

Creating Inclusive Documents

A guide to help you create and edit documents, graphs and multimedia materials which are accessible to everyone.

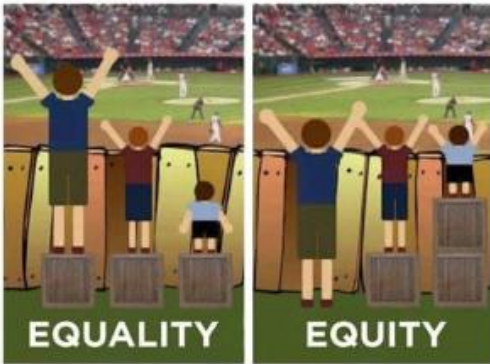


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Why accessibility matters

Imagine you are going to see a baseball game. The barrier is high, so everyone is given the same box to help them see over it. This works if you're already tall, not so much if you're short.

Everyone is treated equally, but this isn't fair. A fair, or equitable, solution enables everyone to watch the baseball game – providing shorter people with a step as high as they need, so the game is accessible to all three fans.

Imagine now that you're not going to a baseball game, but you're going to a lecture, looking at a poster at a conference, or reading an information leaflet. If you have conditions affecting your vision or perception of language, the way in which the information is presented can pose a significant obstacle to understanding and learning. In order for that information to be accessible to all, care must be taken in how that information is presented. That's the equitable solution.

The need for accessible information online was recognised by [new accessibility requirements for public sector bodies](#), which came into force in the UK on 23 September 2018. These regulations mean that public sector websites and mobile apps will need to be accessible to all users, especially those with disabilities. So new websites published on or after 23 September 2018 will have to be compliant within one year and existing websites within two years. Some organisations and types of content do not need to meet the new standards but hospitals, and further and higher education institutions, are all included within 'public sector bodies'.

These regulations establish in law the expectation that information should be presented in an accessible format, benefiting all readers and widening access to those who would otherwise be excluded.

The good news is that creating accessible materials shouldn't create more work or take a great deal of time; by simply making the right design choices you can create resources that are accessible.

This document will guide you through making these changes to your slides, posters, and other materials used in communication with staff, students and patients, so you can reach everyone in your intended audience.

The document will cover the following aspects:

Part 1: Making documents accessible

Part 2: Making data accessible

Part 3: Making multimedia accessible

Part 4: Assistive technology software and apps



Part 1: Making your text documents accessible

Whether it's a report, Powerpoint presentation, poster, or information leaflet, follow these five simple design tips to make your documents accessible.

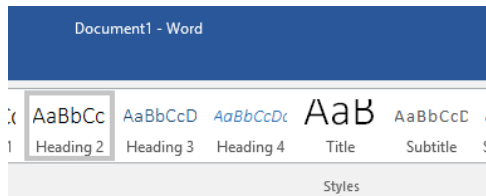
1. Use styles to identify headings

Heading 1

Heading 2

Heading 3

Heading 4



Using Headings and Styles throughout a document automatically creates a searchable document with easy navigation. Screen readers used by the blind and partially-sighted use these headings to create chaptered sound files, which are much easier to search and edit.

2. Choose an accessible font

Text clarity is important for all users, however if you have a learning difference or disability it is vital to accessing the resource.

When deciding on a font style choose a clear font with space around each character letter with no flicks or tails on the letters. These are easier to read for many people, but particularly those with sight problems.

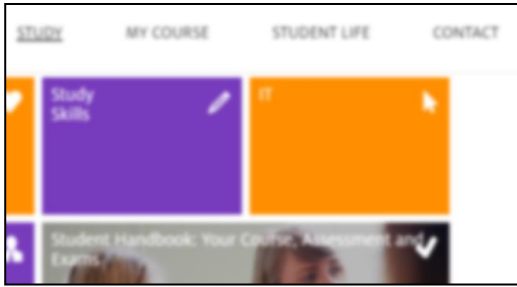
There are many **accessible Sans Serif fonts** that can be used, below are a few examples.

- Accessible Font 1,2,3 Calibri
- Accessible Font 1,2,3 Arial
- Accessible Font 1,2,3 Verdana

Here are a few examples of **inaccessible Serif fonts**, which should be avoided:

- *Inaccessible Digital Font 1,2,3* Bradley Hand ITC
- **INACCESSIBLE FONT 1,2,3** **ALGERIAN**
- Inaccessible Digital Font 1,2,3 Times New Roman

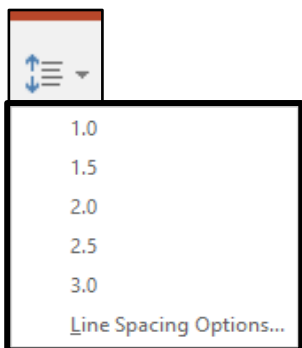
The examples below (sight impaired and dyslexic user perspective) show how use of Sans Serif fonts can help maintain clarity even for those users who find text harder to access:



Aacdmei rwtiing is a patrciualr sytel sued in fromal seasys and otehr sasessemtns ofr yuor corues. It reuqries fomral lagnaue, a oligcal tsurtcure and sohlud be spuproted by evideneec. It is a skill taht you wliil need to laenr and edvelpo carsos yuor tmie at nUvireisty. aMke usee you sue the ifnromtaoin in yuor mdoule ugdise adn feebdack rfmo oyur elctruesr to miprvoe, oyu amy laos haev wroskhops niculdde as part of oyru coruse.

