Making Accessible Word Files

This document is a guide to creating documents in Microsoft Word. The author, Trevor Johnson-Steigelman has made it available CC-BY-NC.

Why Make Accessible Documents?

Making documents accessible is important for many reasons. The overriding reason is that you want your audience to be able to read and understand your document without additional effort. The second reason is because of legal requirements written into the Americans with Disabilities Act (ADA) and other legislation.

When you create your document so that it is accessible from the beginning, you do not need to revise it when you have a student who requires accommodation, or if you do, the revisions should be minor.

As a side benefit, accessible documents are easier to read for all students. It is also easier for you to move the information in an accessible document into other formats.

Accessibility for All.

Many of the accessibility recommendations help you meet the requirements of the ADA. This includes specific groups like people with vision, hearing, and mobility impairments.

However, there are other groups that can benefit from making documents accessible. These include people with learning challenges like dyslexia or other reading disorders.

Even people without any specific problems can benefit from documents that have been made accessible. For example, one of the most common accessibility fixes is to include headings to a document. If you've every read a document or article that was just a wall of text, you can appreciate a well-placed heading.

Features of Accessible Documents.

According to the Web Content Accessibility Guidelines (WCAG 2.0), online documents should be Perceivable, Operable, Understandable, and Robust. Even though the guidelines are for web documents, your print and electronic documents should follow these guidelines too.

When you create documents, it is very likely that you try to make them look "pretty". This is your attempt to make them perceivable and understandable. Unfortunately, many of the things that we do, like using different fonts and placing images, can break the operable and robust parts of the guidelines.

For example, for years I tried very hard to make the headings of my documents stand out from the rest of the body of the text by making them bold and maybe a bit larger. I did this by directly adjusting the fonts. This makes the headings stick out for a sighted reader. They can skim through the document and easily see the headings. Unfortunately, bold, larger text doesn't necessarily stick out to a screen reader or a braille reader.

There are several things you can bake into your documents that will help students using a screen reader. Fortunately, most of these things will help all students.

The most common accessibility adjustments to your text documents are…

- Choosing accessible fonts.
- Careful use of color and contrast.
- Using Heading tags.
- List Styles.
- Accessible Images - Alternative Text.
- Establishing a precise reading order.
- Using two columns.

Microsoft Word makes most of these steps simple, and by making an accessible template, you won't have to do the setup every single time. I'll review each of these items in the remainder of this document.

The Accessibility Checker.

The most recent versions of Microsoft Word include a feature called Accessibility Checker. It is available under the Review Tab in the Ribbon.
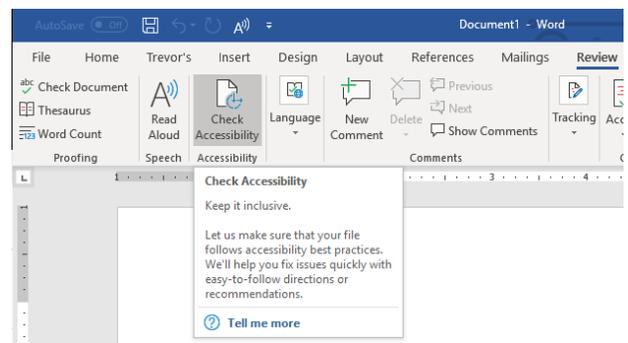
This means that you have a tool to relatively quickly check your document and fix any problems that might exist. Remember to run the checker before you finish your document.

If you have an existing document, this is a quick way to find out what things you can change to improve the accessibility. One word of warning, though; chances are that there are many problems with accessibility. The upside is that most of them are relatively easy to fix.

Using Accessible and Available Fonts.

The fonts you use can have a huge effect on the accessibility of your documents. You need to choose a font that is both easily readable and widely available.

Choosing Accessible Fonts.

These days, there are hundreds, if not thousands of fonts that are available to us. While these fonts can add pizzazz to our documents, most of them will cause problems with accessibility.

The accessibility problems come from the way that certain characters are depicted. For example, capital "I" and lower case "l" and the number "1" could each be represented with a vertical line. This can cause decoding problems for certain individuals.

Look at the characters in the following image. It contains the name of the font followed by the number 1 and the word Illness, spelled with a capital I.

Verdana   1 Illness
Arial   1 Illness
Calibri   1 Illness

Verdana is the recommended font for accessibility. Notice that the characters for the 1, I, and l are easily distinguishable.

