

Research-Based Guidelines for the Development of Documents in Large Print

Font Face

Acceptable fonts for use in large print documents are,

- APHont
- Verdana
- Tahoma
- Helvetica
- Antique Olive
- Comic Sans (when a contrasting font is needed)

Fonts for use with persons who have low vision should not have serifs.

Additionally, the x and t-heights of a font should be 1/8"

APH has designed a font for people with low vision, called APHont. It is available as a free download to those who serve people with low vision or make documents for them. <http://www.aph.org/products/aphont.html/>

Font Size

A document is not actually "large print" unless it is in a font size 18 points or larger. Typically, the smallest options are,

- 18 points is used for the body of text,
- 20 points for subheadings, and
- 22 points for headings.

Print smaller than 18 points or larger than 12 points is known as "enlarged print." It does not meet the requirements of large print.

Punctuation

Since italics are difficult for many people with low vision to read, they are typically avoided. There are four options which may be used instead of italics.

- put the text that would otherwise be italicized into **bold print**
- underscore the text that would otherwise be italicized
- "enclose in quotes" the text that would otherwise be italicized
- put the text that would otherwise be italicized into **contrasting colored print**

Paragraphs are not indented. They are block style with double spacing between paragraphs.

Format Options

Line spacing is recommended at 1.25. This is the measurement between lines of print. Double spacing would then be 2.50 line spaces.

The recommended length of lines is 39-43 characters. This has been shown through research to be the best length to promote reading efficiency.

The use of columns is discouraged. The most difficult reading task that a person with low vision must do is the visual shift from the end of one line to the beginning of the next. Columns can double or triple the effort of this task, depending upon how many columns are used. Therefore columns interfere with efficiency and are not recommended.

The use of lead lines, or dotted lines, from an item in a table of contents to the page number is not recommended. More people with low vision find them confusing rather than not. Instead, every other line should be filled with a pastel background color. Example below:

Pirates of the Eastern Seaboard	231
Pirates of the Caribbean	246
Port Royal, Pirate Headquarters	278

Use of Color

Color can be very helpful to the person with low vision. One must be careful which colors are chosen, however. Many persons with low vision also have color discrimination difficulties, so everything must be done to assure they can distinguish between colors. Since most persons with color discrimination difficulties have trouble distinguishing between red and green we recommend a palette that is appropriate for this group as well as for those who have no color discrimination problems.

Useful colors are: Navy blue, C:100 M:76 Y:0 K:38
Royal blue, C:100 M:56 Y:0 K:0
Pastel blue, C:27.5 M:6 Y:0 K:0
CB yellow, C:0 M:0 Y:100 K:0
Pastel yellow, C:0 M:0 Y:51.0 K:0
Regulation yellow, C:0 M:8.5 Y:72 K:0
Federal gold, C:0 M:11.5 Y:94 K:6
Meridian gold, C:0 M:6 Y:51 K:0
Dark brown, C:0 M:27.5 Y:100 K:56
Cashew brown, C:0 M:18.5 Y:100 K:27.5
Meridian tan, C:0 M:6 Y:38 K:18.5

Regulation pastel tan, C:0 M:6 Y:18.5 K:6
Black
White

This not to say that green, red, orange and purple cannot be used, but be aware that most greens, reds, and oranges will look brown or gold to the person with color discrimination problems. Most purples will appear blue. If, for example, a test question requires reading of a colored graph, or an item formatted with typical basic colors, the student runs a significant risk of getting the wrong answer. However, if the student knows the colors used in the test are true to the palette he/she can see, then color will not be a barrier to finding the correct answer. Additionally, the pastel colors are very useful for use in tables of contents and other grids as a background color.

Gray should never be used in documents for audiences which may include persons with low vision. Graphs or charts that include several shades of gray are virtually indecipherable by persons with low vision. If color is not an option, then very simple patterns may be used. Polka dots and diagonal stripes have proved to be the most decipherable and best understood patterns for uses such as pie charts.

