

# AI-supported accessibility and assistive technologies

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## Learning objective

Many barriers to learning are not in the learner but in the form and structure of the learning material, the environment or the way information is presented.

The aim of this learning content is to introduce AI-supported accessibility and assistive technologies that help reduce such barriers in vocational education. By the end of the material, teachers will be able to describe how AI supports vision, hearing, reading, writing, mobility and interaction, select technologies according to learners' needs, learning goals, classroom context and accessibility principles, and use them in a way that improves access without labelling, excluding or replacing human support.

## Introduction: from special devices to everyday tools

Assistive technology used to mean expensive, specialised devices. Today many assistive functions are built into ordinary phones, laptops and browsers, and artificial intelligence has made them far more capable. A phone camera can describe a scene, a laptop can caption speech in real time, and a browser can read any web page aloud in a natural voice. For schools this means that powerful accessibility support is often already available – free – on devices that learners and teachers carry every day.

An important starting point is the idea that disability arises from the interaction between a person and barriers in their environment. A video without captions is a barrier for a learner who cannot hear it; a dense worksheet is a barrier for a learner with reading difficulties. Accessibility technologies remove or reduce these barriers – and they often help many more learners than those for whom they were designed.

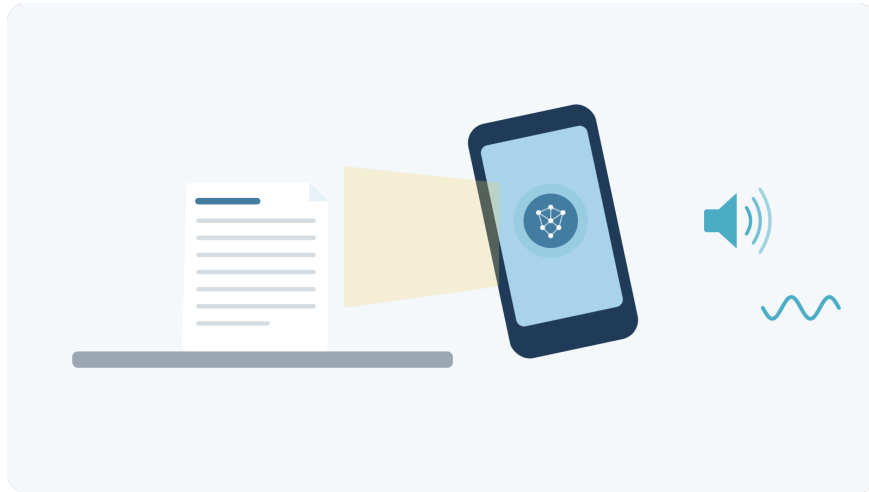
## Where AI can reduce barriers



AI-supported tools can reduce barriers related to vision, hearing, reading, writing, mobility and interaction

## Vision

Screen readers (*VoiceOver*, *TalkBack*, *Narrator*) and magnifiers are built into the major operating systems. AI adds **scene and text description**: apps (such as *Be My AI* in *Be My Eyes*, *Seeing AI* or *Google Lookout*) describe photos, read printed text and labels, and answer follow-up questions about what the camera sees.



A phone camera and an AI model can describe a document, a label or a workspace aloud. Multimodal assistants such as ChatGPT or Gemini can do the same in a live video conversation. AI can also draft **alternative text** for images in teaching materials, which the teacher then checks.

## Hearing

**Live captions** are available in Windows, Android, iOS/macOS and Chrome, and in video-conferencing tools such as Teams and Meet. Transcription apps (for example *Live Transcribe* on Android) turn speech in the room into text on a phone and can alert users to sounds such as alarms or a doorbell. Captions and transcripts make spoken explanations accessible for learners who have a hearing impairment – and helpful for everyone in a noisy workshop. Language support varies: check whether live captions work on your languages on your devices.

## Reading and writing

Read-aloud tools such as Microsoft *Immersive Reader* not only read text aloud but also highlight each word as it is spoken, and adjusting the spacing, line focus and colours make reading more comfortable. Language models can **simplify** and summarise a text and explain terms. In writing, **dictation**, word prediction and spelling support help learners who struggle with handwriting or spelling to express what they know.

## Mobility and interaction

Voice control (Voice Access on Android, Voice Control on Apple devices) allows the computer to be operated by speech; eye-tracking and switch access are now built into some mainstream devices.

**Switch access** is an accessibility feature that lets people operate a device with one or a few simple switches instead of a touchscreen, mouse or keyboard. It is designed mainly for people who, due to physical disabilities, cannot use conventional input devices precisely.



