

# Types of Disabilities

We have gathered together some general information to help TPC instructors better understand different types of disabilities. Often the idea of accessibility is limited to issues of sight, but the students in our classrooms come to us with more diverse backgrounds and abilities. As with everything on this site, this overview is not exhaustive, but it does give you a place to start.

And here are some resources to help you better understand how folks struggle with accessibility issues.

- [how difficult it is for folks](#) (opens in new tab) with disabilities and disabled people to navigate the Web.
- [Working Together: People with Disabilities and Computer Technology](#) – Video from Washington University's Disabilities, Opportunities, Internetworking, and Technology (DO-IT) Program (video length: 11-minute)
- [W3C's Web Accessibility Initiative](#) – Ten short videos from W3C that provide several perspectives on how accessibility benefits people in a variety of situations, including an overview of how people can struggle with certain online accessibility issues. Each video is approximately 1 minute. When you click on each video, underneath it are other facts and information about how to address certain disability needs.

## Types of disabilities

- Cognitive and Neurological Limitations
- Auditory Limitations
- Physical Limitations
- Visual Limitations

# Cognitive and Neurological Limitations

Cognitive and neurological disabilities involve disorders of any part of the nervous system, including the brain and peripheral nervous system. This can impact how well people hear, move, see, speak, and understand information; this does not necessarily affect the intelligence of a person.

Depending on the particular needs of an individual, people with cognitive and neurological disabilities need: clearly structured content that facilitates overview and orientation; consistent labeling of forms, buttons, and other content parts; predictable link targets, functionality, and overall behavior; different ways of navigating websites, such as through a hierarchical menu or search option; options to suppress blinking, flickering, flashing, or otherwise distracting content; and simpler text that is supplemented by images, graphs, and other illustrations.

Some people use tools that resize text and spacing, customize colors to assist reading, and grammar and spelling tools to assist writing. Developers need to consider web accessibility requirements which are often shared by people with hearing, physical, speech, or visual disabilities.

## Examples of Cognitive and Neurological Limitations

- **Attention deficit hyperactivity disorder (ADHD)** – Involves difficulty focusing on a single task, difficulty focusing for longer periods, or being easily distracted.
- **Autism spectrum disorder (ASD)** – Involves impairments of social communication and interaction abilities, and sometimes restricted habits and interests. This includes autism, Asperger syndrome, and pervasive developmental disorder.

- **Intellectual disabilities** – Involves impairments of intelligence; learning more slowly, or difficulty understanding complex concepts.
- **Memory impairments** – Involves limited short-term memory, missing long-term memory, or limited ability to recall language. Dementia is one among many different causes of memory impairments.
- **Multiple sclerosis** – Causes damage to nerve cells in the brain and spinal cord, and can affect auditory, cognitive, physical, or visual abilities, in particular during relapses.
  - **Perceptual disabilities** – Involves difficulty processing auditory, tactile, visual, or other sensory information. This can impact reading (dyslexia), writing (dysgraphia), processing numbers (dyscalculia), or spatial and temporal orientation.
- **Seizure disorders** – Includes different types of epilepsy and migraines, which may be in reaction to visual flickering or audio signals at certain frequencies or patterns.

## **Examples of barriers for people with cognitive and neurological limitations**

- Complex navigation mechanisms and page layouts that are difficult to understand and use.
- Complex sentences that are difficult to read and unusual words that are difficult to understand.
- Long passages of text without images, graphs, or other illustrations to highlight the content.
- Moving, blinking, or flickering content.

- Web browsers and media players that do not provide mechanisms to suppress animations and audio, including background audio that cannot be turned off.
- Visual page designs that cannot be adapted using web browser controls or custom style sheets.

## Auditory Limitations

Auditory limitations can range from mild/moderate hearing impairments in one or both ears (hard of hearing) to substantial and uncorrectable impairment of hearing in both ears (deafness). Some people with auditory disabilities can hear sounds but sometimes not sufficiently to understand all speech, especially when there is background noise.

Audio content needs to have alternatives, such as transcripts and captions. To use the web effectively, people with auditory disabilities need: transcripts and captions of audio content, media players that display captions and provide options to adjust the text size and colors of captions, options to stop, pause, or adjust the volume of audio content (independently of the system volume). Sign language may be their first language; they may not read a written language fluently. Providing important information in sign language and using simpler text that is supplemented by images, graphs, and other illustrations help make web content more understandable to many.