Text should not be used over a print or patterned background unless a halo of at least 2 mm is placed around the text. This includes ascenders (upper part of a t or lower part of a g.) Even then, the use of text over print or patterns should only be used when there are no other options.

The following colors should never be used adjacent to one another if there are color discrimination difficulties among the readership:

- green and red
- dark green and black
- red and black
- navy and black
- orange and brown
- green and brown
- red and brown
- red and orange
- green and orange
- purple and blue
- any color and gray
- gray and gray
- white and yellow

These color guidelines can be helpful when you choose colors and patterns for backgrounds and/or boxes for sidebars, text boxes, graphs, charts, captions, headings, subheadings and colored text.

Graphics

Photos, illustrations, graphs, charts, captions, maps, sidebars, inserts, are often used in documents for audiences that include people with low vision. Often these items must be enlarged to make them visible. Care should be taken that when enlarged these items do not lose resolution, and remain as clear, colorful and readable as the ones available to sighted peers. If people who are sighted have access to a photo in full color, it is not appropriate for that same photo only be available in grayscale to a person who has a visual impairment and is less able to interpret it.

Paper

Paper that is white with black text is considered the best for contrast. However, many people who have low vision have difficulty with white paper because it produces glare in some cases. Other options are ivory, antique white, eggshell, light beige, pastel yellow, or pastel pink paper with black text. Other good combinations are light beige paper with navy text, yellow paper with navy text, eggshell paper with dark brown text. Gray paper is not recommended under any circumstances. Neither is gray text. This is true for both print and electronic text.

Document Size

Now that modern printing techniques have made it possible to create large print in regular-sized books, there is no longer a need for students with visual impairments to carry around books that are 2 to 3 times the size of the books of their peers. Books for students with visual impairments should be no larger than 9"x12"x2.5", and weigh no more than 2.5 lbs. Reference books such as atlases where maps are used, may require larger dimensions. *

Summary

Research conducted by APH in the Student Survey of Large Print and Magnification Needs to Optimize Reading Efficiency, and experts in the field (listed below) points to the validity and necessity of the above guidelines. APH believes these guidelines embody the attributes that have been shown through research to provide optimum readability for persons with low vision. APH is proud to lead the way in the development and implementation of these guidelines and will proceed with the sincere belief that persons with impaired vision will benefit from them. APH wants

to keep a full range of options open for students who need textbooks. The production of high-quality large print that embodies features proven helpful to persons who have low vision, is one way to keep those options available.

*APH has developed very specific guidelines for maps, charts and other materials used in atlases. These are available upon request. (800) 223-1839.

Resources

1. Arditi, A., *Print legibility and partial sight*. New York, NY: The Lighthouse Research Institute, 1992.
2. Bailey, I. and Lueck, A., *Magnification Needs to Optimize Reading Efficiency* (unpublished study). Louisville, KY: American Printing House for the Blind, Draft (2001).
3. Buultjens, M. Aitken, S., Ravenscroft, J. & Carey, K. "Size counts: the significance of size, font and style of print for readers with low vision sitting examinations." *The British Journal of Visual Impairment*. (1998) Edinburgh, Scotland.
4. Carrol, T. J., Trautman, R. L., Collingwood, H. "Standards for production of reading material for the blind and visually handicapped." *National Accreditation Council* (1974) New York, NY: pp. 15-22.
5. Gaster, L., Clark, C., (1995) "A guide to providing alternate formats." *Center for Rehabilitation Technology Services* (1995) West Columbia, SC: pp. 7-12.
6. Kitchel, E., Evans, W., *Student survey of large print* (1999) Louisville, KY: American Printing House for the Blind: pp. 1-27.
7. Mansfield, J. S., Legge, G. E., Bane, M. C. "Psychophysics of reading XV: font effects in normal and low vision." *Investigative Ophthalmology & Visual Science* 37 (8), 1492-1501. Draft (1996)
8. Rubin, G.S. & Legge, G. E., "Psychophysics of reading: The role of contrast in reading". VII. *Comprehension in normal and low vision VII*. *Clinical Vision Sciences*, 4, (1989): 51-60.