Compare this to the same characters for the Arial example. In Arial font, the symbol for the capital I and the lowercase l are exactly the same. Calibri font makes the upper case I slightly shorter, but it is still hard to tell the difference.

These three fonts are all considered to be sans serif. Serifs are the small bars and flourishes at the ends of letters. Verdana breaks the "without serif" rule by adding the serifs to the capital letter I, making it easily distinguishable.

Verdana also makes the font size a bit larger, even though the fonts in the image were all set to be 14 pt. Verdana puts a slight bit more space between characters as well. These changes make it easier to read, and therefore the preferred sans serif font.

The next image compares three serif fonts, Georgia, Times New Roman, and Cambria.

Georgia   1 Illness
Times New Roman 1 Illness
Cambria   1 Illness

Georgia is considered to be the most accessible of the three, even though the differences in readability between these three fonts is not as striking. The number 1 is slightly more distinguishable in the Georgia font. The Times New Roman number 1 and lower case "l" could be confused.

Other, more ornate fonts are available, but you should generally avoid them. The extra flourishes can be distracting for readers with dyslexia or other learning disabilities.

Choosing Common Fonts.

In addition to the readability of fonts, one should also consider the availability of fonts.

These days, students could be reading your documents on a computer, in print, on a tablet, or even on a cell phone. This means that you should use fonts that are readily available.

Both Verdana and Georgia are considered to be "universal" fonts, meaning that they are available on most platforms.

Have you have ever seen a person giving a PowerPoint presentation complain that the fonts aren't right? If so, chances are that they made the presentation on a different type of computer (Mac or PC) than the computer being used to present the talk. It could also be the case that they downloaded a special font from the internet and forgot to embed it into the document.

By using Verdana and Georgia, you make it more likely than not that the student will have the font on their local computer.

This document is written using Verdana for the body, and Georgia for the headings and should appear the same wherever you read it.

Applying Styles

Styles are a way that Word allows you to quickly apply formatting throughout a document. Within the home tab, there is a group called "Styles", which includes Normal, Heading 1, Heading 2, and other styles.

Start a paragraph, apply a font, and then right-click on the Normal style in the ribbon. A context menu will allow you to "Update style to match selection.

If you apply fonts using the styles options, a student can easily change the styles to fit their tastes. For example, there is a font called OpenDyslexic that a student could apply to their personal copy of your document.

Careful Use of Color and Contrast

Sometimes authors will try to be fancy with their headings and text, giving it different colors. You need to be very careful of how you use color and contrast.

Meaning through Color

A helpful teacher might decide to make all of the new vocabulary words in a document bright orange so that students can easily find them.

While the idea of using color is good, make sure that you don't use color exclusively. You might include a phrase like "a new vocabulary word", "is defined as", or something similar. You could include a list of new words somewhere in the document. Preferably, you'd do all of these things in the document.

This is necessary because screen readers don't register changes in color. They may register **bold** or *italics*, but not all do. Adding some color may be helpful but it doesn't give semantic meaning or context to screen readers. The "Read Aloud" function of Word doesn't point out either bold or italics, even when a tag is applied.

Also remember that most copiers are black and white. Fancy use of color will be lost when you print it out on most printers.

Don't put tints behind text or highlight text for the same reasons. Just because you see that done in textbooks doesn't mean that it is a great idea.

Grey Text.

Several years ago, there was a move on web pages to avoid using dark text on white backgrounds. The theory was that the difference in contrast between the white page and the black text was causing undue strain on readers' eyes. This led to the use of grey text like this...

Grey Text on a White Background

I personally found this to be annoying and stopped reading websites that implemented this idea. Let students adjust the contrast and brightness on their screens or change the color of the text on their own printout.

Colorblindness.

It is okay to use colorful text in your documents, but remember, there may be students who are colorblind in your class. There are several different types of colorblindness.

Image from reddit user luccyVeins, https://i.redd.it/c1c5u0dhret01.jpg. Based on work from https://www.color-blindness.com

People with protanopia have trouble seeing differences between red and green. Using green text for "good ideas" and red for "bad ideas" would be lost on students with this condition. They would also have trouble telling the difference between pink and blue.

People with tritanopia have trouble seeing differences between blue and yellow. They can tell that red and green are different, but they can't distinguish between blues and greens.

For protanopia and tritanopia, highlighting some colors of text with certain colors will cause the text to disappear, blending foreground and background together.

Very few people have monochromacy, seeing in black and white. However, as mentioned earlier, most printers print in black and white and grey.

