Creating Accessible E-Documents

Tip Sheet No. 3
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It is estimated that up to 4 percent of the U.S. population (12.5 million people) relies on some sort of assistive technology to access electronic documents and web pages.

Assistive technology includes:

› screen-reading or text-to-speech software;

› refreshable braille displays; and

› screen magnifiers.

The effectiveness of these assistive technologies depends on the accessibility of electronic documents. People view electronic documents (e-documents) on websites, through e-mail, or on a CD/USB drive. Unless you make e-documents accessible to people with disabilities, they will find them difficult, if not impossible to access, read, and navigate.

Accessible e-documents work in partnership with assistive technology to ensure people with disabilities have easy, effective, and equal access to

Assistive technology

Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer or braille display.

A **refreshable braille display** or braille terminal is an electro-mechanical device for displaying braille characters, usually by means of round-tipped pins raised through holes in a flat surface. Blind computer users who cannot use a monitor can use a braille terminal to read text output.

A **screen magnifier** is software that interfaces with a computer's graphical output to present enlarged screen content. By enlarging part (or all) of a screen, people with visual impairments can better see words and images.

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information. When you make your documents accessible, you also make them more portable. This means that they work better across all web browsers, computer systems, and types of devices (cellphones and handheld computers, printers, braille devices, etc.).

Elements of an accessible e-document

Styles, structure, and tags

Screen readers rely on a document's organization/hierarchy created when using styles to navigate the document. A style is a set of formatting characteristics applied to paragraphs, tables, characters, or lists. For example, in Microsoft Word if the style ribbon is not visible on your top toolbar, you can make the style ribbon visible by going to the File menu, choosing Options and then selecting Customize Ribbon in the popup box. There will be two columns of commands: the left side contains the options available, the right side shows those commands that are currently displayed on the top ribbon of Microsoft Office. Make sure that the style command is checked and moved to the right side.

The use of bold/underline/font size for headings and titles does not create structure; they are merely visual techniques used by, and for the benefit of, seeing readers. Using styles, on the other hand, actually creates a relational structure (hierarchy) on a document by assigning outline levels. For example, applying "title" style to a heading will ensure that it is read before a heading marked as subtitle. Use heading levels in descending order of importance to help users navigate the document and find information.

Heading and paragraph styles, as well as a table of contents, make it easier for all readers to follow your document. These elements are especially important for people who rely on visual cues (such as section headings) to navigate and follow along in the document. They also allow people using screen readers to navigate the e-document in the intended order.

Layout and reading order

Screen readers present content to the user one item at a time. The progression through the document from beginning to end is like an automated telephone menu system that does not reveal all of the options at once. Users progress through it in a step-wise manner.

Reading order refers to how a screen reader goes through the document.

Document tag structures should adhere to a logical order that is the same

as the order of the document implied from the visual layout. When the reading order is correct, people who are blind, low-vision, or who have learning disabilities will be able to read the document in the same order as those without disabilities.

Set the language

Most word processing software offers the option to choose the language of the document you are creating. Setting the language of the document is imperative to ensure that assistive technology knows what language to speak. Depending on the software you are using, the option to set the language could be in various places. For example, in Microsoft Word, go to File, choose Options, and then select Language in the pop-up box to set the document's language. Note: this process may vary depending on your operating system, as well as the version of Office and the software you are using.

Graphics and images

Screen Reader software converts text to speech, but it cannot convert graphics/images to text. You can add text to a graphic in the form of "Alternate text" or "Alt-text." Alt-text is a description of the image or object that allows people using screen readers to understand the content of the graphic. Add Alt-text to any graphics, images, charts, or tables in your document.

Alt-text should succinctly convey in words the same information that the graphic communicates. For example, in Microsoft Office programs, to add Alt-text, right click on the graphic and select Format, click on Layout and Properties, and pick the Alt-text option. There are two boxes, one marked "Title" and the other marked "Description." Type your Alt-text into the description box. Note: This process may vary depending on your operating system, as well as the version of Office and the word-processing program you are using.

Tables

When using tables, create clear column headings that provide context and assist with navigation. For example in Microsoft Word, you can do this by selecting the row in the table that contains the column headings and opening Table Properties (you can do this by right-clicking on the table or under your Table tab). Go to the Row tab in the pop-up box and put a check mark in the box that says "Repeat as header row at the top of each page."

Note: This process may vary depending on your operating system, as well as the version of Office and the word-processing program you are using.

Avoid using nested tables and merged or split cells inside of tables, because they make it difficult for a screen reader to navigate.

**To test and simplify the table structure:**

1. Select the first cell of the table.

2. Press the tab key repeatedly to make sure that the focus moves across the row and then down to the first cell of the next row.

Charts and graphs

Charts and graphs are not accessible to screen readers. You can make them accessible by adding a short caption that describes their content and also adding an alternative presentation of the findings. For example, if you have a chart on high school students with disabilities in your document, caption the chart with something like: *"Pie chart students with disabilities 1."*

Pie chart students with disabilities 1
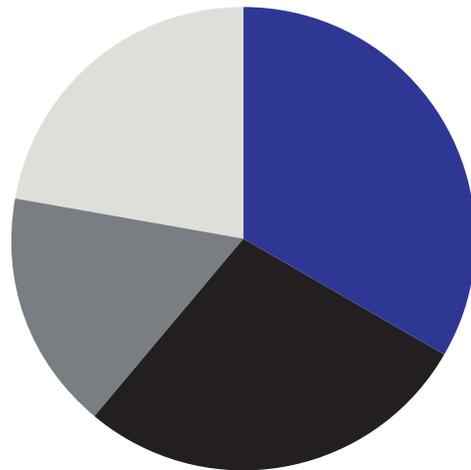
- ■ Freshmen
- ■ Sophomores
- ■ Juniors
- □ Seniors

Then add an alternate presentation of the findings. You can do this by including a table of the data:

Class	**Percentage of students with disabilities**
Freshmen	30%
Sophomores	25%
Juniors	15%
Seniors	20%

Another way to provide the information for screen-reader users is to add Alt-text to the pie chart. That Alt-text should say

something like: "This pie chart shows that 30% of freshman students have disabilities, 25% of sophomore students have disabilities, 15% of junior students have disabilities, and 20% of senior students have disabilities."

