Computer features and accessibility

Context

The relation between students with disability and computers is particular and unique for each single case: the use of computers and other digital devices is nowadays essential to grant accessibility and for inclusion to social life. The diverse kinds of impairments can represent different obstacles in accessing to computer use and the digital world in general.

SEN students benefit from the use of technology to help them in their everyday task as part of their special education plan. The exploitation of computer features and tools permits to these students a fair and equal treatment in consideration of their difficulties.

## Barriers to the use of computers

Cognitive impairments and illiteracy

Making resources accessible to people with cognitive disabilities is one of the biggest challenges in computer accessibility. Students with LSD (Learning Disorder), with poor communication and reading skills, for example, may rely more on **symbols** and less on writings to identify programs and functions.
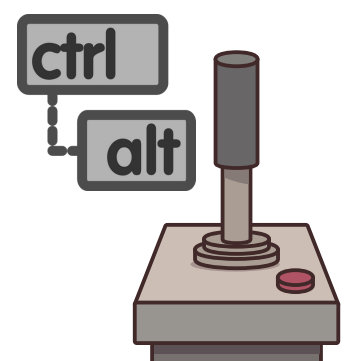
Visual impairment

For individuals with minor to medium vision impairment, it is helpful to use **large fonts**, **high DPI** displays, **high-contrast themes** and icons supplemented with auditory feedback and **screen magnification** software.
In case of most severe vision impairment such as blindness, **screen reader** software or a **refreshable braille display** are necessary accommodations for interaction with a computer and digital world in general. Also about 8% of men and about 0.4% of women have some form of color-blindness: the main color combinations might confuse by people with this visual deficiency.
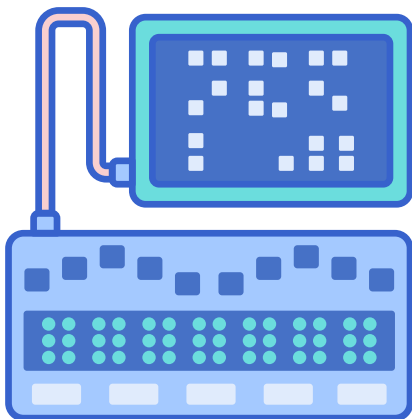
Motor and dexterity impairments

Some students may not be able to use conventional input devices, such as the mouse or the keyboard. Therefore, it is important for software functions to be accessible using both devices. **Keyboard shortcuts** and mouse gestures are ways to achieve this access, **on-screen keyboards** and **alternate input devices** (switches, joysticks and trackballs). Speech recognition technology an appreciated alternative to conventional keyboard and mouse input.

Some system computer functions can be substitued by visual signals, such as system beeping is replaceable by visual lights or onscreen notifications.

For educational purposes: **closed captions** (subtitles) are a very popular means of relaying information for the Deaf and hearing impaired communities. Computer animation also allows translation of small content into sign language by means of **sign language avatars**.

Features for autonomy

Autonomy is an important piece for both identity and personal development, it should always be fostered and granted as much as possible.

Assistive and adaptive technology, both soft and hardware, have this very own objective; to permit disabled persons to reach autonomy.

A few software examples:
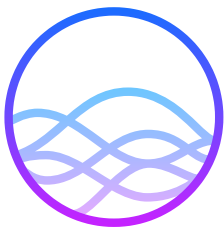
Vocal assistant is a speech-recognition feature allows users with limited mobility to control the computer with their voice.

Text-to-speech software and **Screen readers** can read text out loud, helping students with limited sight.
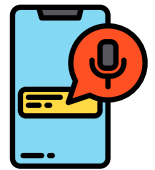
Close Captioning allows hearing impaired students to access to oral content of the lesson.

AAC software permits any text to be translated and explained through the use of icons instead of words.
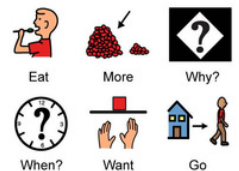
Touchscreen buttons support pc interface navigation for students with motor impairment.

Onscreen keyboard permits motor impaired users to access writing functions even if their vocal capacity is compromised.

Resources

To deepen the knowledge in the topic of computer accessibility for student with disability, it is possible to consult the lecture note *Computer Access Assessment for Persons with Physical Disabilities: A Guide to Assistive Technology Interventions*, published on "Computers Helping People with Special Needs". The article is a summary of the published results of the 13th ICCHP (International Conference on Computers for Handicapped Persons) of 2012.