Making the case for writing to literacy level

Writing tips

Readability tests: overview, resources, and formatting copy for tests

Literacy level tools and resources

Group Health Plain Language Toolkit
Word list

KPCO Communications
Making the case for writing to literacy level
Improving comprehension of KPCO communications

Source for the following information: National Network of Libraries of Medicine:
http://nnlm.gov/outreach/consumer/hlthlit.html

DEFINITION
Health Literacy is defined in the Institute of Medicine report Health Literacy: A Prescription to End Confusion as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."

Health literacy is not simply the ability to read. It requires a complex group of reading, listening, analytical, and decision-making skills, and the ability to apply these skills to health situations. For example, it includes the ability to understand instructions on prescription drug bottles, appointment slips, medical education brochures, doctor's directions and consent forms, and the ability to negotiate complex health care systems.

According to the American Medical Association report, Health Literacy and Patient Safety: Help Patients Understand, "poor health literacy is a stronger predictor of a person's health than age, income, employment status, education level, and race".

There's a move toward "patient-centered" health care as part of an overall effort to improve the quality of health care and to reduce costs. Individual patients and providers need to work together to ensure effective communication. Patients need to take an active role in health related decisions and develop strong health information skills.

As a result, health care providers need to utilize effective health communication skills, including techniques such as "teach-back". Health educators need to write printed and Web-based information using plain language.

SKILLS NEEDED FOR HEALTH LITERACY

Patients are often faced with complex information and treatment decisions. Some of the specific tasks patients are required to carry out may include:

- Evaluating information for credibility and quality,
- Analyzing relative risks and benefits,
- Calculating dosages,
- Interpreting test results, or
- Locating health information.

In order to accomplish these tasks, individuals may need to be:

- Visually literate (able to understand graphs or other visual information),
- Computer literate (able to operate a computer),
- Information literate (able to obtain and apply relevant information), and
- Numerically or computationally literate (able to calculate or reason numerically).

Oral language skills are important as well. Patients need to articulate their health concerns and describe their symptoms accurately. They need to ask pertinent questions, and they need to understand spoken medical advice or treatment directions.
In an age of shared responsibility between physician and patient for health care, patients need strong decision-making skills. With the development of the Internet as a source of health information, health literacy may also include the ability to search the Internet and evaluate Web sites.

**PREVALENCE OF LOW HEALTH LITERACY**

According to the Agency for Health Care Research and Quality Report, *Health Literacy Interventions and Outcomes: an Update of the Literacy and Health Outcomes Systematic Review of the Literature*, low health literacy is linked to higher risk of death and more emergency room visits and hospitalizations. Health literacy may not be related to years of education or general reading ability. A person who functions adequately at home or work may have marginal or inadequate literacy in a health care environment.

**The National Assessment of Adult Literacy** (NAAL) measures the health literacy of adults living in the United States. Health literacy was reported using four performance levels: **Below Basic**, **Basic**, **Intermediate**, and **Proficient**. According to the NAAL:

- Approximately 36% of adults in the U.S. have limited health literacy. Of that total...
  - 22% have Basic health literacy
  - 14% have Below Basic health literacy
- 5% of the population is not literate in English.
- Only 12% of the population has a proficient health literacy level.

**Vulnerable populations include:**

**Elderly (age 65+):**

Older adults use more medical services and acquire more chronic illnesses than other population segments. (Williams, MV. JAMA, December 5, 1995)

Health literacy issues associated with older adults include:

- 71% of adults older than age 60 have difficulty using print materials
- 80% have difficulty using documents such as forms or charts
- 68% have difficulty interpreting numbers and performing calculations

People 65 and older make nearly twice as many physician office visits per year than adults 45 to 65. However, an estimated two-thirds of older people are unable to understand the information given to them about their prescription medications. *(AMA, 2007)*

According to the Centers for Disease Control and Prevention, "by 2030, 71.5 million adults aged 65 years of age or older will be living in the United States". *(CDC, Viewed 11/8/2012)* This demographic shift combined with the NAAL data highlight how important it is to improve health communication as a way to improve the health of older adults.

**Immigrant populations:**

NAAL reports that low health literacy is higher among adults who spoke a language other than English before starting school. Education-level, low health literacy is higher among individuals who didn’t complete high school. More than 76% of respondents in the survey who didn’t complete high school scored at the "Below Basic" or "Basic" level of health literacy.

**Minority populations:**

The NAAL also reported a relationship between health literacy and race or ethnicity. White respondents scored better on the survey than other ethnic or racial groups. Only 9% of White respondents scored at the lowest (Below Basic) level. However, 24% of Blacks, 41% of Hispanics, 13% of Asians, and 25% of American Indian and Native Alaskan respondents scored at the "Below Basic" level.

