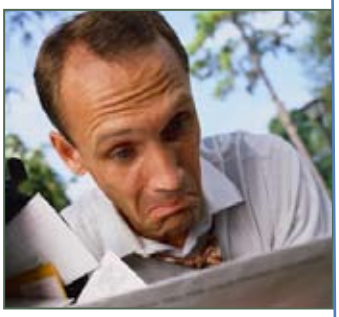
The Solutions: Of the many solutions for low health literacy, one is to improve written communication. To help writers understand and best use readability indices to simplify information for health care consumers, Health Literacy Innovations (HLI) launches its first newsletter, with the first issue dedicated exclusively to readability indices. Like students learning how to use a dictionary, we believe health care communicators need to truly understand the depth and use of readability indices and their importance in improving health literacy. Join us as we introduce, the "Focus on Readability and Readability Indices."

The Basic Terms--Understanding the Differences

Literacy:

Literacy is defined as the "ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts" (UNESCO 2003).

Readability:



Readability "is what makes some texts easier to read than others" (DuBay 2004). Readability can also be affected by the reader's knowledge and interest in the subject, as well as other suitability elements--organization, writing style, and appeal.

Personal Health Literacy:

Health literacy is a consumer's ability to:



- Obtain
- Read
- Understand
- Act on

health information and services

Organizational Health Literacy:

Organizational health literacy is an institution's ability to equitably enable consumers to access health information and services.

Healthy People 2030

Improving Health Communication One Word at a Time™

The Metrics--About The Measuring Tools

Readability:

To measure readability--an assessment of any document--writers use tools called readability indices, tests, scales, or formulas.

Literacy:

Literacy is measured with tools often called tests or surveys. These tools offer a score to help understand the audience who will read a given text. There are many ways to test literacy, from self-assessments to coordinated population surveys. Two common tools to measure literacy are the CLOZE procedure and the Wide Range Achievement Text (WRAT-R). The scores yielded by these and other tools also vary from measuring reading skills in grade levels, to measuring actual functionality skills of reading and comprehension. One of the most well-known reports on literacy is the 2003 National Assessment of Adult Literacy (NAAL). This study found that 43% of those surveyed or more than 90 million adults scored at basic and below basic (low and very low) levels of literacy.



Health Literacy:

In spite of the fact that there is not a comprehensive measure of health literacy, tools to measure functional skills exist. Among popular tools to measure skills of consumers are the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Test of Functional Health Literacy in Adults (TOFHLA) available in both English and Spanish. The NAAL, mentioned above, also measured health literacy, and found that nearly nine out of 10 American adults or 88% are below the "proficiency" level.

Which Metric to Use? Literacy or Readability?

In an ideal world, all health consumers would be tested to ensure the materials they receive correspond with their reading abilities. However, testing all health consumers is not only impractical, but also controversial, especially when testing adults.

Experts who oppose this practice argue that adults who are put on the spot, might be embarrassed or feel shame, a trait often associated with low literacy skills. One valuable practice is to use indices to check the readability of health materials before they are given to consumers.

Readability Indices

What Are They?

Readability indices--tools or tests--are based on mathematical calculations that estimate the understandability or difficulty level of text. Writers have used them since the 1920s. With more than 200 readability indices today, writers continue to rely on them due to their accuracy and research-backed effectiveness.

How Do They Work?

Most readability scores give information on how many years of education are required to read a given text and are often named for their author and the author's readability focus. i.e., the Fog index reflects Mr. Fog's focus on measurement of the percentage of words of certain length. With the exception of a few formulas such as the Flesch Reading Ease, which scores percentages, most readability indices scores are based on a grade level. i.e., a score of 6th grade assumes a 6th grader should be able to read that text.



Readability Indices Design

What Do Readability Indices Measure?

Most readability indices measure the readability of a document by calculating some combination of two factors: word length (semantic or meaning difficulty) and sentence length (syntactic or sentence structure and complexity). Indices count words against a list of frequently known words, or by their characters or syllable length. They measure sentences according to their average length in characters or words.

The Many Formats:

There are variations among how indices work. Some are created for a hand calculation, while others are computerized or available in either format.