The short story on color is to make sure that it isn't the only way that you provide meaning in a document.

Using Proper Heading Tags.

Heading tags are a way to mark off different parts of your document. By using the heading tags, you accomplish two things.

The first is that you signal to screen readers where each section begins. This allows a person using a screen reader to skim ahead in the document in the same way a sighted person might.

The second useful function of heading tags is that you can apply formatting to the tags to keep your document consistent.

Heading tags are part of the "Styles" options. If you click on the home tab, you can see the "Styles" area of the ribbon.

There are many styles available, but the important ones are the Title and the Headings. The headings are labeled Heading 1, Heading 2, etc.

The Title Style.

The title should be reserved for the title of the paper, and only used once. There is an option for a subtitle if you'd like to add one. For some reason, Word doesn't treat your title as the actual title of the document. You can set the title of the document (as opposed to the file name) by clicking on the File tab in the ribbon. To the right-hand side, you will see an area titled "Properties". You can change the display title of the document here.

Heading Tags.

The headings form a hierarchy with Heading 1 being the top-level heading. Heading 2 could be considered a sub-heading of Heading 1. Heading 3 would be a sub-sub-heading. However, the term "subheading" isn't used in this context.

You should be careful to nest your heading tags appropriately. This simply means that you should make sure that each new top-level section starts with Heading 1, followed by Heading 2, and so on.

Don't skip headings. For example, you should never go from Heading 1 directly to Heading 3.

In most documents, you shouldn't need to go beyond Heading 3, even though the headings can extend all the way down to Heading 9.

The NVDA screen reader will jump to the next tag when you press the "H" key.

Formatting the Tags.

You can adapt the style of the heading tag to suit your tastes. In fact, you probably will want to, since the default formatting of tags is not very pretty. The default size of the fonts is too big in my opinion. The spacing around the tags is weird too.

The simplest way to do modify the appearance of the headings is to apply the heading to its first appearance in the document.

Next, format the text of your heading, including font, font size, bold/italics, color, and spacing.

Once it looks the way you want it to look, simply highlight the text.

Next, right click on the style you want in the styles group on the home tab. A context menu will appear that looks like this…
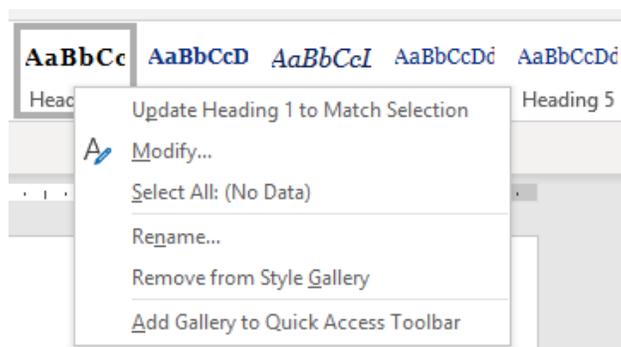
Click on the first choice, "Update Heading X to Match Selection". (The X will be replaced by the number of the heading you have selected.)

If any other occurrences of the heading appear, they will be automatically updated throughout the document.

Other Benefits of Using Heading Tags.

If you go to the "View" tab and click on the Navigation Pane option in the "Show" group, you can see a list of the headings in your document. This makes it easier for you to navigate through long documents. If you make a table of contents, Word will use the heading tags to populate the table.

List Styles.

Lists are a useful way to gather information succinctly. However, you may find problems with some lists, unless you apply list tags carefully.

Within Word, you can start a list by writing down the first item in the list, and then clicking on the "Bulleted List" style found on the Home tab in the aptly named "Styles Group".

- List item.
- List item.
- List item.

You can get out of the list by pressing the enter key twice at the end of the list.

Unfortunately, this keeps the indent of the list going on into the next paragraph, as you can see here.

To get out of this indentation, click on the "Normal" style while your cursor is in the next paragraph.

If you prefer numbered lists, use the "Numbered List" style.

Why should you use the list styles?

Using the list style automatically does two things. The first is that it will put a marker at the beginning of the list. The second is that it will apply a hanging indent so that a list item that spans two lines of text will be indented properly.

The third thing that the list styles will do is add context to the list. Before reading the list, a screen reader will state that it is entering a list. It will also let the listener know when the list includes different levels.

Careful Use of Punctuation.

The use of punctuation is something that is not often mentioned when you look up information about accessibility.

We've been taught to write in complete sentences and to place periods, question marks, or exclamation points only at the end of sentences.