**Low income:**

Based on the NAAL research, adults living below the poverty level have lower average health literacy than adults living above the poverty threshold. **In adults who receive Medicaid, 30% have "Below Basic" health literacy.** People with chronic mental and/or physical health conditions were also in the NAAL report: 42% of the people who reported their health status as poor and 33% of the people who reported their health status as fair scored at the "Below Basic" level.
People with low health literacy use more health care services, have a greater risk for hospitalization, and have a higher utilization of expensive services, such as emergency care and inpatient admissions. (IOM, 2004)

Reasons for limited literacy skills include:
- Lack of educational opportunity – people with a high school education or lower
- Learning disabilities
- Cognitive decline in older adults
- Use it or lose it: Reading abilities are typically three to five grade levels below the last year of school completed. As a result, people with a high school diploma, typically read at a seventh or eighth grade reading level.

The relationship between literacy and health is complex. Literacy impacts health knowledge, health status, and access to health services. Several socioeconomic factors have an impact health status. Literacy has an impact on income level, occupation, education, housing, and access to medical care. Poor and illiterate people are more likely to work under hazardous conditions or be exposed to environmental toxins.

ECONOMIC IMPACT OF LOW HEALTH LITERACY

In addition to the effects of low health literacy on the individual patient, there are economic consequences of low health literacy to society. According to the report Low Health Literacy: Implications for National Health Policy "Low health literacy is a major source of economic inefficiency in the U.S. health care system."

The report estimates that the cost of low health literacy to the U.S. economy is between $106 billion to $238 billion annually. This represents between 7% and 17% of all personal health care expenditures. To put this in perspective, the cost represents an amount equal to the cost of insuring every one of the more than 47 million people who lacked coverage in the United States in 2006. Improving health communication reduces health care costs and increases the quality of health care.

INITIATIVES TO IMPROVE PATIENT COMMUNICATION

Low health literacy was once viewed as an individual patient's deficit – that is, a patient's lack of knowledge and skills regarding health issues. We now recognize that health literacy is a "systems issue" (Rudd, 2010), reflecting the complexity of both the presentation of health information and navigation of the health care system. (Parker, Ratzan, 2010)

The Institute of Medicine, in their 2004 report Health Literacy, A Prescription to End Confusion states "efforts to improve quality, reduce costs, and reduce disparities cannot succeed without simultaneous improvements in health literacy" (IOM, 2004). The Agency for Health Care produced two systematic reviews that provide evidence of the need to improve health literacy. The report also recommends areas for additional research. (AHRQ, 2004 and 2011)

The Joint Commission, the group that accredits and certifies health care organizations and programs in the United States, stresses the importance of health literacy, health communication, and cultural competencies as an element of quality health care. In their report What Did the Doctor Say?: Improving Health Literacy to Protect Patient Safety, the Commission states:

“Health literacy issues and ineffective communications place patients at greater risk of preventable adverse events. If a patient does not understand the implications of her or his diagnosis and the importance of prevention and treatment plans, or cannot access health care services because of communications problems, an untoward event may occur. The same is true if the treating physician does not understand the patient or the cultural context within which the patient receives critical information...” The Joint Commission's accreditation standards underscore the fundamental right and need for patients to receive information — both orally and written — about their care in a way in which they can understand this information.

These landmark reports helped move health literacy from an "under-recognized silent epidemic to an issue of health policy and reform".

Several recent federal policy initiatives address the issue of low health literacy. These initiatives raise importance of health literacy as a component in an effort to improve the health of the U.S. population, decrease costs, and reduce the number of medical errors.
- **Affordable Care Act (ACA) of 2010:** Several ACA provisions address the need for greater attention to health literacy. There are provisions to clearly communicate health information, promote prevention, be patient-centered and create medical or health homes, assure equity and cultural competencies, and deliver high quality care.

- **National Action Plan to Improve Health Literacy:** The Department of Health and Human Services (HHS) in collaboration with more than 700 public and private sector entities, developed this framework for future research and action. The Plan includes seven goals and strategies that researchers and practitioners can use to design studies and interventions. (Released May 2010)

- **Plain Writing Act of 2010:** Requires all new publications, forms, and publicly distributed documents from the federal government to be written in a "clear, concise, well-organized" manner.

