

# **Principals of Universal Design**

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# Introduction

Other terms for *Universal Design* used around the world include *Design For All*, *Inclusive Design*, and *Barrier-Free Design*. Terminology and meanings differ from one country to another and often reflect each nation's societal values.

Universal design is not a fad or a trend but an enduring design approach that originates from the belief that the broad range of human ability is ordinary, not special. Universal design accommodates people with disabilities, older people, children, and others who are non-average in a way that is not stigmatizing and benefits all users. Designing for a broad range of users from the beginning of the process can increase usability of an environment or product without significantly increasing its cost. It results in easier use for everyone and it reduces the need for design modifications later when abilities or circumstances change.

Universal design is not a synonym or a euphemism for accessibility standards. Universal design can be distinguished from meeting accessibility standards in the way that the accessible features have been *integrated* into the overall design. This integration is important because it results in better design and avoids the stigmatizing quality of accessible features that have been added on late in the design process or after it is complete, as a modification.

Universal design also differs from accessibility requirements in that accessibility requirements are usually prescriptive whereas universal design is performance based. Universal design does not have standards or requirements but addresses usability issues.

# The Principles

The Principles of Universal Design and their guidelines were developed by a working group of architects, product designers, engineers, and environmental design researchers as part of a project coordinated by the Center for Universal Design at North Carolina State University. The seven Principles that describe characteristics that make designs universally usable are:

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive Use
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

# What is Universal Design?

Universal Design is an approach to the design of all products and environments to be as usable as possible by as many people as possible regardless of age, ability or situation.

## **These Principles of Universal Design:**

- address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes.
- offer designers guidance to better integrate features that meet the needs of as many users as possible. All Guidelines may not be relevant to all designs.

# 1. Equitable Use

**The design is useful and marketable to people with diverse abilities:**

- Provide the same means of use for all users; identical whenever possible; equivalent when not.
- Avoid segregating or stigmatizing any users.
- Provisions for privacy, security, and safety should be equally available to all users.
- Make the design appealing to all users.



Two shoppers, one pushing a cart and the other using a power wheelchair, pass through open automatic doors.

## 2. Flexibility in Use

**The design accommodates a wide range of individual preferences and abilities.**

- Provide choice in methods of use.
- Accommodate right- or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

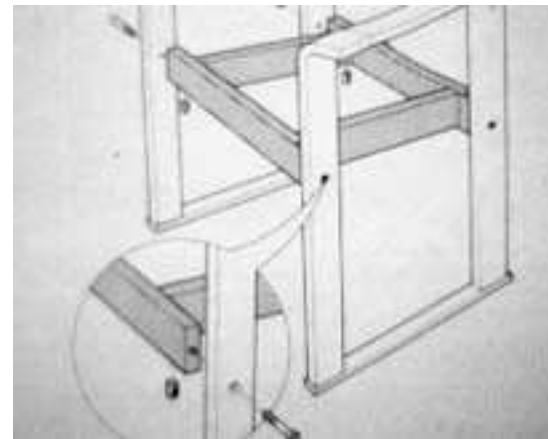


Large grip scissors are shown being held in the left hand, another in other in the right hand.

# 3. Simple and Intuitive

**Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.**

- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion



Imported furniture instructions illustrate assembly without written directions.

# 4. Perceptible Information

**The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.**

- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximize "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.



A person with low vision operates at close range a round thermostat with large numbers, tactile indicators, and audible cues.

# 5. Tolerance for Error

**The design minimizes hazards and the adverse consequences of accidental or unintended actions.**

- Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.



Computer menu shows the arrow pointing to the "undo" function.

# 6. Low Physical Effort

**The design can be used efficiently and comfortably and with a minimum of fatigue.**

- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimize repetitive actions.
- Minimize sustained physical effort



A hand with closed fingers operates a lever door handle by pushing down.

# 7. Size and Space for Approach and Use

**Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.**

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.



A woman in a power wheelchair passes through a wide subway gate.

# Questions?

## **The Principles of Universal Design**

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