Disability Information Scotland

Accessibility Training

Notes for Accessibility course delivered 29th November 2023

Introduction

Current statistics suggest 63% of the worlds population use the internet with just over 50% of the worlds population (or 4.2 billion people) also using Social Media.

Consider this alongside the estimation that 15% of worlds population have some sort of disability and you can see why it is important to ensure that your online content is as accessible as possible to meet the needs of the massive amount of people who will be accessing online content with some accessibility needs.

Not only is it important in terms of equity of opportunity for everyone but it is also important for anyone producing online content to be able to reach and fully engage with as many people as possible.

The very reason you are producing online content is to reach people and in most cases this will be to reach as many people as possible.

Now we'll look at some of the accessibility issues faced by people with disabilities and some of the strategies and technology available to counter these issues

Brief overview of disabilities, issues faced accessing content and strategies to help with these issues

Sensory

Poor or no vision

If your vision is poor but you still have some vision you have access to tools such a screen magnifiers. All current operating systems from Windows, Apple and Linux have built in magnifiers as do phones and tablets which have the pinch to zoom function.

Screen Readers

Screen readers are an assistive technology which can be installed on a computer and which can read out the content on a screen to the user or send it to a braille reader. This content can be text that is in a document or a website or can be content that the screen reader user is producing themselves. As well as being able to read the text on a screen and read out the text that someone is typing into a device they can also be used to navigate through documents or menu systems.

Screen readers are built into windows computers (Narrator) or macs (Voiceover) or more powerful and configurable screen readers can be downloaded from the internet. The two most popular screen readers are NVDA which is free and which is the one I used in the tutorial and Jaws which is regarded as being the best and most configurable screen reader but costs 1000 dollars.

Jaws https://www.freedomscientific.com/products/software/jaws/

NVDA https://www.nvaccess.org/download/

Screen readers are built into modern phones (both apple and android)

As well as being useful for people with visual impairments they are also used by people with literacy issues, learning difficulties or cognitive impairments to read out content they may not be able to read themselves