3. Use left alignment and bigger spaces between lines of text

Left aligning text reduces eye movements and enables you to read the text easily. It is particularly helpful for those with partial sight, or those who use a keyboard (rather than a keyboard & mouse) to navigate the text.



1.5 spacing or higher increases the space around text making it much easier for those with sight problems to view. Breaking up dense blocks of text in this way can also make information less overwhelming and easier to read for those with learning differences affecting reading and writing, such as dyslexia.

4. Use accessible ways of highlighting text

Embolden text: Yes, this is the best way to emphasize text, the text remains clear but still stands out to the user

Underline text: Underlined text can interfere with the clarity of text, particularly if there is movement of the text due to Dyslexia or scotopic sight conditions

Italicise text: *Italicised text reduces the space between words, affects the clarity of each character and changes the shape of the word*

Use colours: Colours can be used but be careful with your choices, 1 in 100 men are colour blind and 1 in 300 women, so avoid using red and green together.

Use all the above: This would be difficult for most users to read with comfort and inaccessible for many users with a specific learning difference or disability

5. Choose accessible background and font colours

The choice of background and font colour can have a marked effect on how clearly text can be seen. The columns below show some examples of background colour and font colour combinations.

Column A <u>Poor</u> contrast and colour choice	Column B <u>Good Contrast</u> for a whole document	Column C <u>Good contrast</u> for banners, titles
Example text	Example text	Example text
Example text	Example text	Example text
Example text	Example text	Example text
Example text	Example text	Example text
Example text	Example text	Example text

Column A shows poor contrast between the background and font colours. This makes the text difficult to read. Some of the colours chosen clash, creating an uncomfortable viewing experience for all viewers. It is also worth noting that 1 in 100 men and 1 in 300 women are red/green colour blind, meaning that many people cannot read red and green together. Colours to avoid, particularly together are red, green and often yellow.

Column B shows good contrast between dark text and the light background. This combination supports the widest group of users. It is easy on the eye, and clear to read for those with a learning difference affecting sensory processing (such as dyslexia or autism). Note that a pale colour is chosen rather than white, as the stark contrast between black and white can be perceived as harsh and strain the eyes.

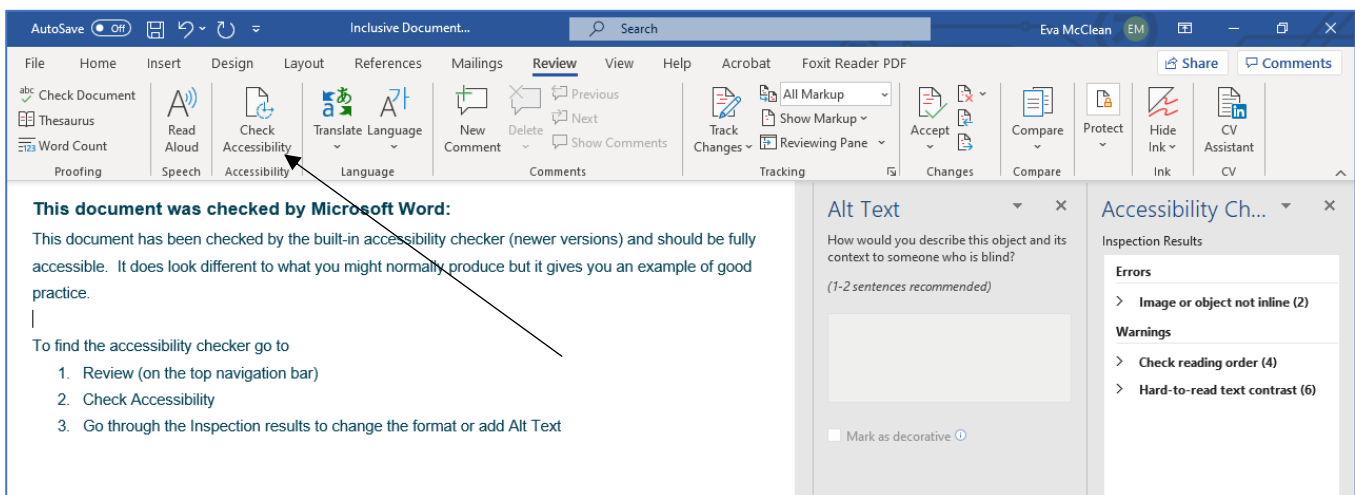
Column C shows good contrast between light text on a dark background. This is accessible and most legible for those with a sight impairment. It is often used in banners to grab attention but some users can find it overwhelming when reading larger amounts of text, and much prefer the pastel background. You may want to consider using these combinations of light text on a dark background sparingly, depending on your intended audience.

This document

This document has been checked by the built-in accessibility checker of Microsoft Word (newer versions) and should be fully accessible. It probably looks a bit different to what you might normally produce but it gives an example of good practice.

To find the accessibility checker go to

1. Review (on the top navigation bar)
2. Check Accessibility
3. Go through the Inspection results to change the format or add Alt Text





Part 2: Making your data accessible

Once you have applied accessible formatting to the text of your document, it's time to add some illustrative figures. Whether it's a table or a chart, follow these simple formatting tips to clearly present your data to the widest possible audience.