## Examples of Auditory Limitations

1. **Hard of hearing**— Mild or moderate hearing impairments in one or both ears.
2. **Deafness**— Substantial, uncorrectable impairment of hearing in both ears.
3. **Deaf-blindness**— Substantial, uncorrectable hearing and visual impairments.

## Examples of barriers for people with auditory disabilities

- Audio content, such as videos with voices and sounds, without captions or transcripts.
- Media players that do not display captions and that do not provide volume controls.
- Web-based services, including web applications, that rely on interaction using voice only.
- Lack of sign language to supplement important information, and text that is difficult to read.

## Physical limitations

People with physical limitations often need full keyboard support for all functionality provided by a web page. They may need more time to type, click, or carry out other interactions, and they may type single keystrokes in sequence rather than typing simultaneous keystrokes. Additionally, people may have trouble clicking small areas and are more likely to make mistakes in typing or clicking.

To use the Web, people with physical disabilities often use specialized hardware and software such as ergonomic or specially designed keyboard or mouse; head pointer, mouth stick, and other aids to help typing; on-screen keyboard with trackball, joystick, and switches to operate it; and voice recognition, eye tracking, and other approaches for hands-free interaction.

## Examples of physical limitations

- **Amputation and deformity** – Includes missing fingers, limbs, or other parts of the human body.
- **Arthritis** – Inflammation, degeneration, or damage of the joints.
- **Fibromyalgia** – Chronic pain of muscle and connective tissues.

- **Rheumatism** – Typically refers to arthritis and other causes for bone or joint pain, and sometimes to fibromyalgia and other causes for muscular and other soft tissue pain.
- **Reduced dexterity** – Is a functional term (rather than a medical condition) that describes the ability to control the hand, such as hand-eye coordination of people with cognitive and neurological disabilities.
- **Muscular dystrophy** – Progressive weakness and degeneration of muscles, including arms and hands.
- **Repetitive stress injury** – Involves injuries to the musculoskeletal system (bones, joints, tendons, and other connective tissues) and the nervous system from repetitive tasks and damage.
- **Tremor and spasms** – Involuntary movement or muscle contraction, including short twitches, and continual or rhythmic muscle contractions.
- **Quadriplegia** – Partial or total paralysis (includes motor control and sensation) to all four body limbs (legs and arms) and the torso.

## **Barriers for people with physical limitations**

- Websites, web browsers, and authoring tools that do not provide full keyboard support.
- Insufficient time limits to respond or to complete tasks, such as to fill out online forms.
- Controls, including links with images of text, that do not have equivalent text alternatives.
- Missing visual and non-visual orientation cues, page structure, and other navigational aids.
- Inconsistent, unpredictable, and overly complex navigation mechanisms and page functions.

## **Visual limitations**

Visual limitations can range from mild to moderate vision impairments in one or both eyes, to substantial and

uncorrectable loss of vision in both eyes. Some people have reduced or lack of sensitivity to certain colors, or increased sensitivity towards excessive brightness in colors.

People with visual limitations rely on changing the presentation of web content into forms that are more usable for their particular needs. This includes enlarging or reducing text size and images; customizing settings for fonts, colors, and spacing; listening to text-to-speech synthesis of the content; listening to audio descriptions of video in multimedia; or reading text using refreshable braille.

## Examples of visual limitations

- **Color blindness** – Includes difficulty distinguishing between colors such as between red and green, or between yellow and blue, and sometimes inability to perceive any color.
- **Low vision** – Includes poor acuity, tunnel vision, central field loss, and clouded vision.
- **Blindness** – Substantial, uncorrectable loss of vision in both eyes.
- **Deaf-blindness** – Substantial, uncorrectable visual and hearing impairments.

## Examples of barriers for people with visual limitations

- Images, controls, and other structural elements that do not have equivalent text alternatives.
- Text, images, and page layouts that cannot be resized, or lose that information when resized.
- Missing visual and non-visual orientation cues, page structure, and other navigational aids.
- Video content that does not have text or audio alternatives, or an audio-description aids.
- Inconsistent, unpredictable, and overly complex navigation mechanisms and page functions.

- Text and images with insufficient contrast between foreground and background color combinations.
- Websites, web browsers, and authoring tools that do not support use of custom color combinations.
- Websites, web browsers, and authoring tools that do not provide full keyboard support.