Screen readers, like most people, use punctuation to know when to insert pauses when reading.

Most people also know to pause at the end of the line of a bulleted list. Screen readers may or may not know to do this. For this reason, I put a period at the end of bullet list items, even if the item isn't a complete sentence.

I know that Mrs. Rapsey and Mr. Zakutney, my high-school English teachers might be disappointed. In the past year or two, I have seen improvements, but I still recommend that you put a period at the end of each list item.

You may notice that I put periods at the end of my headings too. Again, this is to ensure that screen readers pause after reading the heading.

Pitfalls of the list styles.

Numbered lists can be a bit troublesome in Word sometimes. For example, you might want to interrupt a list with a quick comment and then continue. You might also have two separate lists close to each other in the document.

I have found that there are about even chances of Word starting a new a list or continuing a list when I don't want it to. In these situations, right-click on the list and look for options to "Separate list" or "start numbering at...", then fix the problem.

Why even include lists?

There is a whole list of reasons why you might want to make a list in your document.

- You include lists to help summarize information.
- Lists allow students to skim the text to find information.
- You might have a list of materials for an experiment.
- Breaking instructions into a list helps students do multi-step tasks.

All of these are good practices. Just make sure that you format your lists appropriately.

Screen Readers and Lists

Each screen reader has a different set of keystrokes to read lists.

NVDA will jump to the next list if you click the "L" key from inside the document. Within the list, you can click on the "I" key to move on to the next item in the list.

Accessible Images.

By their very nature, images can contain large amounts of visual data. Unfortunately, readers with limited vision can't immediately process this information. To make your images accessible, make use of the "alt-image" or "alt-text" feature.

Alternative Text.

Alternative text, or "alt text" for short, is text that is used to describe the image. Screen readers will read this text in place of the image. If there is a problem loading the image, the alt text will display instead. Sometimes people familiar with posting images on the internet will refer to the alt-text as an "alt-tag" or simply "tag" instead.

Including Alternative Text.

To include alternative text on a picture in Office 365 or later, right click on the image. The context menu will include an option to "Edit Alt Text…"
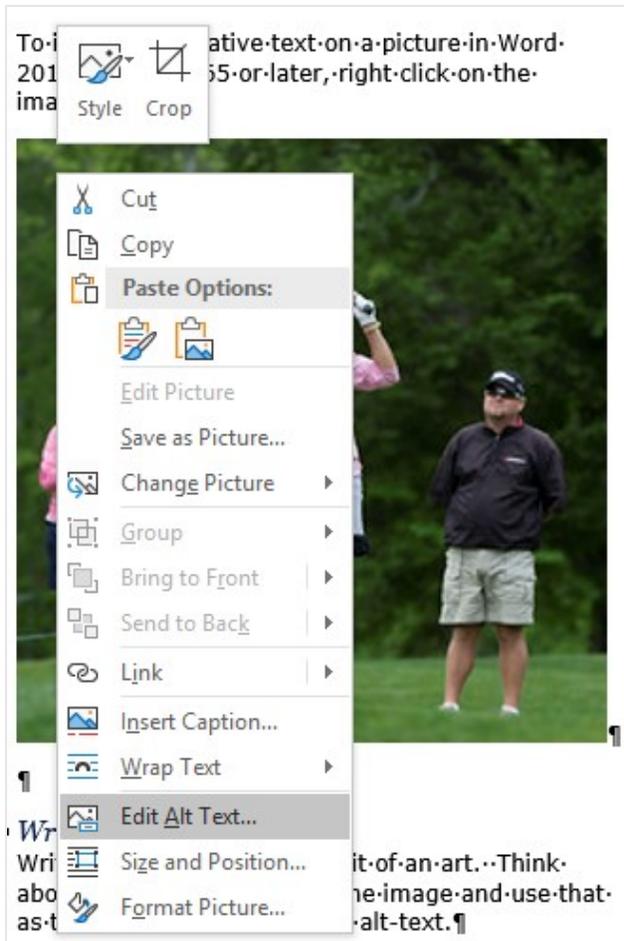
Clicking on this option will open the Alt Text dialog box on the right-hand side of the Word window.
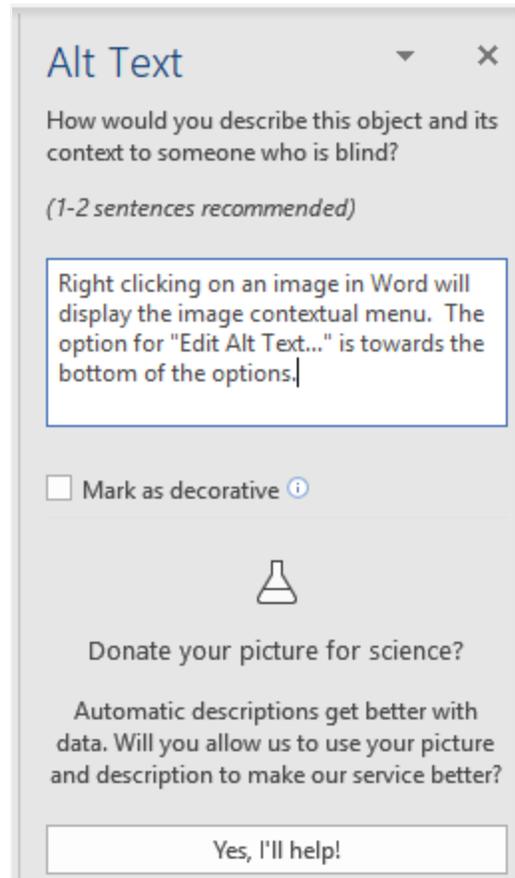
On older versions of Word, you use the accessibility checker, and it will guide you picture by picture through the document.