Lists

Instead of manually inserting bullets, numbers, or asterisks, use the List tool. As with headers, this tool enables screen readers to process list items more efficiently. Numbered lists with multiple levels should use a different numbering scheme on each level.

Hyperlink text

Hyperlink text should provide a clear description of the link destination, rather than only providing the URL or saying "Click here."

ScreenTip text (which appears when your cursor hovers over a hyperlink) can be used in a way similar to Alt-text by providing additional detail about the hyperlink.

Forms

Organize forms in a logical manner. To make it easier for the user, provide them with instructions for completing the form and which items are required. Using the Form Controls listed under the Developer tab will ensure that they have the correct

labels and that they are readable by assistive technology.

Beyond word processing

Spreadsheet software

› Include labels for the x- and y-axis on charts and graphs.

› Label columns and rows to provide context and assist navigation of the table's contents.

› Use descriptions in addition to color and highlighting to ensure that people who cannot perceive color are still able to understand the information provided.

› Avoid using blank cells, rows, or columns for formatting; these can mislead someone using a screen reader into thinking that there is nothing more in the table.

› Give all sheet tabs unique names.

Presentation software

› The correct use of slide layouts is key to ensuring that your content is accessible because the layout contains the structures a screen reader requires.

› Presentation-development software offers a variety of templates. Within

each template, you can choose a slide layout that meets your needs. Each layout will have a placeholder in which you can type text or insert visuals. Typing or adding items to these placeholders ensures that readers see the items in the order you intend. Screen readers recognize and read only items added correctly to a slide placeholder.

Types of email formatting

HTML (HyperText Markup Language) e-mail is formatted like a web page, using colors, graphics, table columns, and links.

Plain text e-mail is an e-mail that only includes text.

Rich text (RT) e-mails support text formatting, such as **bold,** *italics,* and underlining, as well as different fonts, font sizes, and colored text.

E-mail

› Write e-mails in plain text, rich text, or HTML.

› Plain text is the recommended format for people using screen readers and other assistive technology. The font, font size, color, and contrast are set as preferences in the e-mail client. Users then get e-mails displayed the way they want.

› Choose a brief, engaging subject line.

› Use clear, descriptive attachment file names (capitalize each letter of a filename to prevent a screen reader from reading the file name as a single word).

› Include text in the e-mail that indicates that a file is attached or that there are voting buttons.

› Avoid elements such as blinking text or animated images.

› Keep the design or look of your e-mail simple and easy to scan.

Portable Document Format (PDF)

› Tag a PDF to make it accessible. Tags provide the structured, textual representation of the PDF content that screen readers can access. A few examples of tags include:

  – Heading level 1 <H1>

  – Table of contents <TOC>

  – Paragraph <P>

› Tagging adds a layer of information called "semantics" to a PDF document. "Semantics" in the PDF context refers to the purpose of each block of text as established by its tag. For example, headings (<H1>, <H2>, etc.) are used for text that organizes other text contained in paragraph (<P>) tags.

› When you save, for example, a Word document as a PDF, the Office application you are using identifies and labels the semantics you are using and adds them to the file. You have the option to include those structured tags in your PDF. A pop-up box will appear when you click on Save, and you should click the box next to the text "Document structure tags for accessibility."

Viewers

When you offer e-documents, provide links to the available free viewers (such as PDF viewers). Users can then view the document without having the program on their computers. Free viewers are available for word processing, spreadsheet, and presentation software.

Conclusion

This document offers ways to make electronic documents both visually appealing and disability-friendly. These tips not only benefit readers with a range of disabilities but also older people, those in trauma, and those for whom English is a second language.

Additional resources

Disability Access Services, CA Department of Rehabilitation, "Seven Steps to Creating an Accessible PowerPoint Slideshow"
https://perma.cc/C5HY-GSNN

Create Accessible Electronic Documents
https://perma.cc/WHY4-TW3M

Section 508: Making Electronic Documents Accessible: PDF
https://perma.cc/B8CA-5ZXN

Section 508: Making Electronic Documents Accessible: Microsoft Excel
https://perma.cc/6A5M-VC9C

Section 508: Making Electronic Documents Accessible: Microsoft Word
https://perma.cc/9HXK-8HMF

Web Accessibility in Mind, "Designing for Screen Reader Compatibility"
https://perma.cc/37KQ-8L4E

How to Make Your PowerPoint 2010 Presentations 508-Compliant
https://perma.cc/JJY4-V4JX

For more information

The Center on Victimization and Safety (CVS) at the Vera Institute of Justice works with communities around the country to fashion services that reach, appeal to, and benefit all victims. CVS's work focuses on communities of people who are at elevated risk of harm but often marginalized from victim services and the criminal justice system. We combine research, technical assistance, and the training to equip policymakers and practitioners with the information, skills, and resources needed to effectively serve all victims. To learn more about CVS, contact cvs@vera.org.

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