1. How to make tables accessible

Present the data in the most obvious, clear arrangement you can, to help all users navigate your tables successfully. Use the simplest table layout possible, and keep the layout regular, avoiding merging cells or leaving empty cells.

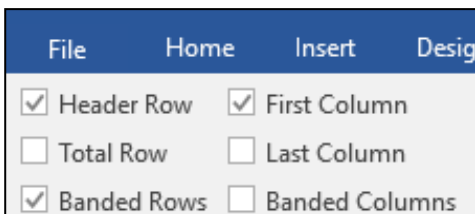
In addition, be careful in identifying a heading row. Emboldening or colouring text is a common way of identifying heading rows, but this does not identify text as a heading to screen readers. If you do not formally identify headings, users who rely on this assistive technology will hear a long stream of data, mixed into the order which may well differ to that desired by the creator, and difficult to understand.

An example of an inaccessible way to list data is shown below:

Table with 10 columns and 7 rows. Department Code, Class Number, Section, Max Enrolment, Enrolment, Room Number, Days, Start Time, End Time, Tutor, 80, 4, 25, 23, 12, Mon,Wed,Thu, 10:00, 11:00, Jade, 110, 12, 17, 5, 6, Tue,Wed,Thu, 11:00, 12:30, Jude, 32, 2, 19, 7, 5, Tue,Thu, 09:00, 10:30, Pete, 125, 1, 71, 6, 6, Mon,Wed,Thu, 13:00, 14:00, Steve, BUS, 130, 3, 19, 20, 18, Mon,Thu,Fri, 09:00, 10:00

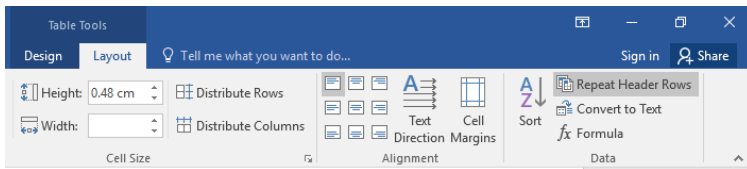
To designate a **Header Row** ensure the corresponding check box is ticked in **Table Tools, Design Tab**.

There are also options for a Total Row and First Column Row. Each option communicates the location of the Headers. An example is shown below:



Name	Hair Colour	Shoe Size	Age
Melanie Jun	Black	6	28
Harry Dart	Brown	10	19
Susan James	Blonde	7	38
Peter Smith	Brown	11	42

If the table spans several pages, column headings should be repeated at the top of the table on each page. As an example, this is how you do it for a table in a Word document:



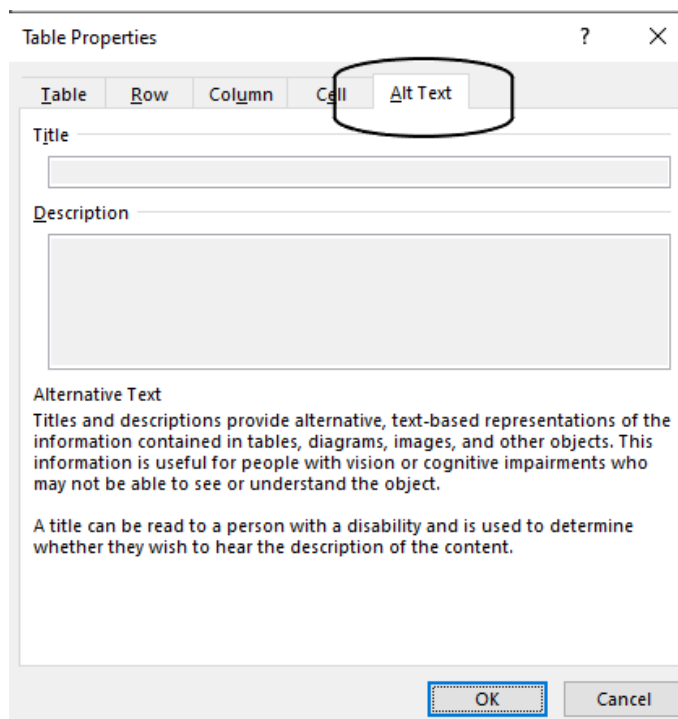
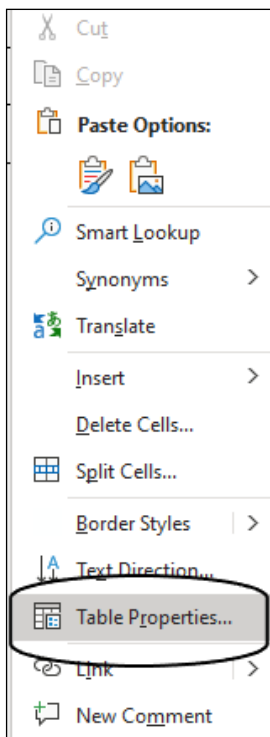
Select Layout, Select Repeat Header Rows

A screen reader can now read the table in a variety of ways depending on the user settings as the headings have been identified.

It is also helpful to those using screen readers to include a general description of the chart, to aid navigation.