**Research findings on the impact of low health literacy**

Below are just a few of the conclusions from studies on health literacy and outcomes:

- **People with low health literacy have a lower likelihood of getting flu shots, understanding medical labels and instructions, and a greater likelihood of taking medicines incorrectly compared with adults with higher health literacy.** (Bennett IM, et al., *Annals of Family Medicine*, 2009 and Soroui JS, et al., *Annals of Family Medicine*, 2008)

- **Individuals with limited health literacy reported poorer health status and were less likely to use preventive care.** (Nielson-Bohlman, Panzer, and Kindig (2004)

- **Individuals with low levels of health literacy are more likely to be hospitalized and have bad disease outcomes.** (Baker et al., 1998, 2002) and (Schillinger et al., 2002)

- Inpatient spending increases by approximately $993 for patients with limited health literacy. (Howard, 2004)

- After controlling for relevant covariates, lower health literacy scores were associated with high mortality rates within a Medicare-managed care setting. (Baker et al 2007)

- The annual cost of low health literacy to the U.S. economy was $106 billion to $238 billion. (Vernon, et al., 2007)

**Cancer Treatment** *(Merriman, Betty, CA: A Cancer Journal for Physicians, May/June 2002)*

Low literacy has an adverse impact on cancer incidence, mortality, and quality of life. For example:

- Cancer screening information may be ineffective; as a result, patients may be diagnosed at a later stage.

- Treatment options may not be fully understood. Therefore, some patients may not receive treatments that best meet their needs.

- Informed consent documents may be too complex for many patients and consequently, patients may make suboptimal decisions about accepting or rejecting interventions.

**Diabetes** *(Schillinger, Dean, JAMA, July 24/31, 2002)*

Among primary care patients with Type 2 diabetes, inadequate health literacy is independently associated with worse glycemic control and higher rates of retinopathy. Inadequate health literacy may contribute to the disproportionate burden of diabetes related problems among disadvantaged populations.

**Asthma** *(Williams, MV, Chest, October 1998)*

Inadequate literacy was common and strongly correlated with poorer knowledge of asthma and improper metered-dose inhaler (MDI) use. More than half of patients reading at a sixth-grade level or less report they go to the Emergency Department when they have an attack compared with less than a third of literate patients. Less than one third of patients with the poorest reading skills knew they should see a physician when their asthma was not symptomatic as compared with 90% of literate patients.

**Hypertension and Diabetes** *(Williams MV, Archives of Internal Medicine, January 26, 1998)*

Almost half (48%) of the patients with hypertension or diabetes in a study had inadequate functional health literacy, and these patients had significantly less knowledge of their disease, important lifestyle modifications, and essential self-management skills, despite having attended formal education classes.
The main sources for the following information: PRISM (Program for Readability In Science & Medicine) Readability Toolkit, published by the Group Health Research Institute; and Simply Put – A guide for creating easy-to-understand materials, published the U.S. Department of Health and Human Services and the Centers for Disease Control and Prevention.

**PLAIN LANGUAGE: MORE THAN JUST SIMPLE WORDS**

Stated simply, using plain language means communicating clearly. No one technique describes plain language, rather it consists of a range of strategies that lead to a common end: clear, readable information. While it may be obvious that plain language is based on using understandable language and avoiding jargon or other unfamiliar terms, there is much more to it than that.

Plain language is *written in a conversational style, with ideas organized into short, succinct sentences and paragraphs.*

Using plain language also involves using reader-friendly formatting so that the document *looks* easy to read.

Finally, using plain language means keeping your readers’ needs in the forefront of your mind as you organize and filter your content. Doing so helps you organize the content in a way that will make sense to the reader and omit unnecessary details.

The most important thing to bear in mind when using plain language is that it’s a continual process of improvement. **Achieving clear communication is more of an art than a science**, and **your skills will improve dramatically with practice.** The clearest communication—and the best examples of plain language—usually result after multiple rounds of editing, so be prepared for an iterative process.

**USE LANGUAGE YOUR AUDIENCE CAN EASILY UNDERSTAND.**

In most cases, this means using common, everyday words. The key is to edit rigorously and search for multi-syllable (i.e., more than three syllables) words that you can replace with simpler alternatives. It’s also important to look out for short words with complex or multiple meanings.

Use plain language word lists to help you replace or define jargon or other complex words. See GH Plain Language Word List at the back of this guide, which is a useful plain language word lists that can be found on the Internet.

You cannot always avoid using complex words and concept, but you can use examples, analogies, and visual aids to help explain them.

**GIVE THE MOST IMPORTANT INFORMATION FIRST**

- To quickly engage the audience:
  - Give the most important information first
  - Tell them what actions to take
  - Explain why it is important to them

**For example:**

Always wash hands with soap and warm water for 20 seconds before and after handling food. Food and water can carry germs that may make you and your family sick.
LIMIT THE NUMBER OF MESSAGES
Give your audience no more than three or four main ideas per document or section of your document.