There may be some text already generated for the image. More often than not, though, this text is not what you want it to be. For example, I often see "image from a cell phone" as the text. The auto-generated alt-text for the picture of a golfer below was "a group of people playing baseball".

You write your text in the empty box. If the picture is just decoration, click on the "Mark as decorative" box. Screen readers might then ignore the image. This depends on the sophistication of the screen reader.

There is also an option to donate your picture for science. This option lets Microsoft use your alt-text to build a database of image descriptions that will use artificial intelligence to label pictures.

Your alternative text should be a useful description of the image. Don't include "Picture of…" or similar words. The screen reader will preface the alt-text with "image" before reading the alt-text.

Next, we'll talk about writing useful alt-text.

Writing good alternative text.

Writing alternative text is a bit of an art. Think about the important part of the image and use that as the basis for creating your alt-text.

For example, the following picture of a golfer could be used in several different contexts.

The image is from Keith Allison, a freelance photographer located in Baltimore, MD specializing in professional sports, and is used with a Creative Commons BY-SA license.

The caption provided on flickr.com read…

"Alexandra Casi earned her spot into the LPGA Kingsmill Championship in a 29-player qualifying event at the 6,384-yard River Course by shooting a three-under par 68. Williamsburg, VA April 30, 2013."

If I were writing an article about Alexandra Casi, this caption might be just the thing that I would include as my alt-text.

However, I would also probably include this information in the text of the article. In that case, the alt-text might be simply "Alexandra Casi at the 2013 LPGA Kingsmill Championship".

You should avoid being redundant with alt-text. I've found that writing alt-text for images in lab report handouts has helped me write better descriptions within the body of the report. The important things I see in the pictures or diagrams should be described in the text for everyone to read (or hear).

If I were using this image in an article about playing golf for fitness, the alt-text could be as simple as "female golfer".

Notice that I didn't say that there were other people in the background in either description. I didn't mention trees in the background, the weird tripping hazard, the color of Alexandra's jacket, or the expression on her face. None of this

information is important to the context of the picture. (Of course, if you are talking about these things in the article, you would include them in the alt-text.)

There is an excellent article about how one might write alternative text for a famous portrait of George Washington by Gilbert Stuart. The article can be found at the Web Accessibility in Mind website at the following URL https://webaim.org/techniques/alttext/#context

The whole article talks about images used on the internet, but the information about context also works for images in Word documents or PowerPoint presentations.

Text-Heavy Images.
If you have an infographic or other text-heavy image in your document, you should re-write the text on the image and include it in the body of the document. Include text that describes how the information is organized.
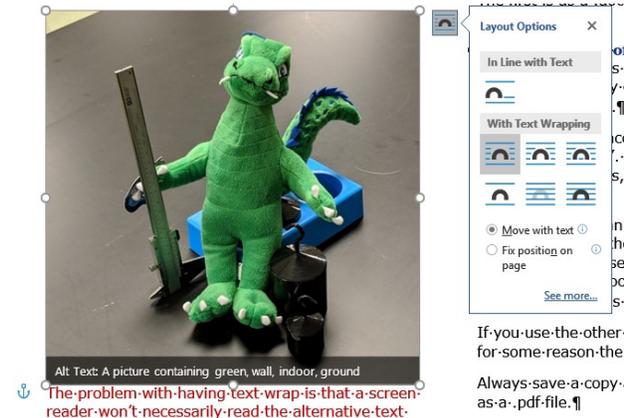
This might seem redundant, but remember, visually impaired students won't be able to see the image, so they will be missing all of the information.