This is how you do it:

1. Right click the table
2. Select **Table Properties**
3. Select **Alt Text**

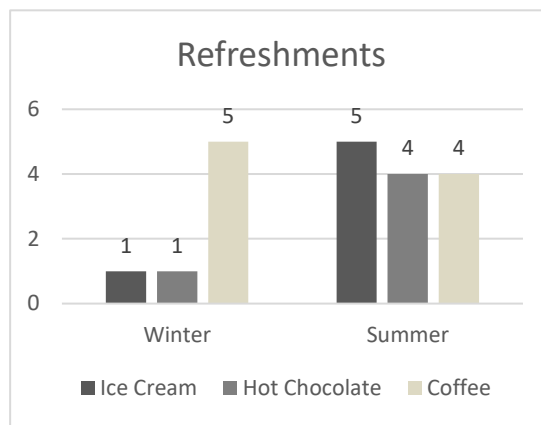
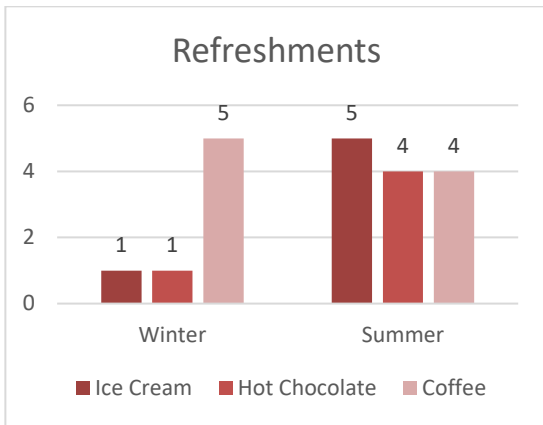


2.Creating Accessible Charts

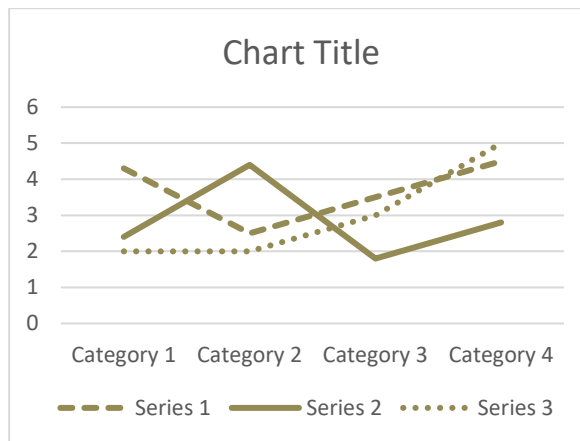
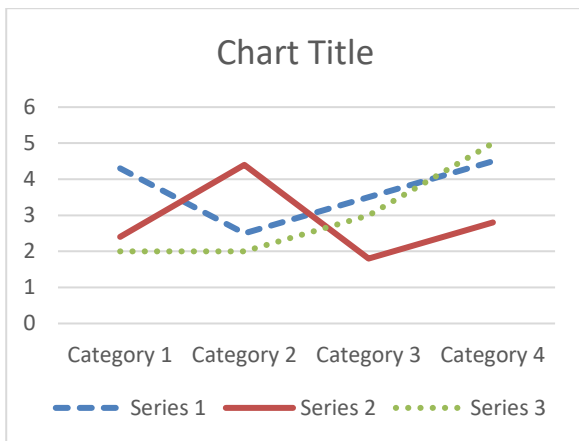
Many charts rely heavily on colour to identify different data categories. Colours can be perceived very differently by many people and so it is wise not to rely on colour alone to differentiate between data categories. Make sure you do not identify elements by colour alone, but always label with accessible text as well. If you use colour, consider using the same colour with differing shades to enable identification on the basis of the intensity of colour rather than the particular shade. Consider using a pattern fill instead, to identify the different elements for easy black and white viewing.

Below are some examples of how to do it... and how not to!

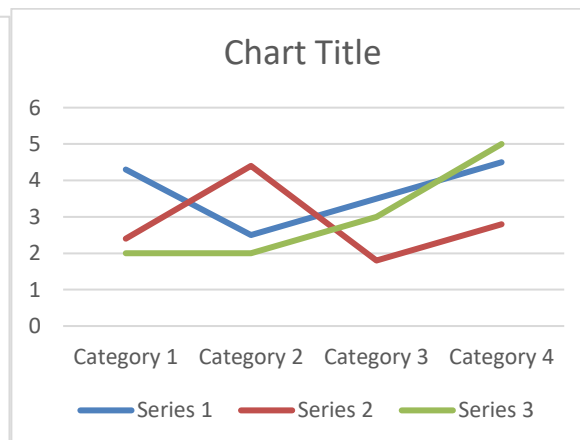
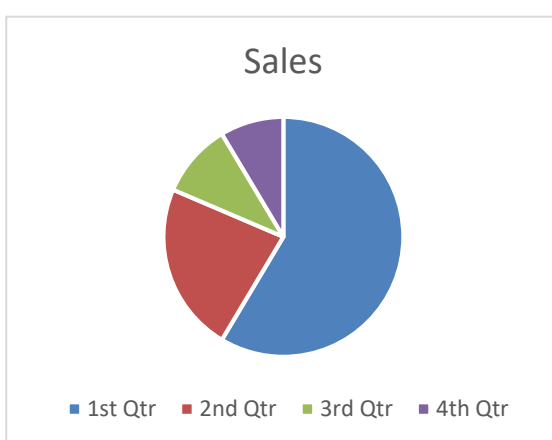
Accessible Bar Chart Examples: The data is clear and the displayed in a way that colour is not the only way to distinguish between the categories