- **Focus on what your audience needs to know and do.** Skip details that are only nice to know. If you are writing a brochure on how to prevent Lyme disease, you don’t need to tell the audience how and when Lyme disease was discovered. Tell them what to do to prevent it instead.

- **Stick to one idea at a time.** Develop one idea fully before moving to the next idea. People are confused when materials skip back and forth between topics.

- **Avoid lengthy lists.** Create short lists (3-7 items) with bullets, not commas. People with limited reading skills tend to forget items in longer lists. If you have a long list, break it into subheads.

TELL AUDIENCES WHAT THEY NEED TO DO.
Clearly state the actions you want your audience to take. Use concrete nouns and an active voice. Active voice is where the subject does the action.

**Say:** Follow these rules to avoid getting sick from food:
- Cook meat until it is not pink in the middle.
- Wash your hands after touching raw meat.
- Wash fresh fruits and vegetables before eating them.
- Keep hot food hot and cold food cold.

**Not:** Following safety precautions can reduce food-borne disease transmission.

HIGHLIGHT THE POSITIVE.
Tell your audience what they should do rather than what they should not do.

**Use:** Wear your helmet every time you ride your bicycle.

**Instead of:** Do not ride your bicycle without wearing a helmet.

TELL YOUR AUDIENCE WHAT THEY WILL GAIN FROM UNDERSTANDING AND USING THE MATERIAL.
Tell your audience how your materials will benefit them. Answer the question, “What’s in it for me?”

**For example:** You’ll learn what to do to have a healthy pregnancy and ways to prevent possible complications.

CHOOSE YOUR WORDS CAREFULLY.
Keep it short. Use words with one or two syllables when you can. Keep most sentences, if possible, between 8 to 10 words and limit paragraphs to 3 to 5 sentences.

WRITE IN A CONVERSATIONAL STYLE, AS IF YOU WERE SPEAKING TO A FRIEND
Use active voice, where the subject acts instead of being acted upon. It’s more readable and more powerful than passive voice. “We will ask you questions about your health” is active, while “You will be asked questions about your health” is passive.

Write in the first person using pronouns, such as “I,” “we,” and “you.” It’s more engaging and more personal. People will often read comfortably at a higher grade level than normal if they’re interested in and can relate to the subject matter. The more words about people and the more sentences addressed to an audience, the more interesting a document is to read.

A conversational style has a more natural tone and is easy to understand.

**Say:** You could get sick if you are near the chemical.

**Not:** Exposure to the chemical could cause adverse health effects.
RESPECT AND VALUE YOUR AUDIENCE.
Don’t talk down or preach. People are less likely to act on information if they’re made to feel bad about their current behavior or health situation.

USE A TONE THAT ENCOURAGES THE AUDIENCE.
Emphasize small, practical steps. Offer concrete examples of successful action steps.

LIMIT USE OF JARGON, TECHNICAL, OR SCIENTIFIC LANGUAGE.
Define necessary jargon or technical terms first. Then explain them in language your audience will understand.
Say: high blood pressure
Not: hypertension
Say: birth control
Not: contraception
If you have to use technical terms, make them look easier to read. You can do this by adding a phonetic pronunciation or a similar-sounding word in parentheses to help the reader familiarize himself with the word. For example, "A normal heart beat starts in the upper right chamber of the heart, or atrium (ay-tree-yim)."
You can also define difficult words by context clues, such as using parentheses to elaborate on a word, or using a footnote or citation to further explain the word. In addition, you can use connective words (‘firstly,’ 'initially,' 'lastly,' 'however,' 'therefore,' etc.) to help guide the reader through sentences and paragraphs.
Also, don’t use abstract words in instructions for actions.
Say: Don't lift anything heavier than a gallon of milk (over about 10 pounds).
Not: Don't lift anything heavy.

CHOOSE WORDS WITH A SINGLE DEFINITION OR CONNOTATION.
People with limited literacy skills may not be able to figure out the meaning from the context.
For example: “Poor workers” could mean workers with poor performance or workers with limited income.

BE CONSISTENT WITH WORD USE.
Pick the most familiar words and use them throughout your text.
For example: Mad cow disease and bovine spongiform encephalitis may be the same thing, but your audience may think they are two different diseases.

USE ANALOGIES FAMILIAR TO YOUR AUDIENCE.
When making comparisons, use references that your audience will recognize.
Say: Feel for lumps about the size of a pea.
Not: Feel for lumps about 5 to 6 millimeters in diameter.