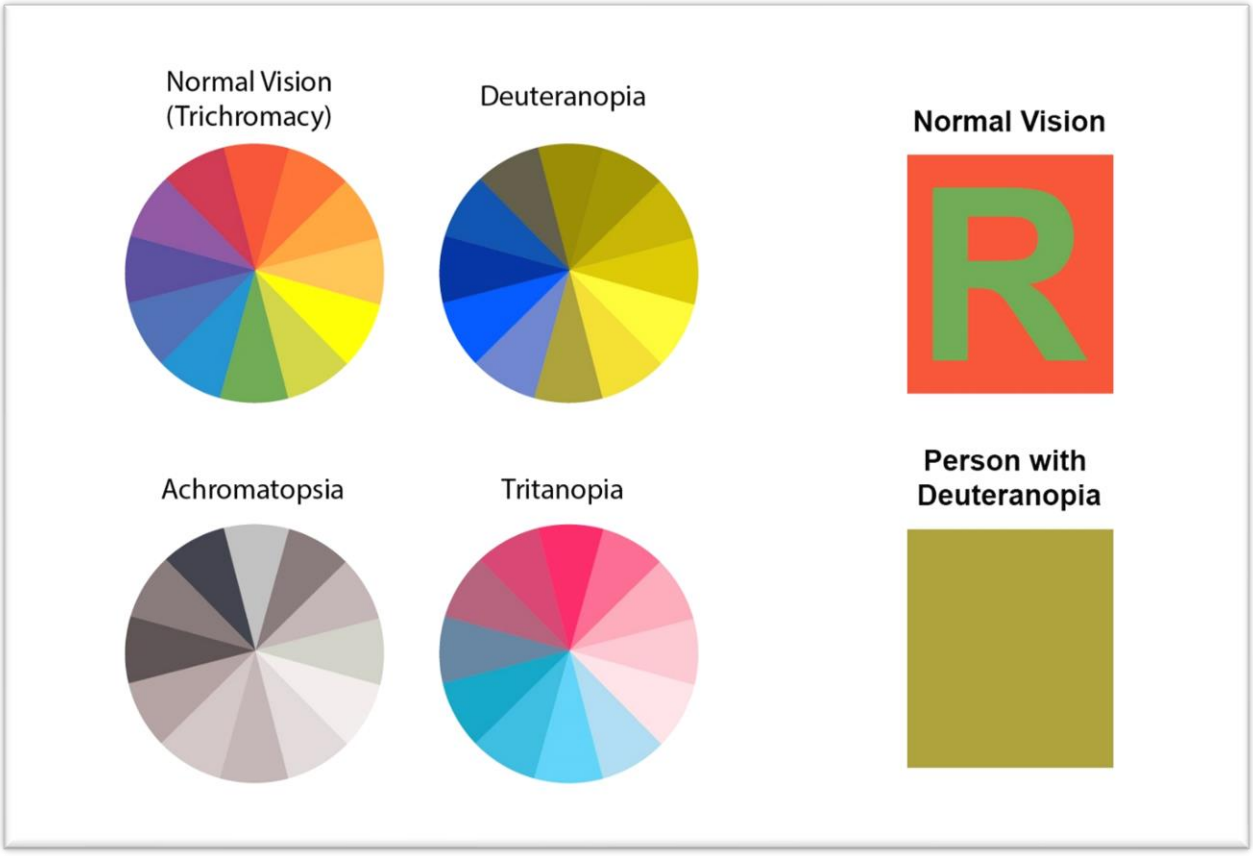
Braille Reader

As well as using what is called text to speech recognition where a screen reader reads out the screen content, screen readers can also utilise text to braille where they will translate the text into a format which can be used by a braille reader. A braille reader is a keyboard like device with which a person with a visual impairment can receive braille translated content from text on a screen or can type braille text into a computer. To do this it has keys which produce braille symbols with moving pins which the user can read with their fingers or use to type.

Colour Blindness

When light comes through the lens of they eye it hits photoreceptors called cones and rods. These break down the light into different colours of shades and send it to the brain to be reassembled into the actual colours your are looking at. Rods deal with light and dark and cones deal with colour. There are 3 types of cone each of which is concerned with detecting levels of one colour. Either red, blue or green. Mixing different levels of red blue and green will make up any colour on the visible spectrum so if all of your cones are working properly you'll be able to perceive the entire visible colour spectrum and are said to be trichromatic or 'normal' vision. If any of the 3 types of cones are not working you will not have all the information needed to make all the colours of the visible spectrum and are said to have a colour vision deficiency or colour blindness. The most common colour deficiencies are with reds and greens appearing to be the same colour.

This diagram will give us an idea of what some colour deficiencies might look like.



Trichromacy or normal vision is where all the colours of the visible spectrum are perceived.

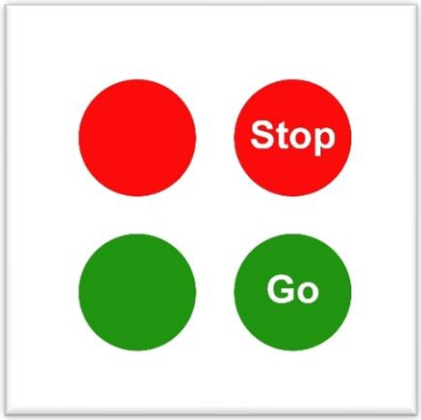
Tritanopia makes you unable to tell the difference between blue and green, purple and red, and yellow and pink. It also makes colours look less bright.

Achromatopsia is a condition characterized by a partial or total absence of colour vision. People with complete achromatopsia cannot perceive any colours; they see only black, white, and shades of grey.

Finally Deuteranopia which is the most common colour deficiency and is a type of red-green colour blindness in which the green cones in the eye detect too much red light and not enough green light. As a result red, yellow, green, and brown can appear similar, especially in low light. In laymans terms, it makes reds look green.

Since this is the most common colour deficiency we will use it as an example of how it might affect someone accessing colour content on a website. In the diagram above we have a graphic which to someone with full colour vision will appear to be a red letter on a green background. To a person with deuteranopia who cannot perceive reds fully this will appear to be a green letter on a green background

General advice for accessibility for people with colour blindness is to be careful about how you use colour combinations and try not to use colour alone to get messages across. In the example below we can see that putting text into the graphics will help someone with colour blindness understand them as opposed to just using coloured graphics.