Many indices today are wrapped into software programs that include selected indices, text statistics and editing features. i.e., the HLA, which offers six indices and unlike other programs, edits the content by replacing health terms with plain language alternatives.

The Use of Readability Indices in Health Care

Research shows that the average reading level of health instructions continues to be written at a 10th grade reading level, one too difficult for almost half of adult readers in the U.S.

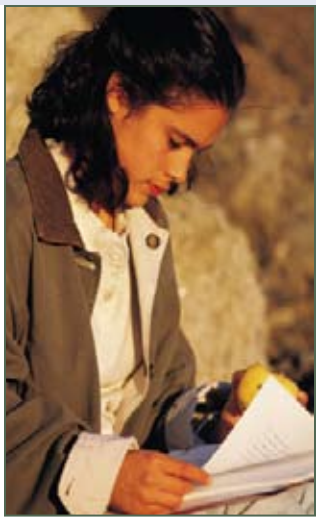
Because scores from readability formulas correlate with the comprehension levels of readers, experts contend that using them in health care will help to predict the understandability of health care information--vital to consumer health, outcomes, safety, and delivery. In fact, when experts test health materials labeled below a 6th grade reading level with consumers, they often hear comments such as:

"This is the first time I've ever read a book from beginning to end."



Caution About Readability Indices

Pay Close Attention:



Alone, readability indices cannot predict the interest of the reader about the subject, nor do they:

- Examine if the words are correctly used or familiar to the reader.
- Take into account other variables such as typeface, text size, layout, color contrast and white space.
- Tell writers if the text is interactive, organized and relevant to the reader.
- Assess words and content appeal--gender appropriate and cultural relevance.

The aforementioned illustrates elements of suitability that readability indices can't measure--critical to make information clear, and acceptable.

To measure these factors, writers often use checklists such as the Suitability Assessment of Materials (SAM), the most widely used tool of its kind.

Be Aware of False Reliance:

- Scores from different readability indices cannot be compared to each other--this is like comparing apples to oranges. As mentioned before, each formula is designed to count different text features.
- Some formulas are created to count difficult words based on the familiarity of words to a 4th grader or words of three syllables or more. Still, in health care not all multi-syllabic words are difficult, and not all short words are easy to understand. Many times, it depends on the familiarity of the consumer with the medical jargon. Yet, a repeated use of these words will yield a higher or lower score when using readability indices.
- There are words such as "brand or program names and fair-balance language," which might alter the reading level or score, specially if these are repeated too many times in the document.

The Challenges Using Readability Indices

Accurate Scores Require Accurate Assessments of Text

Accurate readability scores depend on the proper counting of words, syllables, and sentences. There are some challenges with this process, especially when counting all pages of large documents, a task virtually impossible when doing an assessment by hand. In that case, one must select only certain sections. This practice however, will not give a true readability picture of health materials since, for example, some passages may include hard-to-read medical or scientific information. As a result, more writers are depending on electronic readability tools for faster and total counting.



Electronic Indices Challenges

- Electronic tools can have problems, too because of their programming for punctuation—periods at the end of acronyms, semicolons, exclamation and question marks—that can be counted as the end of the sentence when they are not. This can give the user a false number of shorter sentences, which will alter the true readability result.
- In English, there is not a standard rule to count syllables of words. Hence, any software program should have a large database of already determined word breaks.
- Some electronic indices limit the amount of text that it scans. As a result, users still need to select, cut and paste the text they want to assess.



Dirty Documents

Whether assessing by hand or by computer, users need to know how to count numbers, headings and subheading, some punctuation and text in bullet lists, which if not ignored, will alter the reading level of the document.

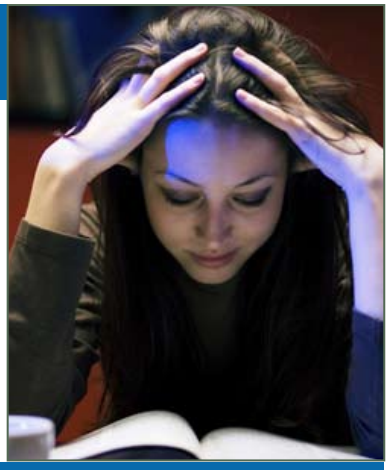


Cleaning a Document

Writers need to clean a document--a process of ignoring features of the text—bullets, titles, subheadings and some punctuation—before using readability indices. This cleaning process can be done easily when tabulating by hand. However, if users ignore the cleaning process when using electronic readability indices they might produce inaccurate scores.