AVOID UNNECESSARY ABBREVIATIONS AND ACRONYMS.
Provide the acronym first and then spell the word(s) out in parentheses when using a familiar abbreviation or acronym. Apply this rule also when creating content that will be spoken in video or audio materials.
For example: In the early stages of infection, HIV (human immunodeficiency virus) often causes no symptoms.
Provide the term before the acronym when using unfamiliar abbreviations.
For example: Breathing secondhand smoke is a known cause of sudden infant death syndrome (SIDS).

LIMIT USE OF STATISTICS AND USE GENERAL WORDS LIKE MOST, MANY, HALF.
If you must use statistics, try putting them in parentheses.
Say: Researchers found that almost all Americans (90%) believe the possible harm from vaccines is very small.

Not: Researchers found that 90% of Americans believe the risk from vaccines is very small.

Mathematical concepts, such as risk, normal, and range, may not have meaning to your audience. If possible, use words such as “chance” or “possibility” instead.

Use: Most Americans believe the chances that something bad can happen to them after getting a vaccine is small.

Instead of: Most Americans believe there are very few risks associated with vaccines.

LIMIT THE USE OF SYMBOLS.

What’s meaningful and natural for one audience may be confusing or misleading to others. Pretest any use of symbols.

For example: The following symbols may not be familiar to or have the same meaning for everyone:

![Symbols](Elevators, First Aid, Hearing Assistance, Stairs)

LIMIT USE OF QUOTATION MARKS.

Choose other formats to show who is speaking when writing dialogue.

For example:

**Jane:** How hard can it be to stop smoking?

**Ann:** Most people have a very hard time quitting. I had to try three times before I quit for good.

Although it may seem awkward, **reading your document aloud** is probably the best way to ensure that you’re using a conversational style. Also, taking a break if you get stuck can be helpful. Try stepping away from the keyboard (or the paper and pen) and just speaking your thoughts.

Be consistent with terms. For example, don’t use "drugs" and "medications" interchangeably in the same document. And when possible, say things positively, not negatively. For example, use "Eat less red meat" instead of "Don't eat lots of red meat."

Choose a writing style that’s easy to follow. Two popular writing styles include: 1) the "question-answer" style in which the author asks a question and then answers it in detail; and 2) the "sharing-experience" style in which the author describes an experience in personal terms. You can also use the "list" style (e.g., bullets, numbers, etc.) to emphasize main ideas in sequential order.

ORGANIZE AND FILTER CONTENT WITH YOUR READERS’ NEEDS IN MIND

When developing content, try to follow the thought process of your reader. What information is most important to them? How should you order the information items to help it make the most sense? Are there concepts that may not be clear to someone who doesn’t know what you know?

At times, our writing may be based on assumptions or lack context that will limit how meaningful the message will be to the intended audience. Ironically, we also tend to include significantly more information than the reader really needs in order to understand the key points.

Provide information in understandable chunks by using short sentences and limiting paragraphs to one main idea.

**Break up sentences joined with semicolons or conjunctions,** and **aim for an average sentence length of 15 words or less.** Varying the length of your sentences will improve flow. Paragraphs should start with a clear topic sentence and should not include unrelated details.
USE READER-FRIENDLY FORMATTING

Readers are often discouraged by dense-looking pages. So, don’t assume that one page is always better than two. Why? Because one page crammed with information is often more intimidating than multiple pages.

Adequate white space and margins provide visual breaks that encourage the reader to keep going. Avoid decreasing margins to force text to fit on one page. Top and bottom margins should be at least 1 inch, and side margins should be at least 1.25 inches. Always consider how best to make use of any white space that may be left over. You may be able to add space between paragraphs or increase the font size of text or headers.

USE FONT SIZES BETWEEN 12 AND 14 POINTS.

Anything less than 12 points can be too small to read for many audiences. Older people and people who have trouble reading or seeing may need larger print.

FOR HEADINGS, USE A FONT SIZE AT LEAST 2 POINTS LARGER THAN THE MAIN TEXT SIZE.

Examples of font sizes:
This is 8 point.
This is 10 point.
This is 12 point.
This is 14 point.
This is 16 point.
This is 18 point.

FONT STYLE

For the body of the text, use fonts with serifs, like the one used in this line. Serif fonts are usually easier to read than sans serif fonts. This is because the serif makes the individual letters more distinctive and easier for our brains to recognize quickly. Serifs are the little “feet” on letters.

S S

Use sans serif fonts in headings and subheadings. Sans serif is more readable when your type must be small or when used on a web site.

