Cognitive and Learning Disabilities

Quick background
- EO is updating *How People with Disabilities Use the Web*, which has pages on 5 types of disabilities: auditory, cognitive, physical, speech, and visual.
- EO's draft for the cognitive page is at abilities-barriers-cognitive/
- EO welcomed COGA rewriting the cognitive page as long as we follow its template.
- The draft below adjusts Lisa's initial draft so it hews more closely to EO's template.

Sections of this document (using EO's template)
- Summary
- Introduction
- Examples of cognitive and learning disabilities
- Examples of barriers for people with cognitive and learning disabilities
- Stories related to cognitive and learning disabilities

Summary

Cognitive and learning disabilities affect how people store, retrieve, or use information. Often, only some functions are impaired while others are unaffected. Many of these disabilities do not affect overall intelligence. Cognitive and learning disabilities are usually invisible and can be age-related. Many users may not have a formal diagnosis or disclose having a disability due to stigma and discrimination.

Note: This page is illustrative and is not a complete list of all disabilities and barriers.
Page Contents
- Introduction
- Examples of cognitive and learning disabilities
- Examples of barriers for people with cognitive and learning disabilities
- Stories related to cognitive and learning disabilities

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Introduction

Cognitive and learning disabilities is an umbrella term for a large spectrum of differences and disabilities. They may affect the ability to:

- Learn, communicate, read, write, do math, or process sensory input, and/or
- Understand or process new or complex information and learn new skills, and/or
- Use memory and attention or visual, language, or numerical thinking.

Often, only some functions are impaired while other cognitive functions are unaffected. For example, someone with dyslexia may be a fantastic engineer. Sometimes, cognitive and learning disabilities may include intellectual impairments that affect comprehension, alongside written and spoken expression. People may also experience more than one type of cognitive and learning disability. Note that the terminology and definitions used for cognitive and learning disabilities vary between countries. They can be legally and functionally defined differently in different locations based on local and national laws.

Often people with cognitive and learning disabilities or age-related forgetfulness may not be able to effectively use web content because of the design and content choices.

For example, access to information may be critical to public health. The elderly and vulnerable populations are among the most critical groups for these communications. But studies have shown low usability of web and phone communication among these groups. Vulnerable people are trying to reach health-related hotlines and find online information and not managing, because of known accessibility and usability issues for these groups.

To use the Web effectively, people with cognitive and learning disabilities rely on clear and easy-to-understand structure, content, and design. This includes:

- Common design patterns that help users understand what things are and how to use them.
- Easy-to-follow layouts with visual cues, such as icons, that help users find what they need.
- Easy-to-follow site structure.
- Clear content with easy words, short sentences, and blocks of text, and easy-to-understand images and video.
- Designs that make errors less likely and that make it easy for users to correct errors.
- Headings that help users focus and breadcrumbs that help restore the context when it is lost.
- Processes that do not rely on memory, such as logging in and using voice menus.
- Easy access to human help as well as supporting different ways to understand content, such as graphics, summaries of long documents, and alternatives for numerical information.

- Content that has been tested with people with cognitive and learning disabilities.

Beyond a well designed site, it is also important for developers to make Many users also need products that support adaptation and personalization, such as assistive technology including add-ons and browser extensions. Examples include spell checkers, passwords support, and text-to-speech with synchronized highlighting of the phrase being read. Sometimes the user relies on personalization for support such as additional symbols or simplification. For example, alternative and augmentative communication systems aid people who have trouble with speech or language skills.

~~Meeting the needs of users with cognitive and learning disabilities will also benefit:~~

- ~~People with mental health issues that cause cognitive difficulties, such as difficulty focusing, cognitive fatigue, or reduced memory.~~
- ~~People under a temporary stress.~~
- ~~People who do not know the language or culture of the country well.~~
- ~~People with limited technical knowledge or are new to the Web.~~

To learn more, visit the W3C's **Making content usable for people with cognitive and learning disabilities**, which includes a design guide and user needs and personas.

Examples of cognitive and learning disabilities

- **Age-related forgetfulness (**sometimes called "age-appropriate forgetfulness" or "age-related memory loss") — impaired memory that can be a normal part of healthy aging, such as taking longer to learn new things and occasionally forget things.
- **Attention Deficit (Hyperactivity) Disorder (ADHD)** (formerly "attention deficit disorder" (ADD)) — involves difficulty focusing on a single task, focusing for longer periods, or being easily distracted.
- **Autism spectrum disorder** (includes "autism," "Asperger syndrome," and "pervasive developmental disorder)" — involves impairments of social communication and interaction abilities, and sometimes restricted habits and interests.

- **Brain Injury** (traumatic or acquired) — damage that can happen at any stage in life and can lead to long-term impairment of executive function, memory, learning, coordination, speech, and emotions as well as other physical and sensory impairments.
- **Dementia —** includes memory loss and trouble concentrating, following a conversation, and finding the right word.
- **Mild cognitive impairment (MCI) —** sometimes considered the stage between age-related forgetfulness and the more serious decline of dementia.

Examples of barriers for people with cognitive and learning disabilities

- Unfamiliar, complex, or changing navigation mechanisms and page layouts.
- Unfamiliar words including acronyms or complex text.
- Long blocks of text without icons, diagrams, or other visual cues to highlight the context.
- Distractions such as moving, blinking, or flickering content, and background audio.
- Visual page designs that cannot be adapted using extensions.
- Passwords and other interface paradigms that rely on memory or copying.
- Time-outs that make some people with disabilities unable to complete a task.
- Metaphors and other non-literal text whose meaning is not clear to literal thinkers.
- Numerical references such as percentages, without an explanation or [alternative means of understanding](#).
- Cognitive fatigue such as when completing complex, multi-stage processes, filling out forms.

Stories related to cognitive and learning disabilities

- [Luis, basketball fan with Down syndrome](#)
- [Blair, autistic data entry clerk](#)
- [Preety, middle school student with Attention Deficit Hyperactivity Disorder and Dyslexia](#)

- [Yun, retiree with low vision, hand tremor, and mild short-term memory loss](#)

For more stories, see the [personas from the Cognitive and Learning Disabilities Task Force](#).