How do we check that we are designing documents which will be fully accessible to people with colour blindness? Well the obvious strategy is to avoid red and green colour combinations and secondly to check any colour combinations we have with a colour blindness simulator checker such as:

http://colororacle.org/

Hearing impairments

People with hearing impairments are going to struggle to a lesser or greater extent with audible online content and this may be countered with the following measures.

Captions

Captions are a text transcription of speech in a video. They differ from plain subtitles which you will be used to seeing at the bottom of your TV screens for foreign films in that they may also include a description of what is going on as well as the dialogue. Examples are that if a door bell rings in the video it may say ‘door bell rings’ in the captions.

Captions can be automatically generated by most video editing software and most social media platforms for videos posted on their sites.

Live Signers

Videos especially news programmes employ live signers usually in the corner of the screen to sign along with the content on the main news programme

Speech

People with limited speech due to medical conditions or disability can have difficulty interacting with web content which operates with voice commands. Although these are not very common there are still some

sites which have voice commands but mostly it's a problem on automated phone lines. People with verbal communication difficulties will require strategies built into the applications which allow them to be operated with a keyboard or mouse as well as speech.

Physical Disabilities

Physical disabilities (sometimes called "motor disabilities") include weakness and limitations of muscular control (such as involuntary movements including tremors, lack of coordination, or paralysis), limitations of sensation, joint disorders (such as arthritis), pain that impedes movement, and missing limbs. In the context of online accessibility these conditions are going to make it difficult for people to use a keyboard and mouse or other hardware.

Strategies to counter these issues include the use of

- Ergonomic or specially designed keyboard or mouse;
- Head pointer,
- mouth stick and other aids to help with typing;
- On-screen keyboard
- Switches operated by foot or shoulder
- Voice recognition, eye tracking, and other approaches for hands-free interaction

Learning Difficulties, disabilities or Cognitive Impairments

General

People with learning difficulties or cognitive impairments can have difficulty with both literacy and comprehension when presented with online written content and there are a number of assistive technologies and strategies to help them cope with this.

Screen Readers

Along with people with visual impairments they might use screen readers to access content which they might have difficulty reading.

EasyRead

Information which is complex or written in an oblique style (sarcasm, satire, overly jargony etc) can also prove challenging for people with learning difficulties or cognitive impairments and there are a number of strategies we can employ to help with this. One strategy is to employ a system called EasyRead when you are writing content. Easy Read is a writing style where you break down your paragraphs into short, simple sentences along with descriptive pictures at the left. It looks like this.

Microsoft Word - Housing Vision Statement- easy read final (1).doc (mencap.org.uk)

You can get training in EasyRead from Disability Equality Scotland.