KEEP THE FOLLOWING STYLE TIPS IN MIND:

- Don’t use FANCY or script lettering.
- Use both upper and lower case letters. Do not use ALL CAPS. ALL CAPS ARE HARD TO READ.
- Use bold type or larger font, borders, or other graphical elements (e.g., bullets, numbers, tables, highlighters, etc.) to emphasize words or phrases. This will draw the reader’s attention to critical information, even when they are only skimming your document.
- Avoid using justified margins and limit the use of italics or underlining. They’re hard to read. While italics can work for a few words at a time, you can show emphasis using bold, larger type size, or different fonts.
- Use dark letters on a light background. Light text on a dark background is harder to read.

BREAK UP CHUNKS OF DENSE COPY

This can cause readers to miss important information.

CONVERT LONG LISTS EMBEDDED IN SENTENCES INTO BULLETED LISTS

Use one point per line. It’s especially important to put lists of critical information, like eligibility criteria, in bullet format. Use a numbered list if the order of items is important.
GIVE YOUR READERS “ROAD SIGNS”
This will help your readers navigate your document and process information more quickly and effectively. A document is easier to read when there are descriptive headers or subheads for each section.

Headers should be specific and should be graphically emphasized to stand out. In many cases, using a question format like, “What will happen if I don’t pay my premium?”, can make an effective header.

MAKE VISUALS EASY FOR YOUR AUDIENCE TO FOLLOW AND UNDERSTAND.
Place visuals near the text to which they refer. Audiences may not be able to connect a drawing placed in the top, right-hand corner of a document to text found in the lower, left-hand corner. Be sure all visuals connect directly to written messages.

Use brief captions that include your key message. Some people may read only your captions. Make them count by including your key message. Use brief, complete sentences with correct punctuation. A caption can tell exactly what the visual is trying to convey. The caption also repeats a sentence found in the body of the document to reinforce the message.

Although it may seem awkward, reading your document aloud is probably the best way to ensure that you’re using a conversational style. Also, taking a break if you get stuck can be helpful. Try stepping away from the keyboard (or the paper and pen) and just speaking your thoughts.

Be consistent with terms. For example, don’t use “drugs” and “medications” interchangeably in the same document. And when possible, say things positively, not negatively. For example, use "Eat less red meat" instead of "Don't eat lots of red meat."

Choose a writing style that’s easy to follow. Two popular writing styles include:

- The “question-answer” style in which the author asks a question and then answers it in detail.
- The "sharing-experience" style in which the author describes an experience in personal terms. You can also use the "list" style (e.g., bullets, numbers, etc.) to emphasize main ideas in sequential order.
Free readability tools will analyze your text and output the results based on a variety of readability formulas. These tools can also help you determine the grade level for your text. Here is some brief background on readability test in general and of a few of the more popular formulas used today.

According to Wikipedia:

Readability tests, readability formulas, or readability metrics are formulae for evaluating the readability of text, usually by counting syllables, words, and sentences. Readability tests are often used as an alternative to conducting an actual statistical survey of human readers of the subject text (a readability survey). Word processing applications often have readability tests built-in, which can be deployed on documents in-editing.

The application of a useful readability test protocol will give a rough indication of a work's readability, with accuracy increasing when finding the average readability of a large number of works. The tests generate a score based on characteristics such as statistical average word length (which is used as an unreliable proxy for semantic difficulty) and sentence length (as an unreliable proxy for syntactic complexity) of the work.

Some readability formulas refer to a list of words graded for difficulty. These formulas attempt to overcome the fact that some words, like "television", are well known to younger children, but have many syllables. In practice, however, the utility of simple word and sentence length measures make them more popular for readability formulas. Scores are compared with scales based on judged linguistic difficulty or reading grade level. Many readability formulas measure word length in syllables rather than letters, but only SMOG has a computerized readability program incorporating an accurate syllable counter.

Since readability formulas do not directly take syntactic or semantic complexity into account, they are not considered definitive measures of readability.

A brief summary of a few of the more popular formulas used:

1. The Flesch Reading Ease formula will output a number from 0 to 100 – a higher score indicates easier reading. An average document has a Flesch Reading Ease score between 6–70. As a rule of thumb, scores of 90-100 can be understood by an average 5th grader. 8th and 9th grade students can understand documents with a score of 60-70; and college graduates can understand documents with a score of 0-30.