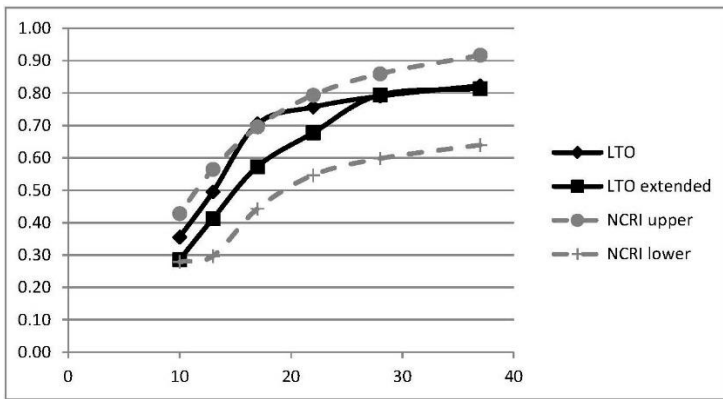


Accessible Line Chart Examples: Using different line styles means that you can easily distinguish between the data sets without relying on colour.



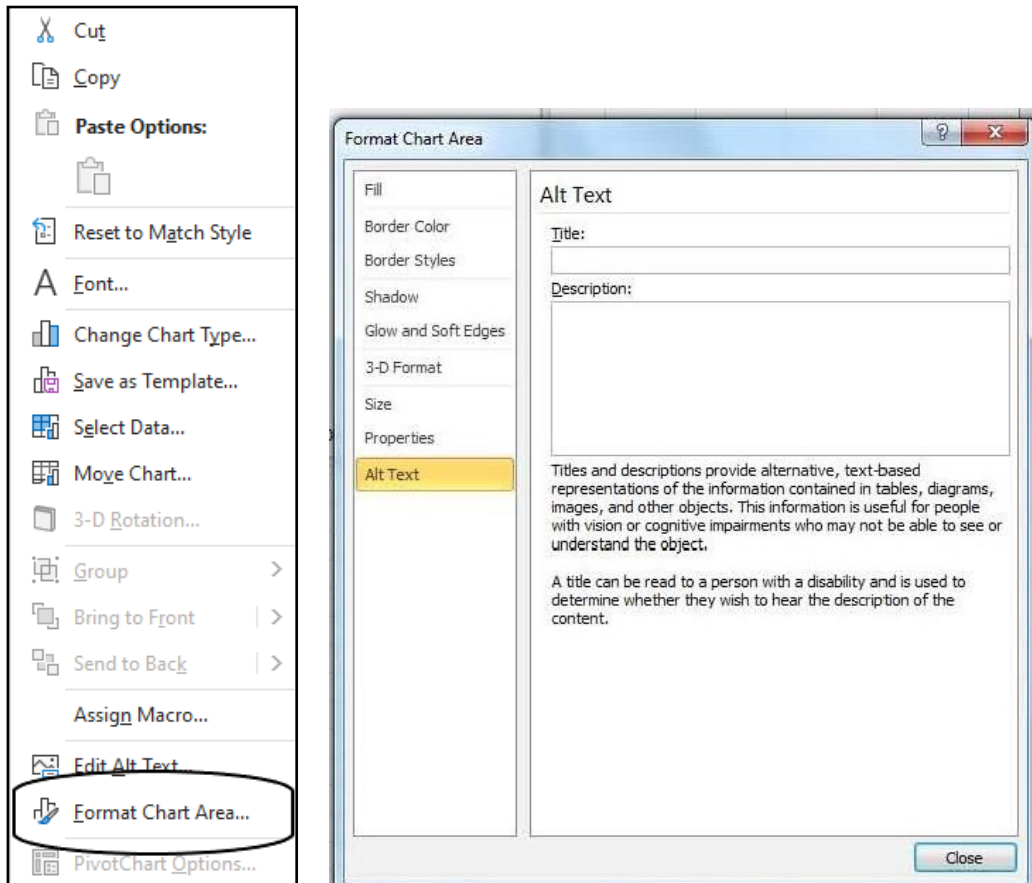
Inaccessible Chart Examples: It is difficult to distinguish between segments and lines unless you have the same perception of these colours as the creator of the chart. The text is not close enough to the segments and lines to help identify which is which.





It is also helpful to those using screen readers to include a general description of the chart, to aid navigation. As an example, this is how you do for a chart in Excel :

1. Right click the chart
2. Select **Format Chart Area**
3. Select **Alt Text**



The careful choice of colours, use of formal table headers and alt text are small modifications that are not particularly time consuming, but can make all the difference between whether your data can be understood, or not. These are good habits to get into, even if you are not expecting anyone with a sight problem to access your documents.

For further information on improving tables and figures, see the [MS office EXCEL support page](#):



Part 3: Making multimedia accessible

Using sound and video can greatly enhance the presentation of information, and it is now commonplace to add video clips to teaching presentations in particular to illustrate the concepts described and provide material for discussion. However, as with all resources, consideration needs to be given to those who are potentially unable to access the content. Below are just a few things you should consider to improve the experience for all users and reach a larger audience.