Easy Read Training - Disability Equality Scotland

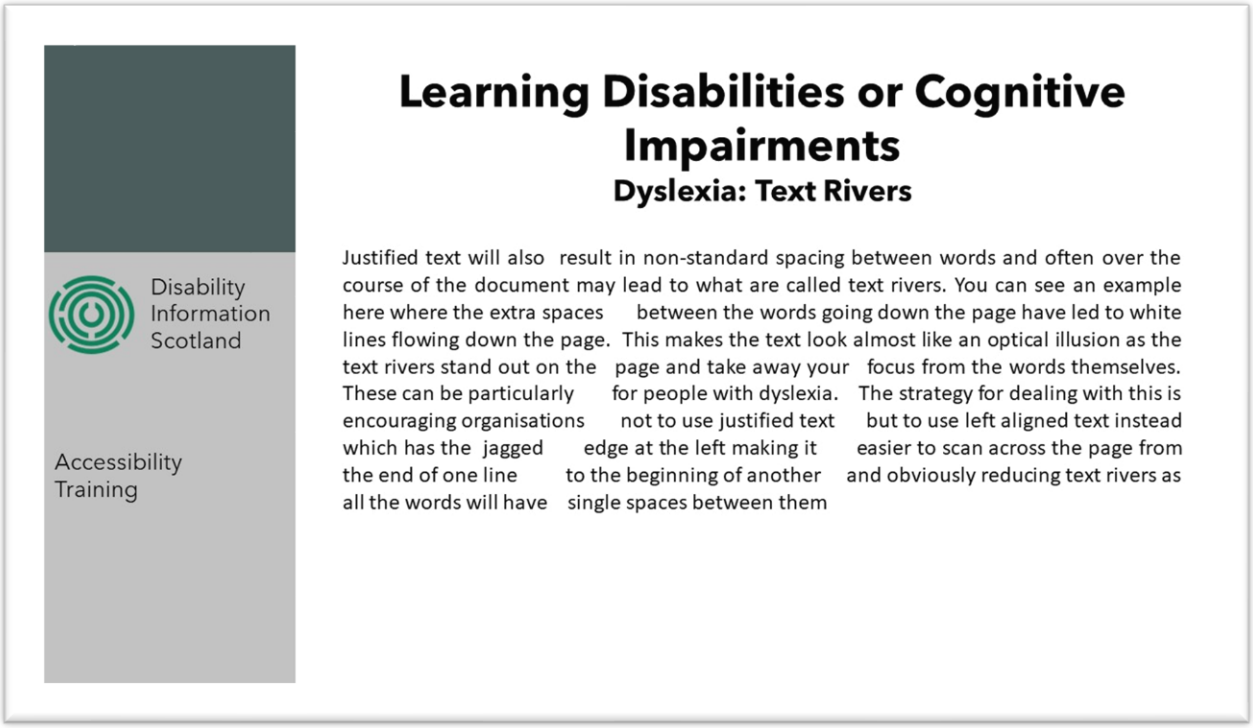
Dyslexia

Dyslexia is a lifelong learning difficulty which has a number of symptoms including difficulties reading and writing as someone with dyslexia will often confuse the order of letters in words
They may also be be confused by letters that look similar and write letters the wrong way round (such as "b" and "d")
They may also have have poor or inconsistent spelling
Screen readers can help by reading both what is typed back to the person who typed it and of course what is on the screen. This will help a person with dyslexia identify errors in their own work which they may not have spotted visually and get through paragraphs of text more accurately and easily

People with dyslexia, as well as having difficulty with reading and writing words themselves, may also have difficulty with way words are laid out on a page. An example of this is with justified text. Justified text is where the words in a paragraph are lined up both on the left and right hand sides of the page and consequently stretched across the page to fit. This may cause difficulties for people with dyslexia who may find it hard to scan across the page from the end of one line to the beginning of another.

Justified text will also result in non-standard spacing between words and often over the course of the document may lead to what are called

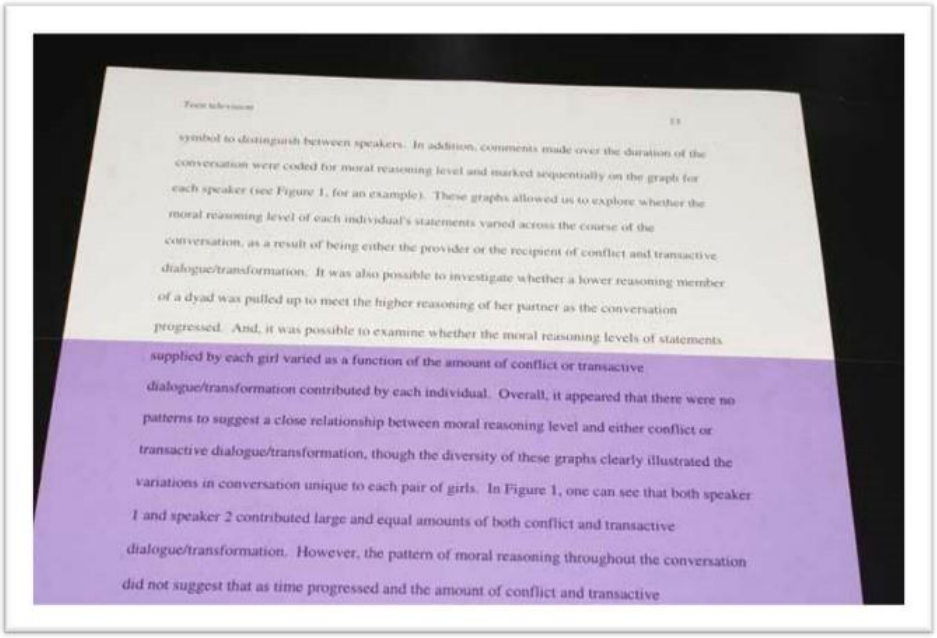
text rivers. You can see an example here where the extra spaces between the words going down the page have led to white lines flowing down the page. This makes the text look almost like an optical illusion as the text rivers stand out on the page and take away your focus from the words themselves. These can be particularly troublesome for people with dyslexia. The strategy for dealing with this is encouraging organisations not to use justified text but to use left aligned text instead which has the jagged edge at the left making it easier to scan across the page from the end of one line to the beginning of another and obviously reducing text rivers as all the words will have a single space between them