In other words:
- 90–100 = 5th grade level
- 70–90 = 6th/7th grade level
- 60–70 = 8th/9th grade level
- 40–60 = 10th/11th/12th grade level
- 0–30 = college graduate level

2. The Flesch-Kincaid Grade Level outputs a U.S. school grade level; this indicates the average student in that grade level can read the text. For example, a score of 7.4 indicates that the text is understood by an average student in 7th grade.
3. **The Fog Scale** (Gunning FOG Formula) is similar to the Flesch scale in that it compares syllables and sentence lengths. A Fog score of 5 is readable, 10 is hard, 15 is difficult, and 20 is very difficult. Based on its name, ‘Foggy’ words are words that contain 3 or more syllables. Generally useful for business publications and journals.

4. **The SMOG Index** outputs a U.S. school grade level; this indicates the average student in that grade level can read the text. For example, a score of 7.4 indicates that the text is understood by an average student in 7th grade.

Useful for secondary age (4th grade to college level) readers. This formula is based on text from the .4 to 16.3 grade level range. This test usually yields the lowest grade when applied to technical documents.

5. **The Coleman-Liau Index** relies on characters instead of syllables per word and sentence length. This formula will output a grade. For example, 10.6 means your text is appropriate for a 10-11th grade high school student.

This index is useful for secondary age (4th grade to college level) readers. This formula is based on text from the .4 to 16.3 grade level range. This test usually yields the lowest grade when applied to technical documents. Unlike the other indices, the Coleman-Liau, along with the ARI, relies on a factor of characters per word, instead of the usual syllables per word.

6. **Automated Readability Index** outputs a number which approximates the grade level needed to comprehend the text. For example, if the ARI outputs the number 3, it means students in 3rd grade (ages 8-9 yrs. old) should be able to comprehend the text. Unlike the other indices, the ARI, along with the Coleman-Liau, relies on a factor of characters per word, instead of the usual syllables per word.

7. **Linsear Write Formula** is a readability formula for English text, originally developed for the United States Air Force to help them calculate the readability of their technical manuals. Linsear Write Formula is specifically designed to calculate the United States grade level of a text sample based on sentence length and the number words used that have three or more syllables.

While there are a wide range of readability tests, based on a wide variety of formulas, I recently discovered [StoryToolz.com](http://storytoolz.com), which was referred to by Ann Wylie (wylie.com), a well-known lecturer on creating readable copy.

The site debuted in January 2008. It was designed and created by a struggling fiction author, Chuck Heintzelman. It’s gone through several iterations since then, starting out with paid memberships, which were done away with in 2012. Today, you have to “register” first to use the full “readability” tool. Once you register, you’ll be able to test up to 50K of copy at a time.

Once you prepare and paste your copy into the readability tool, your copy gets analyzed by seven readability formulas at the same time. You’ll get the individual results for each formula, as well as an “Average grade level” assessment.

Below, are the instructions for registering and using StoryToolz.com:

**Determining literacy/readability levels: Storytoolz.com**

This is a free website, but you have to register first to use its various tools.

- Visit [StoryToolz.com](http://storytoolz.com)
- Click on “Word Count Meters”
Click on “Register” link

- Fill in e-mail address, password, password again boxes and click “Join Now.”
- An activation email, with activation code, will be sent to your e-mail address.
- Fill in activation code in Congratulations” screen (which will have appeared when you clicked “Join Now” on the registration screen), then click “Activate My Account.”

Sign in with e-mail address and password.
- Click on “Readability” box

- Copy and paste in up to 50k of copy.
- Click on “Check Readability” box.
Click on "Reading Levels" link.

Readability scores will appear, along with an "Average grade level." By clicking on each one, you’ll get directed to the Wikipedia listing that explains each grading system. (FYI: The copy used in the readability test pictured here was the NCQA copy in our 2014 Accolades Flyer which came in at a 12.8 grade level. Yikes!)
You can also get “Sentence Information”.

- You can also get “Word Usage” and “Sentence Beginnings” information.
- By clicking on the blue terms, you’ll get directed to the Wikipedia listing that defines each term.
PREPARING YOUR TEXT TO HELP CALCULATE AN ACCURATE GRADE LEVEL

To achieve an accurate measurement of text, you need to prepare your document before you score them with a computerized readability formula. Otherwise, your results may vary by a significant margin.

To score a document, most computerized readability formula will usually analyze:

- Word length as measured by the average number of syllables per word
- Sentence length as measured by the average number of words per sentence. The program specifies how to do this and the computer follows instructions in a mechanical way.

Here are a few tips to help you ‘prepare’ your copy before you use any of the many readability tests out there. Once you’ve finalized copy, but before testing it, you might want to make a duplicate copy that you can actually format for testing. That way you have a ‘guide’ set aside that you can use to restore any of the formatting you want to keep.