Which Index to Choose?



In health care, the most commonly used indices are the Fry Graph, SMOG, and Flesch Reading Ease. Most readability indices can only evaluate running text or paragraphs, but few can assess text in boxes and/or list of words. Some indices are design to assess text only up to elementary grades while others offer a wider range up to college.

While writers favor one type of readability index over another such as regulations, costs, availability, ease, and convenience, they should select the one that most closely addresses the type of text they need to evaluate, and be consistent in using it among writers of the same organization.

Conclusion

Research continues to support the value of using readability indices to measure the readability of text and how scoring with grade levels can determine if text can be read by the target audience. In fact, some experts now believe that matching reading level of readers with the level of the material--is an important practice to determine the effectiveness of the text.

Although, true readability indices alone do not paint the entire readability picture, they are the first and a good screening guide to tell the writer when the text is too difficult and needs revision. Using these and other methods of testing suitability as well as taking into consideration the motivation, and previous knowledge of the reader in the subject, and most importantly, replacing medical jargon for simple terms will help create better documents for all audiences, especially health consumers with low literacy skills.

Readability Indices & the Health Literacy Advisor

For user flexibility the Health Literacy Advisor (HLA) includes the six indices described below:

1. Fry-Based Electronic Readability Formula:

The Fry Readability Graph, named after Dr. Edward Fry, is based on the average number of sentences and syllables per 100 words. These averages are plotted on the Fry Graph; the intersection of the average number of sentences and the average number of syllables determines the reading level of the text.

The Fry Graph is widely accepted among health literacy experts and reading specialists because it measures a wide grade range of materials--1st grade through college and beyond.

The HLA uses a formula that accurately applies Dr. Fry's graph, called the Fry-Based Electronic Readability Formula.

Users of the HLA's Fry-Based do not need to plug-in the numbers or to interpret the graph. The HLA's Fry-Based scores documents in grade levels.

2. Flesch Reading Ease Score:

Because it was designed to test materials written for adults, this is a popular formula used in health, business, government and education. It scores materials from 4th grade through college. One disadvantage of this index is that it produces a score between 0 and 100, which cannot be converted into an exact grade level.

Flesch Reading Ease Score Interpretation:

Score	Style	Estimated School Grade Completed
90 to 100	Very Easy	4th
80 to 90	Easy	5th
70 to 80	Fairly Easy	6th
60 to 70	Standard	7th to 8th
50 to 60	Fairly Difficult	Some High School
30 to 50	Difficult	High School or Some College
0 to 30	Very Difficult	College

3. Precise SMOG:

Short for Simple Measure Of Gobbledygook, the SMOG Index is based on the premise that a word of three or more syllables is complex, and that the more complex words in a text, the higher the grade level needed to understand the information. The HLA uses the version of this formula known as Precise SMOG. It gives the result in grade levels and is one of the most accurate formulas when matching reading of text with the reading level of the readers. It provides a grade score from 4th to college level.

4. Gunning-Fog:

This index uses two variables, average sentence length and the number of words with more than two syllables for each 100 words paragraph. It is commonly used in health care. This formula provides a grade score from 4th to college level.



5. Automated Readability Index (ARI):

Unlike the other indexes in the HLA, the ARI counts characters per word rather than syllables per word. Opinion varies on the accuracy of its counting method as compared with syllables per word count.

6. Flesch-Kincaid Grade Level:

This index computes readability based on the average number of syllables per word and the average number of words per sentence. It is used to assess materials from upper elementary up to 12th grade.

The Challenges Using Flesch-Kincaid

The Flesch-Kincaid is a formula, included in several programs, including the HLA. HLI believes the variations in reading levels for the same document reflect a difference in programming.

Flesch-Kincaid:

- Treats a "period" found in an abbreviation, colon, or semi-colon as the end of a "sentence" (when indeed it is not). This gives the user a false number of shorter sentences altering the true readability result.
- Gives a result between 1.5 to 3.00 grade lower than what the document really is.
- Can only measure readability once it completes the spelling check.