Sighted students will benefit from seeing the text in both places or can simply skip the text or the image.

Reading Order.
One of the pitfalls of using images is reading order. We really want to make sure that the image fits in with the flow of the text.

If you right click on an image, a small box with an upside down half circle will appear at the upper right-hand corner of the image. Clicking on this symbol will bring up the "Layout Options" context menu.

Alt Text: A picture containing green, wall, indoor, ground

The problem with having text wrap is that a screen reader won't necessarily read the alternative text

Word has two basic options for the placement of images. The first option is to have the image appear "In Line with Text". The second option is "With Text Wrapping". Text wrapping allows the text of your document to flow around the image. You have several options related to text wrap, placing the image to the left, center, or right of the page. If you really dislike your readers, you can even have it appear behind or on top of your text.

The problem with having text wrap is that a screen reader won't necessarily read the alternative text at the right time, unless you very carefully place your anchor. (Notice the small anchor that appears at the lower left corner of the image.) The other problem with text-wrap is that it is very prone to misbehaving. I've had images suddenly move to different pages in the document.

In line Images.
You really should have all your images be in line with the text. This means that the screen reader will know exactly when to read the alternative text for the image.

Unfortunately, this might not be the prettiest option. For example, if you have a small image, there might be a large amount of white space left around the in-line image.

Using Two Columns.
One way to get around this is to use a two-column format for your document. Using two columns makes it easy to put an image in place, as long as it is narrow enough the fit within a single column. If an image is wider than a column, you will need to place a section break within the document around the image.

Creating Two Columns
To create a two-column document, click on the "Layout" tab in the Microsoft Word ribbon. To the left side of the ribbon will be a command icon for "Columns".
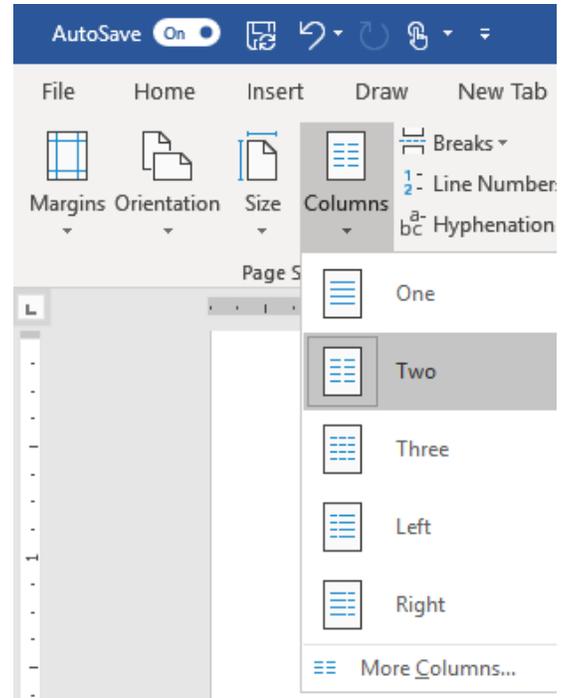
You can select one, two, or three columns from the dropdown menu. There are also options for having a skinny column to the left or right of a wide column. If none of these choices works for you, you can select the "More Columns" option, which gives you fine control over the columns.
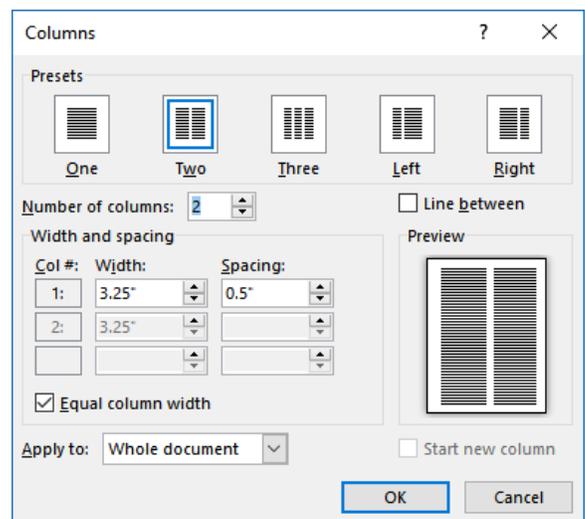
You can switch the numbers of columns and size of columns by breaking your document into sections.
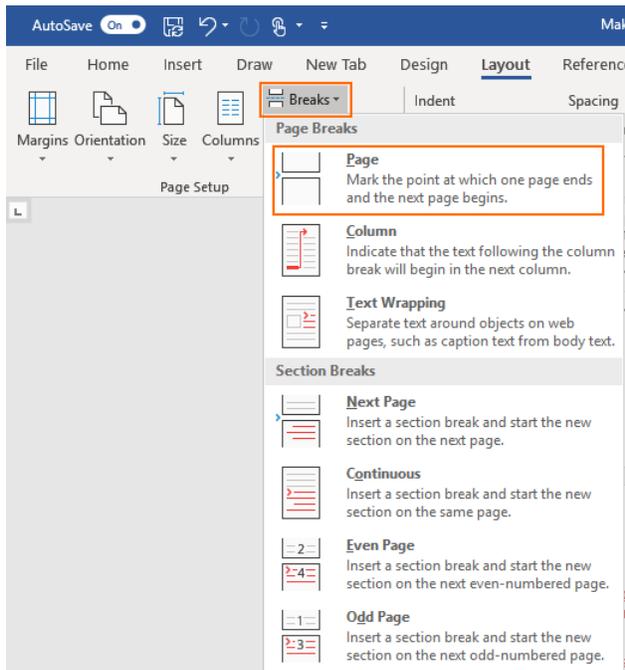
Line Spacing