1. Considering those with hearing impairments

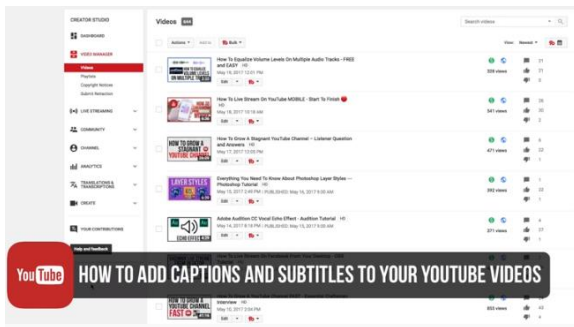
People who are unable to hear audio included in recorded lectures or podcasts require a transcript of the spoken sound. A transcript enables a deaf user to access the audio content, and may be used whilst watching the video. **Transcripts** are either text or braille, and include the verbatim dialogue along with additional details which help communicate what is being said more fully, e.g. laughter, crying.

For video content, closed **captions** are needed provide a more complete full description of what is included in the audio, including both dialogue and other pertinent details, e.g. laughter, door closing. **Subtitles** are used when the dialogue is needed. If the dialogue stands alone without mention of any additional or background sounds, using only subtitles may be suitable. However, if these incidental sounds will affect how the dialogue is perceived, then closed captions will be needed.

The three main criteria that need to be considered for **captions** and **subtitles** are:

1. Synchronized – captions and subtitles must be available at the same time as the video and audio, so the information from the multimedia is received in the same way by all members of the audience.
2. Accessible – captions must be accessible with good colour contrast, font and background, which makes it easy to read the text.
3. Textual equivalent – captions must present the same content that is available from the multimedia format, so that the same message is communicated with and without sound.

There are a variety of captioning and subtitling services available to help you add these features to video. Some examples are listed below:



How To Add Closed Captions And Subtitles To Your YouTube Videos

Free Video Captioning Tools:

[Amara: Caption, Subtitle and Translate Video](#)

[Dotsub: Caption and translate videos online](#)

As the leading video streaming site, [YouTube provides a free subtitle and captioning service.](#)

If you use Microsoft or Apple platforms there are also services available within their suite of products:

- Microsoft PowerPoint O365 now includes speech to text [live subtitling and recording feature](#)
- Microsoft Stream includes the ability to [add captions and subtitles](#) to uploaded videos
- [Apple Subtitles and Voiceover](#) features are also available



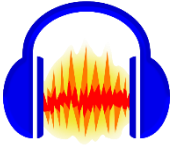
2.Considering those with visual impairments

People who are unable to view video require the visual experience to be carefully scripted in a way that ensures all important content is accessible through audio. A narration sound file can be provided to support the content if information is displayed in a visual format only.

Audio description can also be included in the media file, as used in this [YouTube Lion King example clip.](#)



A variety of tools are available for creating audio descriptions, here are two free options you may wish to try:



[Audacity](#) is a free open source tool for creating sound files and can be used to create a narration file and uploaded to streaming services such as YouTube.



[YouDescribe – audio description for YouTube Videos](#) is a free accessibility tool to add audio description to YouTube videos. It allows anyone, anywhere to contribute description of an existing video and let a viewer who is visually impaired check it out right away.



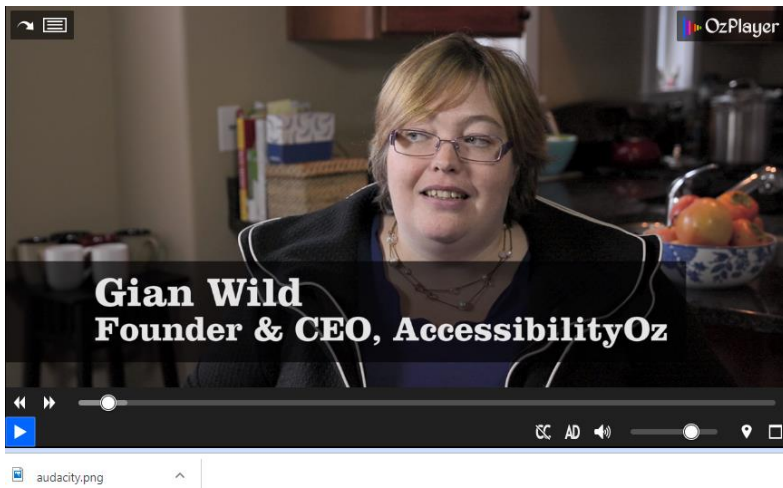
3. Considering those with motor skills impairments

Teaching materials are typically made available to the audience after the lecture or tutorial, so that attendees can review and revise what has been presented. In this scenario, care needs to be taken to ensure the presentation remains accessible to those with motor-skills impairments which mean they are unable to use a mouse, as they who would otherwise have difficulty in navigating the presentation.

People who are unable to use a mouse require a multimedia player that:

- works with a keyboard alone
- responds to verbal commands using speech input
- is not set to auto play on display

The first full accessible video player is called [OzPlayer](#), and is free for not-for-profit use. For a full list of accessible players and specifications, visit the [Digital Accessibility Matters Website](#).



Whilst these steps are specifically designed to make presentations accessible to those with hearing, sight and motor skills impairments they can be useful to other users in a variety of situations. For example, transcripts enhance multimedia experiences for those who are unable to listen to sound in a particular social context, have defective computer audio, or are unfamiliar with technical jargon and need to view what is being said alongside a dictionary or translation software.