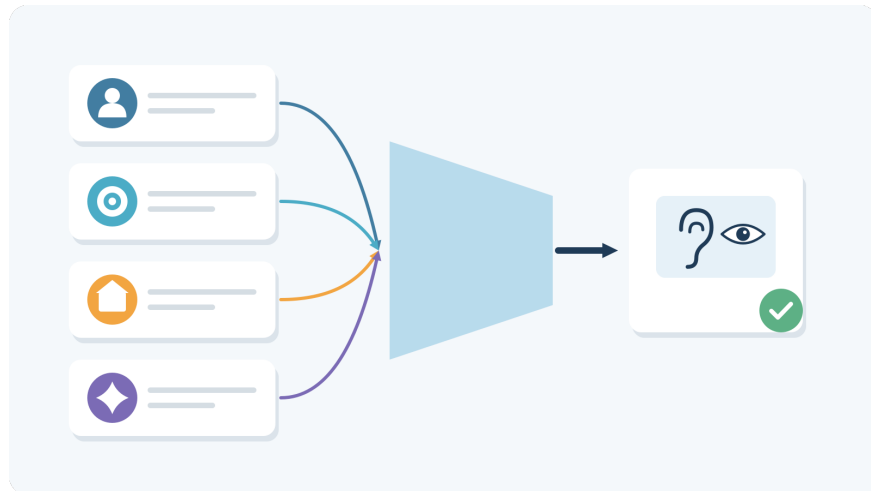
Switch access (Forrás: ChatGPT)

AI tools can also help with attention and organization: *goblin.tools*, for example, breaks large tasks down into smaller, manageable steps, while conversational AI can be a patient partner for practicing communication.

## Selecting the right technology

The best tool is not the most advanced one, but the one that fits the learner, the task and the setting. The following four questions can help you in your selection:

- **Learner needs:** what barrier does the learner actually experience, and what do they prefer? Ask the learner – they are the experts in their own experience.
- **Learning goal:** does the tool support the goal or bypass it? Reading a text aloud is excellent support in a mechanics lesson, but may not be appropriate when the goal is to assess reading ability itself.
- **Classroom context:** devices, network, noise, time, school rules and data protection. A tool that only works on a personal smartphone may not be usable in every lesson.
- **Accessibility principles:** [Universal Design for Learning](#) (UDL) is a teaching framework helping teachers to give all students equal opportunities to learn by using flexible methods, materials and recommends multiple means of representation, engagement, action and expression. The [Web Content Accessibility Guidelines](#) (WCAG) guidelines describe how digital content can be perceivable, operable, understandable and robust.



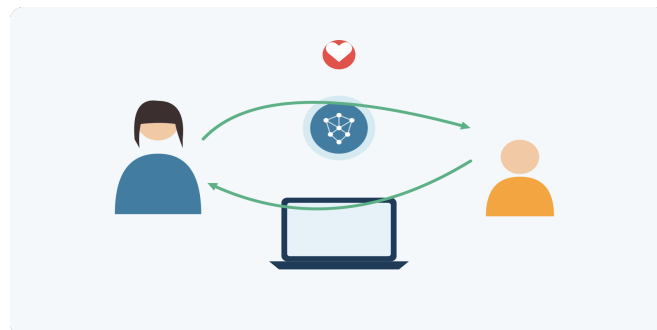
Learner needs, learning goal, classroom context and accessibility principles together determine the right tool

### **Design for everyone**

Whenever possible, offer accessibility features to the whole group: captions on every video, an audio version of every worksheet, a glossary for every unit. When support is universal, no one needs to be singled out – and many learners benefit without having to ask.

## Limits, risks and the role of people

- **Errors:** AI descriptions and transcriptions can be wrong or incomplete. In a workshop, a misread label or a missed warning can be dangerous – safety-critical information must never depend on AI alone.
- **Privacy:** camera images, voice recordings and documents are often processed in the cloud. Avoid photographing people without consent and do not upload personal or health-related data.
- **Dependence and autonomy:** tools should increase the learner's independence, not create new dependence. Agree with the learner when and how a tool is used.
- **Availability and cost:** check whether the tool works in your language and on the devices available at school; free versions may be limited.



Technology supports the relationship between teacher and learner – it does not replace it. Assistive technology is most effective as part of a human relationship: the teacher who knows the learner, special education professionals, parents and the learner themselves decide together which support is useful. AI can reduce

barriers, but encouragement, patience and pedagogical judgement remain human tasks.

The legal framework also points in this direction. Since June 2025 the European Accessibility Act has required many digital products and services – including e-books – to be accessible, and under the Web Accessibility Directive public-sector websites – including those of public schools – must meet accessibility requirements. Accessible design is therefore not an optional extra but an expectation.

## Takeaways for teachers

- Many AI-supported accessibility tools are already built into everyday devices – explore them before buying anything.
- Start from the learner's needs and preferences, and check that the tool supports the learning goal.
- Offer support to everyone where possible: captions, audio versions and glossaries help many learners.
- Check AI output, especially for safety-critical information, and protect personal data.
- Technology complements human support; it never replaces it.

## References

- CAST (2024): Universal Design for Learning Guidelines version 3.0.
- W3C (2023): Web Content Accessibility Guidelines (WCAG) 2.2.
- Directive (EU) 2019/882 on the accessibility requirements for products and services (European Accessibility Act); Directive (EU) 2016/2102 on the accessibility of public sector websites and mobile applications.
- WHO & UNICEF (2022): Global Report on Assistive Technology.
- Lengyel, Zs. (2026): Concrete applications for content generation. VITA training presentation.

## Links

- UDL Guidelines: [udlguidelines.cast.org](https://udlguidelines.cast.org)
- W3C Web Accessibility Initiative: [w3.org/WAI](https://w3.org/WAI)
- Be My Eyes – Be My AI: [bemyeyes.com](https://bemyeyes.com)

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