# Accessibility of content

# Step "Taking action" into the educational approach

# Relevant for "visual impairment" type of disability

## Part one: Content accessibility for users with visual impairments

### Step by step description of the activity

When working with visually impaired youth, it is necessary to adapt to the environment so that he/she feels comfortable.

**1. General facts about visually impaired learners:**

Using the eyes does not harm or injure the visually impaired youth.

Encourage them to use their vision to help with visual tasks unless otherwise specifically prescribed by a doctor.

The use of glasses cannot correct visual acuity in all conditions. But glasses can be worn to limit glare and thus reduce fatigue.

Some youngsters can read the small print, others large print, others need a hand magnifier, and still others a screen.

Erasmus+

**2. General information:**

- These youth sometimes read flat-screen material and have corrected visual acuity of 20/70 or less in the better eye.
- Most have very poor distance vision, i.e. they have a hard time seeing the board or project information.
- They can get information from images, graphs, and tables when the material is nearby.
- The eyes cannot be "overworked", but they can tire quickly. An activity that allows youth to change focus is useful and much appreciated.
- Holding materials near their eyes does not harm them.

3. **Steps to help visually impaired youth feel comfortable in the environment.**
- Leave him/her alone to choose his/her place in the room.
- If he/she is comfortable, let him/her sit as close to the board as possible.
- Limit glare as much as possible and adjust the light as needed.
- Never give blurry copies to a youngster because good contrast is extremely important.
- Both font and letter spacing are important. Sometimes even more important than their size.
- V.I. youth may need more time to complete tasks.
- They may read more slowly.

4. **Some important rules:**
- Much of the communication is non-verbal. Often, a V.I. youth misses some non-verbal situations, so it is good to explain what happened tete-a-tete to him/her.
- If you notice that a youngster has soiled his/her face or clothes, tell him/her discreetly.
- If you think something might not be used and therefore you are worried about giving it to print, DON'T! More is always better than less.
- It will be helpful for the blind youth to read anything you write on the board or project.
- Another option is for a participant to read silently to the blind person, who writes down in Braille everything they find useful (e.g. dictionary, homework, math tasks).
- In tests, each answer should first be written in Braille by the blind youth and then transferred from Braille to a flat print to be read.

5. **How technology helps the visually impaired persons**

The development of technology makes it possible to facilitate the daily life and learning of people with visual impairments. Here is a short list of various aids:

5.1. **Computer**
- Computers can be used as assistive technology to demonstrate accessible assignments and allow visually impaired people to take notes. In addition, computers have many settings for accessibility, zoom, large print, contrast display, etc., which make them user-friendly.

5.2. **Keyboard**
- Access to a modified typing keyboard can be especially helpful for people with reduced vision. There are both physical keyboards with yellow keys and large letters, Braille keyboards, and more, as well as high-contrast virtual keyboards for most smartphones and tablets.
- Hotkeys - set by default or chosen by users allow them to quickly perform computer operations.

5.3. **Screen reader**

- A screen reader is a software program that reads all the text on the screen with a synthesized voice. Screen readers are also available on phones and tablets.
- Examples:
  - JAWS and NVDA for Windows computers
  - VoiceOver for Apple devices, including macOS and iOS
  - TalkBack and Select-to-Speak for Android

### 5.4. Audio descriptions
- An additional, narrative audio track that describes visual information for the blind. Audio descriptions can be played in the full audience or through an individual device so that only the blind person can hear them.

### 6. Other assistive technologies:
- **Electronic books**
- **A white cane**
- **A talking calculator**
- **Tactile materials** (allow learning through touch. It could be just outlines or complete 3D models and may or may not include braille. Example: 3D lines to demonstrate math information; modified anatomy diagram)
- **Underline / line tracking tracker** (for people who find it difficult to follow the text with their eyes, such a tracker can be used below the lines to make it easier to focus on them (built-in tracker in Immersive Reader; using a separator for pages to follow the text by lines)
- **Virtual assistants**
  Virtual assistants, sometimes called voice assistants, perform services or tasks for users based on spoken commands or questions. There is no need for users to look at the screen. Examples (Amazon's Alexa, Apple's Siri, Android's Google Assistant)
- **Guidance technologies**
  "all the ways in which people orient themselves in physical space and move from one place to another." In relation to visually impaired people, it refers to orientation and mobility techniques. Examples:
  - GPS tools for the visually impaired like Nearby Explorer
  - Remote virtual assistant – for example, Aira
- **Built-in camera**
  The built-in camera in a tablet or phone can be used as assistive technology very easy to magnify documents, menus, signs, and more. Many assistive applications use a built-in camera, so users need to know how to stabilize the image and take a clear picture.
- **Add audio/sound**
  Adding sound to something can help convey visual information to people who would otherwise have no way of seeing it. It can be as high-tech as adding audio feedback to a computer or as low-tech as adding bells to a ball or buzzers to a basketball hoop.