Image References

Icons Creative Commons, from the [Designing for Accessibility Posters](#) available as part of this blog series



Part 4: Assistive technology and apps

Assistive Technologies are tools, including software, which enable a user to access a resource which otherwise would be inaccessible.

For example a user who is partially sighted may struggle to view all aspects of a digital document however by utilising a Screen Reader they can listen to all the information included in the document, removing the barrier of inaccessibility.

If the previous tips listed in the blog series are applied to your resources, a user of assistive technologies will generally be able to interact with your materials.

1.Types of specialist assistive technology software

- **Text to Speech Readers** are designed to support sighted users with Specific Learning Differences (SpLD) for example Dyslexia or Dyspraxia – The user can listen to text in documents or webpages by hovering over or selecting text with the mouse or keyboard.
- **Screen Readers** are designed for partially sighted or blind users. The software reads all elements of the page and includes all functionality via keyboard shortcuts. The access is often referred to as a Non Visual Desktop Access (NVDA).
- **Magnifiers** enable the screen to be enlarged in a variety of ways and the text reflowed to reduce the need for horizontal scrolling. The software also changes the contrast and colour of the page to maximise access to the resource.
- **Mind Mapping** software supports those with organisational, time management and sequencing difficulties enabling thoughts and learning to be communicated in an understandable manner which is easy follow. This software is often used by those with specific learning differences such as Autism, Dyslexia or Dyspraxia.
- **Screen Overlay and Ruler** software covers the screen area with a coloured transparent overlay of the user's choice, improving the reading experience for all items displayed. The screen can also be masked to isolate the areas being read or underlined like a ruler. This is useful for those with specific learning differences, particularly Autism, Dyslexia, or Dyspraxia, or partially-sighted users to focus on the area of focus and ease reading.
- **Dictation** software enables the user to speak and the computer type the spoken words, this tool can support a wealth of users including those with motor skills impairments.

The table below gives an indication of how assistive tools (AT) can be used to support specific user needs:

Learning Need/Disability	Potential AT Solution
Affected by sight loss	Screen rulers, magnification tools or software, screen reader, dictation software, screen colour and contrast software
Reading difficulties such as Dyslexia or Scotopic conditions	Text to speech, reader pens, phonetic spell checker
Speech difficulties, selective mutism or specific learning disability such as Autism	Communication tablet, email, phone texting, visual help cards
Hearing Impaired, deaf or affected by background noise	Assistive hearing system, noise cancelling headphones, subtitles
Fine and gross physical motor skills such as Dyspraxia or other physical disability.	Alternative keyboard, trackball mouse, digital voice recorder, voice recognition software, graphic organisers, mind mapping software, predictive text software, digital recorder
Organisational skills and memory	Graphic organisers, digital voice recorder, mind mapping software, calendar, task list, notes, time management apps

2. Free Assistive Tools

Assistive software can be expensive to purchase, however there are now many free software tools, browser extensions and apps which provide effective support to a wide range of users.

AT Bar is free and allows you to change the look and feel of webpages, increase and decrease font sizes, have text read aloud, use coloured overlays, readability and a dictionary to aid reading. Spell check forms and try word prediction when writing. It is a simple tool which is available for most popular browsers

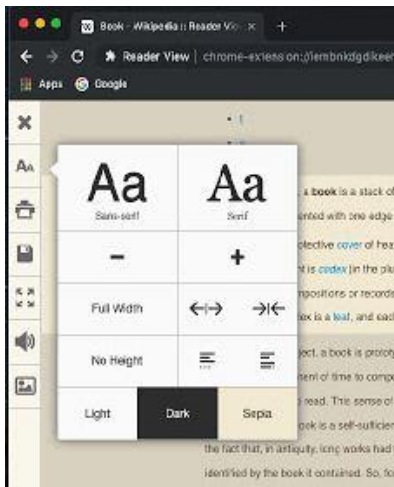


My Computer My Way is a website which shows you how to alter your device to best support your user needs.

3. Browser extensions

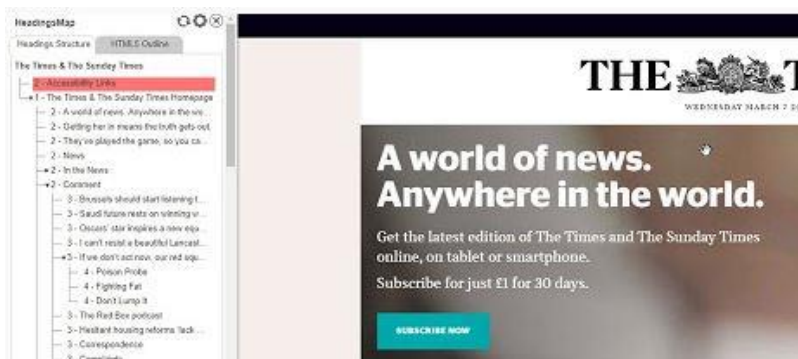
Extensions are small software programs that customize the browsing experience by adding an icon to your website toolbar which can be toggled on or off. They enable users to tailor functionality and behaviour to meet individual needs or preferences on the Internet.

Google Chrome has a full suite of extensions available via their [Chrome Web store](#) however you will need a free Gmail account. Other browsers are increasing their use of extensions however the list below are all sourced from the Chrome Web Store.