The HLA includes the Flesch-Kincaid index because is a commonly used and often available corporate wide.

Why Use HLA Over Other Electronic Tools?

Unlike other programs, the HLA:

- Evaluates and scores the document any time in the editing process.
- Stamps the score on the document allowing users to compare documents or show the scores and the progress in the simplification process.
- Includes other features such as, search and replace, highlight hard-to-read words and long sentences.
- Calculates readability of documents of any length.
- Eliminates the need for Internet or other vocabulary searches to find plain language alternatives.
- Assesses readability of forms and surveys without having to cut and paste text from boxes.
- Includes a "Health Literacy Advisor Style Guide" for materials development.

About The Health Literacy Advisor

The HLA, the nation's first interactive health literacy software tool, saves health care organizations time and money by:

- ☑ Promoting the awareness of health literacy within organizations and industry wide.
- ☑ Improving health communications.
- ☑ Reducing the time needed to comply with Medicaid requirements and other industry standards.
- ☑ Automating the entire document simplification and review process.
- ☑ Reducing the risk of lawsuits, due to poor communication, saving companies thousands or even millions of dollars.
- ☑ Reducing the time and effort to assess and produce health materials in plain language.
- ☑ Eliminating laborious online and dictionary searches for health care glossaries in plain language.



The Health Literacy Advisor Features

Scan and Highlight

- Finds hard to read health and non-health language.
- Highlights long sentences with more than 15 words, and words with 3 syllables or more.

Search and Replace

- Finds difficult terms such as medical jargon, diseases, medications, health insurance terms, treatments and procedures and offers relevant alternatives or definitions in plain language.

Calculate Readability

- Includes six readability electronic formulas.
- Taps into a database of more than 118,000 words divided in syllables for a reliable counting.
- Measures readability of prose text and text in boxes.
- Cleans the document--ignores bullets, headings, phone numbers, URL's, text symbols and some punctuation--saving time in the calculation of document readability.

Create Detailed Reports

- Marks the document with the "Reads Easy" stamp when the readability standard of 6th grade or lower is reached.
- Stamps documents with scores, date, time, assessment statistics, and name of readability indices used.

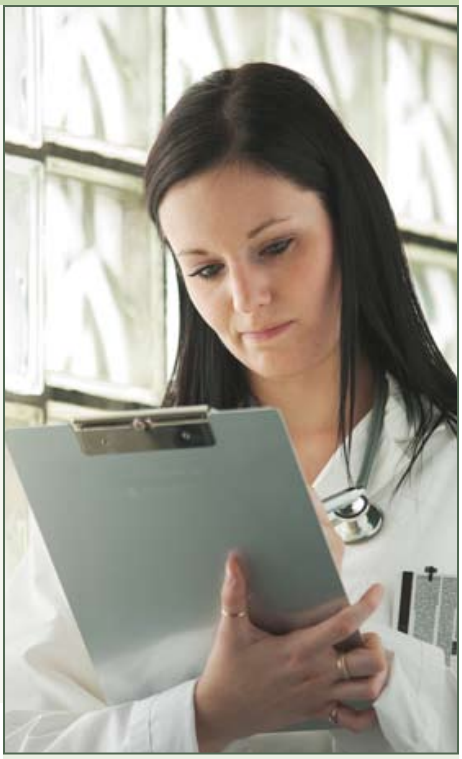
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About Health Literacy Innovations

Knowing that "literacy" is the single most important indicator of a health outcome, Health Literacy Innovations was established to develop tools to quell medical mistakes and confusion due to low health literacy. In 2007, HLI launched the Health Literacy Advisor (HLA), the nation's first interactive health literacy software tool.

Today, with more than 300 users of all skill levels using the HLA to simplify consumer health information, HLI continues to streamline the materials review process with technology, efficiency, and knowledge.



"Heath Literacy Innovations believes if it can empower communicators to create, produce, print, display, share, advertise–clear health information it can help to improve health care outcomes one word at a time."

The Health Literacy Advisor (HLA)



- **Scores readability**
- **Highlights difficult words and health terms**
- **Suggests plain language alternatives**
- **Evaluates other principles of plain language**
- **Provides readability reports**
- **Stamps the ReadsEasy when you achieve the readability goal**

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