## Part two: Accessibility of content for people with other types of disabilities (physical or hard of hearing)

As people with various disabilities frequently use the same accommodations as those proposed for the people with visual disabilities, here we are going to short-list those access facilitating interventions that have not been already mentioned in part one.

- For example, use fonts, which are easy to read and understand, such as Arial and Calibri. It also appears that, surprising as it may look, Comic Sans is appreciated by people with v.i. and dyslexia. Tahoma, Verdana and a couple of others simple looking fonts are also acceptable.
- In general, avoid clean white background for documents or pages, as it produces glare that can lead to eyes getting tired. Use some soft, creamy light background in order to avoid glare. This is relevant for all content users, regardless of the existence of a diagnosed disability.
- Do not justify text, because even spaces between the words make the text easier to read.
- Add extra space around headings as well as between paragraphs.
- Organize the information under distinct and clearly identifiable headings.
- Hyperlinks should look different from the other forms of text.
- Increase the space between the lines to 1.5
- Avoid using only capital letters or uppercase letters
- Include closed captions for hard of hearing users
- Remember that text to speech is not only used by people with impaired vision, but also by users with mobility issues, dyslexic people, etc. Therefore be mindful about only including elements, which can be accessed and read by the respective softwares.
- Keep the pages and the file layouts simple.
- Do not place images or signs that are dubious and could be misunderstood. Be as straightforward as possible. It is more important for all users to get to the information rather than having some of them be impressed with your design decisions and graphic skills. .
- When including videos, be mindful about flashing lights (if there are such, start the video with a warning), also be careful to have the autoplay off, so that starting the video and the sounds that go with it, takes place at user's discretion and not automatically. In any way, construct the content in a way, excluding stimulations, known to be able to cause seizures with users with neurological conditions.
- Allow navigation from the keyboard for users who might be unable to use a mouse.
- As an alternative, voice commands or other assistive devices like head wands and eye trackers should be provided.

Part three: Accessibility of content for people with cognitive and learning disabilities

The W3C Working Group has created an excellent guide on creating content for people with cognitive and learning disabilities in the most accessible way. The guide has been partially funded by the US government and the Horizon 2020 programme of the EU. It is accessible in full at this link and all content/web developers are encouraged to use it as its findings and recommendations are based on the feedback and requirements shared by a large group of users with intellectual disabilities - from mild to severe ones: https://www.w3.org/TR/coga-usable/

Here we are going to provide the summary of the findings of the W3C Working Group as initial orientation and information for all youth workers, designers and trainers that are considering organizing their content in an accessible way.

The majority of the suggestions are relevant for all users, regardless of the existence of a diagnosed disability.

**Make the content delivered easy to understand and easy to use.**

The icons, symbols, pictograms, terms and design patterns, which are used, should be such that users with cognitive and learning difficulties are already familiar with. Do not expect or force them to have to learn new ones, as common behavior and patterns, including design-wise, are needed by these types of users. An example: when using hyperlinks, use the standard convention, i.e. blue and underlined for unvisited and purple for visited.

**Assist users to find what they need.**

Provide an easy navigation system. Use visual cues, clear headings, boundaries and regions, so that the page design would be understandable.

**Use clear content (text, images and media).**

Easy words, short sentences and blocks of text, non ambiguous images, and easy to understand videos would do the trick here.

**Help users avoid mistakes.**

Avoiding mistakes in the first place can be catered for via good design solutions and asking the users only for what is really needed! When errors do occur, users should have no problem going back and correcting them..

**Help users stay focused and avoid distractions from their tasks.**

If distraction does occur, headings and breadcrumbs (a term used to describe a **type of secondary navigation scheme that reveals the user's location in a website or application**) can help the user orientate themselves and eventually restore context when the latter had been lost. Linked breadcrumbs help undoing mistakes.

**Make sure the processes do not rely on memory.**

Memory troubles are a frequent difficulty for people with cognitive disabilities and this stops them from using content. Long passwords to log in and voice menus that involve remembering a specific number or term are among the barriers such users face.

**Provide help and support.**

Including guaranteeing easy access to human help, which would be invaluable for obtaining proper feedback. Otherwise the designers/content providers will never know whether the users are successful in using the content or what problems they are facing. Support and help may also be represented via providing different ways to understand the content, such as offering graphics, icons to headings, links or specific words/expressions, summaries of longer documents, etc.

**Support adaptation and personalization.**

People with cognitive and learning disabilities often use add-ons or extensions as assistive technology, which means that those should not be disabled. Personalization and easy access to preferred options sometimes makes a huge difference for certain users.

**Make tests with real users**

Involve people with disabilities in the research, design, and development process of all the materials you are preparing to launch. This applies to all types of disabilities. People with sensorial, cognitive and learning disabilities, physical disabilities are the experts in their conditions and they know best what works for them and what does not.

**Links to other resources**

Assistive technologies blog, maintained and very regularly updated with useful ideas and suggestions by Veronica with 4 Is: https://veroniiiica.com

W3C Working Group accessibility guide: https://www.w3.org/TR/coga-usable/ .