Reader View Extension: strips away clutter like buttons, background images, and changes the page's text size, contrast and layout for better readability

Search for: [Reader View Extension in the Chrome Web Store](#)



Headings Map Extension: The extension generates a document map or index of any web document structured with headings (you can access directly to the content by clicking on any of its items), and now, it shows the HTML 5 outline.

Search for: [HeadingsMap extension in the Chrome Web store](#)



Read & Write Extension: Boost reading and writing confidence across all types of content and devices, in class, at work, and at home.

Search for [Read & Write Extension in the Chrome Web Store](#)



ClaroRead Chrome Extension: Listen to web pages read aloud.

Search For: [Claro Read Chrome Extension in the Chrome Web Store](#)



The Universal Accessibility Toolkit provides users with a comprehensive selection of tools to fulfil all their accessibility needs in one easy to use app. Search for: [Universal Accessibility Toolkit in the Chrome Web store](#)

4.Apps

'App' is short for application, which are small programs downloaded to smart phones and tablets. Apps can change the way you interact with your device and provide a wealth of accessibility support.

Apps are downloaded from online stores, which one depends on the brand or type of your device. For example:

- Apple products access the App Store
- Android products access Google Play Store
- Windows products access Windows Marketplace

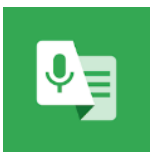
Some Apps are free, others are low cost, but some can be considerable more expensive, so ensure you check the price before you download.

The list below contains a selection of the accessibility apps which can be found at both the [App store](#) or [Google Play](#) .

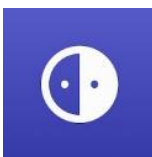


Android Accessibility Suite: Android Accessibility Suite is a collection of accessibility apps that help you use your Android device eye-free.

Search for: [Android Accessibility Suite](#) on Google Play only



Live Transcribe: Live Transcribe performs real-time transcription of speech and sound to text on your screen, so you can more easily participate in conversations going on in the world around you. You can also keep the conversation going by typing your response on the screen. **Search for:** [Live transcribe](#) on Google Play (Android)



Envision AI: See what you can't with Envision, the fastest and most reliable app that describes the visual world around you with the help of artificial intelligence and OCR

Search for: [Envision AI](#) available on Google Play only



Claro MagVR: 3D high-definition visual magnifier for your screen.

Search for: Claro MagVR' on the [App Store \(iOS\)](#) or [Google Play \(Android\)](#)



Claro MagX: Mobile app that can magnify and improve contrast.

Search for: 'Claro MagX' on the [MagX App Store \(iOS\)](#) or [GMagX Google Play \(Android\)](#)



Claro PDF: PDF Reader for your mobile device with features to increase readability of documents.

Claro PDF is free, however you can buy Claro PDF Pro for a one-off fee.

Search for: 'ClaroPDF' on the [PDF App Store \(iOS\)](#) or [PDF Google Play \(Android\)](#)

5. Other useful Links:

- Ability Net Expert Resources: [Best Apps for ... recommendations](#)
- Apple Accessibility Guide: [Visit Apple Accessibility Guide](#)
- Android Accessibility Guide: [Visit Android Accessibility Guide](#)
- Funkify Disability Simulator: free for a trial period, visit the [Funkify Website](#)

This excellent set of free posters has been developed by the Home Office for public use to improve accessibility. Download and share in your workplace! [Designing for Accessibility Posters](#)

Designing for users on the autistic spectrum

Do...	Don't...
use simple colours	use bright contrasting colours
write in plain English	use figures of speech and idioms
use simple sentences and bullets	create a wall of text
make buttons descriptive	make buttons vague and unpredictable
build simple and consistent layouts	build complex and cluttered layouts

Designing for users of screen readers

Do...	Don't...
describe images and provide transcripts for video	only show information in an image or video
follow a linear, logical layout	spread content all over a page
structure content using HTML5	rely on text size and placement for structure
build for keyboard use only	force mouse or screen use
write descriptive links and headings	write uninformative links and headings

Designing for users with low vision

Do...	Don't...
use good colour contrasts and a readable font size	use low colour contrasts and small font size
publish all information on web pages	bury information in downloads
use a combination of colour, shapes and text	only use colour to convey meaning
follow a linear, logical layout	spread content all over a page
put buttons and notifications in context	separate actions from their context

Designing for users with physical or motor disabilities

Do...	Don't...
make large clickable actions	demand precision
give form fields space	bunch interactions together
design for keyboard or speech only use	make dynamic content that requires a lot of mouse movement
design with mobile and touchscreen in mind	have short time out windows
provide shortcuts	tie users with lots of typing and scrolling

Designing for users who are Deaf or hard of hearing

Do...	Don't...
write in plain English	use complicated words or figures of speech
use subtitles or provide transcripts for videos	put content in audio or video only
use a linear, logical layout	make complex layouts and menus
break up content with sub-headings, images and videos	make users read long blocks of content
let users request an interpreter for appointments	don't make telephone the only means of contact with users

Designing for users with dyslexia

Do...	Don't...
use images and diagrams to support text	use large blocks of heavy text
align text to the left and keep a consistent layout	underline words, use italics or write in capitals
consider producing materials in other formats (for example, audio or video)	force users to remember things from previous pages - give reminders and prompts
keep content short, clear and simple	rely on accurate spelling - use autocorrect or provide suggestions
let users change the contrast between background and text	put too much information in one place