To help the computer calculate and score text correctly, you need to prepare the text first by removing things that will confuse and mislead the computer:

- **TIP #1:** Embedded punctuation confuses the computer when it’s counting the number of sentences. Most readability programs tell the computer to sense the end of a sentence by looking for a punctuation mark that triggers the end of a sentence, such as a period, question mark, or exclamation point. Sometimes this punctuation falls within a sentence, rather than at the end, but the computer cannot differentiate this.
  
  Since the computer interprets any period as the end of a sentence, you need to remove embedded punctuation, such as periods that you’ve used for abbreviations, etc. (See below.)

- **TIP #2:** Titles, headings, and bulleted lists can mislead the computer. A computerized readability program cannot distinguish ordinary sentences from titles, headings, and bulleted lists because the sentence has no punctuation.
  
  If the computer keeps searching for punctuation, such as a period, question mark, or exclamation point, it will include the text from headings as part of the first sentence that follows the heading. Obviously, the program will miscalculate the sentence length.

Using the two tips above as a guide be sure to go through the document and delete:

- Headings
- Sentence fragments
- Lists with bullets (if bullets are complete sentences, you can use them in your sample)
- Periods that don’t mark the end of a sentence, such as:
  - Numerals in a numbered list (1. or 2.)
  - Abbreviations (Jill M. Sanchez, M.D.)
  - Periods in “e.g.” or “i.e.”
  - Decimals (98.6 degrees or 12.9%)
  - Or periods in times (9 a.m.)

If you don't remove extra periods, your software may "see" many more sentences than are really there. This will have an artificial and inaccurate impact on your readability score.
HELPFUL PLAIN LANGUAGE RESOURCES
There are many other excellent resources that describe techniques for improving readability and include information about plain language principles and strategies. Among the most comprehensive are:

Teaching Patients with Low Literacy Skills, 2nd Edition – This is a classic health literacy textbook for educators that includes information on reader comprehension, tips for using effective visuals, and an incredibly useful tool for assessing the suitability of materials that goes beyond the limitations of readability formulas. The book is now out of print, but can be downloaded for free.

KEY WEBSITE RESOURCES:
National Assessment of Adult Literacy (NAAL)
Center for Plain Language
Institute for Healthcare Improvement (IHI) search: Health Literacy
JAMA: Journal of American Medical Association
Kaiser Permanente: Department of Care and Service Quality search: Health Literacy
Agency for Healthcare Research and Quality (AHRQ)
Affordable Care Act. Health Literacy component.

ONLINE PLAIN LANGUAGE TRAINING: DEVELOPED BY THE NATIONAL INSTITUTES OF HEALTH
The NIH offers a free plain language internet-based training that introduces you to the basics of plain language. It’s not just for medical folks. The goal of this training is to help you learn to organize your ideas, use a clear writing style, and become a more effective communicator. The NIH describes the courses…

“We have developed the following Computer-Based Training (CBT) modules to introduce you to the basics of plain language. Modules 1 through 7 contain tales of medical history, some exercises, and a summary.

The 8th module contains optional exercises for additional practice. We have also provided a list of Web sites that you can use as you continue to expand your writing skills. We hope this training will help you learn to organize your ideas, use a clear writing style, and become a more effective communicator."

http://plainlanguage.nih.gov/CBTs/PlainLanguage/login.asp

YOUR TAX DOLLARS ALSO WORK FOR YOU ON:
From plainlanguage.gov / tips & tools section
Simple words and phrases on plainlanguage.gov:
http://www.plainlanguage.gov/howto/wordsuggestions/simplewords.cfm

Common Errors in English Usage (by Paul Brians) on plainlanguage.gov:
http://public.wsu.edu/~brians/errors/errors.html

Non-errors in English usage (split infinitives, ending a sentence with a preposition, beginning a sentence with a preposition, and much more):
http://public.wsu.edu/~brians/errors/nonerrors.html

The CDC has their “Gateway to Health Communication & Social Marketing Practice.”

**Readability test resources:**

Wikipedia.com has a variety of information on some of the more common readability tests at:

You’ll find descriptions of more than a dozen of the tests on that page, including:

- Accelerated Reader ATOS
- Automated Readability Index (ARI)
- Coleman-Liau Index
- Dale-Chall Readability Formula
- Flesch-Kincaid readability tests:
  - Flesch Reading Ease
  - Flesch-Kincaid Grade Level
- Fry Readability Formula
- Gunning-Fog Index
- Lexile Framework for Reading
- Linsear Write
- LIX
- Raygor Estimate Graph
- SMOG (Simple Measure Of Gobbledygook)
- Spache Readability Formula