Blank lines in a document will be read as "Blank" by screen readers. Rather than just adding multiple returns, you should make use of page breaks and paragraph spacing.

It is probably best to do this just before publishing your document. Don't fret about this too much, though. If a student adjusts the font size, the page breaks will probably move around.

Page Breaks.

To insert a page break, go to the "Layout" tab of the Ribbon.

Click on the "Breaks" option to reveal other choices. A page break ends a page and starts a new one. Other options are here for column breaks, and text wrapping. You can also choose from options related to section breaks, including next page, continuous (same page), even pages or odd pages.
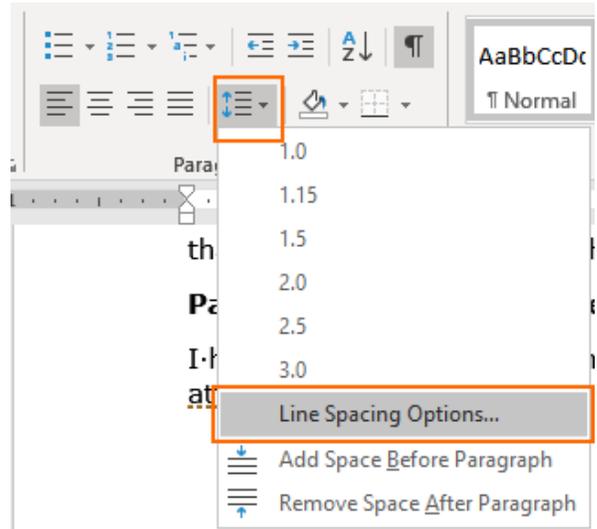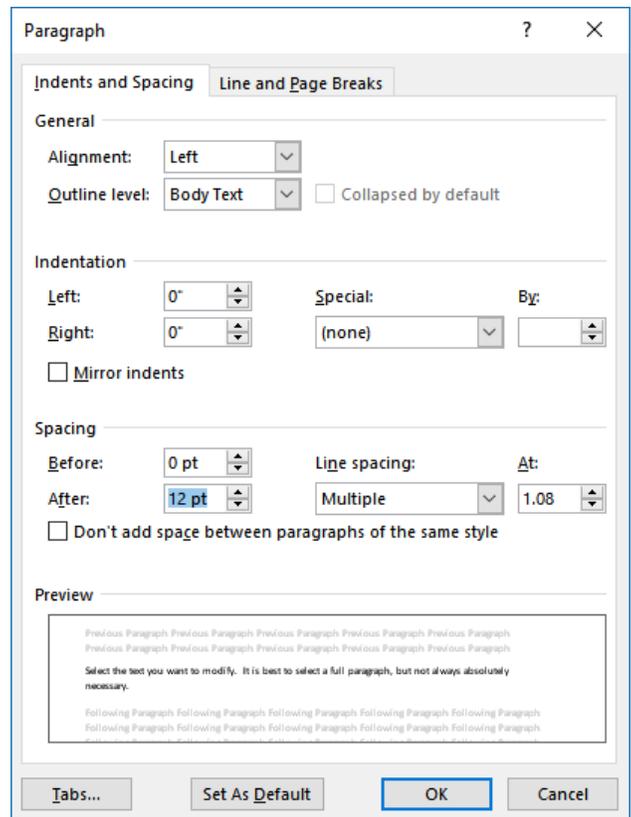

Paragraph Spacing.