Scotopic Sensitivity

Scotopic sensitivity is a condition which affects the way in which the brain processes and interprets visual information. Although its symptoms suggest that it is an optical problem it is actually called a perceptual processing disorder as it is the brains inability to properly process the information it receives through the eyes that causes issues. The symptoms can be wide ranging from problems with reading and writing, depth perception, headaches, comprehension problems and extreme light sensitivity. In terms of technology accessibility it can cause problems with text appearing to move or blur or disappear on a screen

due to the usually high contrast between text and background (ie black text on white background) This condition can be helped with either colour tinted glasses or colour tinted screen overlays which will reduce the contrast between the elements on the screen.



WCAG and its 4 points

How to tell if a website or online resource is accessible

To analyse whether a website or other online resource is accessible we are going to look at the current accepted guidelines on how websites are measured for accessibility. These guidelines are called WCAG (the web content accessibility guidelines) and were developed by a consortium of organisations around the world with the aim of developing a single standard for web accessibility that would work for everyone. The WCAG standard is updated as appropriate and is now on version 2.1 with version 2.2 due in 2023

WCAG 2.1 has 4 main requirements for a website or online content to be accessible and we will go over them now. These requirements are that a website must be perceivable, operable, understandable and robust.

Perceivable

Perceivable: to be able to interpret or regard something properly. Examples of this in an accessibility context are that if someone is unable to see an image that there will be an alternative to it such as alternative text. Alternative text is a written description of an image which can be read out by a screen reader for people who have visual impairments.

Captions

Captions should be provided for people who have hearing impairments in content such as videos.

Content control

Content control Should be employed to Make it easier for content to be seen and heard. Eg audio controls built in where content can be paused and played and the volume can be changed.

Contrast level

Contrast level. Make sure there is enough contrast between the foreground and back ground of content. Guidelines states that the contrast ratio should be 4.5 to 1. I will include a guide in the notes on how to check your contrast ratio to make sure that its at least 4.5 to 1

For an online contrast checker see https://contrastchecker.com

Operable

The guidelines state that content should be operable or usable from a technical point of view

This means that the functionality of all content should be available through a keyboard for people with mobility issues who cannot use a mouse. An example would be that users should be able to use keys such as the arrow keys on the keyboard to move things or navigate through the content.

Time to read

Users should be given enough time to read and use content so things like captions should be on the screen long enough to be readable

Seizures

Not using content which can cause seizures or other adverse reactions so no strobing images

Menus

Menu systems should be easy to navigate

Understandable

Text should be easy to understand and read. Use simple san serif fonts with adequate spacing and keep the style and tone of your content at a level which can be understood

Correct mistakes

Content should be written to Help user avoid and correct mistakes. For example in an online form give guidance on the correct information needed and the correct way to input it. Advise users if they have made an error

Robust

The content should be compatible with future working practices

For example if a plug in is required to access content make sure the plug-in is likely to remain available

If you want to check your content there are a number of options to do so automatically. Microsoft office has built in accessibility checkers and your website can be scanned at a number of websites which will give you a written report on how accessible it is (generally before trying to sell you something)

In Microsoft Office applications click on the Review Tab at the top of the page and choose ‘Check Accessibility’

For a full breakdown of the WCAG Guidelines see here: Introduction to Understanding WCAG (w3.org)

Contact Us

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Call our helpline on 0300 323 9961
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