Avoid putting blank lines between items. Instead, add spaces before and/or after paragraphs by using the line spacing options.

Select the text you want to modify. It is best to select a full paragraph, but not always absolutely necessary.

Go to the "Home" tab of the Ribbon. Look for the "Paragraph" command group. There is an icon that has an up and down arrow next to four horizontal lines. Click on this to reveal several choices. The one you want is the Line Spacing options. (Choosing Add or Remove Space doesn't give the fine control we want here.)

The Paragraph Option window will open on your screen.

I usually modify the spacing option to put 12pt after the paragraph. You can adjust this to the size of your default font or a bit bigger. Screen readers don't see or read this space.

You can also adjust the spacing around headings this way.

Publishing Your Document.

Saving the Document

Make sure that you save your document in the latest format for Word. Even though there is an option to save as a .doc file, you need to save a recent document as a .docx file. This ensures compatibility of recent features. Students or schools who are on older versions of Word should be encouraged to update.

Before saving your file for the final time, though, makes sure you give your document a title. Even if you've used the "Title" style, you still need to do one more step.

Go to the "backstage" view of Word using the "File" tab in the ribbon. At the top of the right-hand column, you should see the "Properties" settings.

This gives you some information about the document, including the file size, the number of pages, and number of words. The next item is the time you've spent editing the document.

The important thing you must adjust is the "Title" of the document. This is different than the file name. Unfortunately, this doesn't populate when you use the title style. Click on "Add a title", then type in the title of your document.

Posting the Original Word Document.

Posting your document in Word's .docx format is probably the best way to make it accessible to all students.

If a student requires larger text, they can simply select all of the document, and then tap up the size of the font right from the home screen.

Word also has the "Speak" function available. Newer versions include "Read Aloud" functions and Immersive Learning Tools.

The downside to this is that students can also easily change the document unintentionally. For example, they could easily delete an entire section of the document.

For that reason, I like to post my documents twice. The first is as a .docx file, the second is as a .pdf file.

Making a .pdf File of your Document.

There are two ways to make a .pdf copy of your document, but only one of those ways will create an accessible copy.

One of the major accessibility features of the .pdf format is "tagging". This is essentially the proper use of heading tags, as well as other tagging marks.

In order to make an accessible .pdf file, you need to save the file in the .pdf format. To do this, click on the File menu, select "Save a copy" or "Save As…", and then choose .pdf from the drop-down menu. This creates a tagged .pdf file.

If you use the other method, "Print as" a .pdf file, for some reason the tagging information is lost.

Always save a copy as a .pdf rather than printing it as a .pdf file.

Having multiple versions of your document can be a bit of a pain, especially since it means that you need to update in multiple places. However, the inconvenience to you can make the difference to your students and audience.

The Accessible Mindset

By considering accessibility while creating or updating documents, you are helping all students, not just those who have a documented disability.

If your documents aren't accessible, you set yourself up for trouble. Many educators have been thrown into a panic when they receive the notice that a student who needs accommodation has registered for their class. This can happen as late as a day or two before (or after!) the start of the semester.

At that point, you need to quickly convert all your documents into a more accessible form. You, the office of Student Disability Services, and others must work quickly to stay in compliance.

This means that non-experts are forced to work on the documents that you, the content expert, have created. This and the time factor can result in needless errors.

By thinking about accessibility proactively, you can have most, if not all of your documents ready to go.

If you haven't started this process yet, start by updating a document or two a week this semester. Working a document at a time, you can have your class updated within a semester or two without entering panic mode.

Another option is to teach a student aid how to do this process. They can process a few documents each week, then you can proof-read them before posting.

If you would like me to visit your department or school to provide training on making accessible documents, please feel free to contact me by email at trevor@coachesoftech.com.

Appendix: Useful Links

http://blogs.wright.edu/learn/accessibility/word/images-in-microsoft-word/

https://webaim.org/resources/shortcuts/nvda