

Principles of Universal Design

Purposes and History

Accessible design is primarily about court-enforced compliance with regulations. The regulations are intended to eliminate certain physical barriers that limit the usability of environments for people with disabilities. Historically, accessible design has focused on compliance with state or local building codes. These typically were based on the American National Standards Institute's requirements. With the passage of the Americans with Disabilities Act (ADA) in 1990 and the subsequent development of the ADA Accessibility Guidelines, accessible design has focused more recently on satisfying these minimum technical criteria to allow most people with disabilities to use most of the designed environment (Salmen, 1996).

Universal design is a market-driven process intended to create environments that are usable by all people. While considerations for people with disabilities are certainly necessary for universal design, they are not sufficient when planning and designing for the whole population. Accommodating the needs and wishes of

Salmen, J (1996). Universal Design: Moving Beyond Accessibility. Trade Press Publishing Corporation. www.facilitiesnet.com/NS/NS3b76c.html.

everyone – e.g., children, the elderly, women and men – is also necessary for universal design (Norwegian State Council on Disability, 1997).

Acknowledging this greater inclusiveness, in the mid-1990s the Center for Universal Design in Raleigh, NC asked ten leading advocates to identify the underlying performance requirements of universal design. The resulting Principles of Universal Design (Connell, et al, 1997; North Carolina State University, 1997), developed through funding provided by the U.S. Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR), has since become the internationally referenced definition.

Explaining and Illustrating the Principles

These seven principles are not without their critics. Some consider them vague and difficult to understand. Others argue that they are more applicable to product and graphic design than building design. And yet, as evidenced by their growing international acknowledgment, these principles continue to maintain their status as the definitive statement of what constitutes universal design. This guidebook also acknowledges the seven Principles of Universal Design by explaining and illustrating their applicability to the universal design of the built environment.

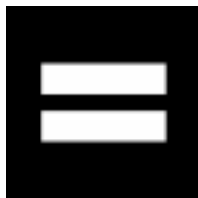
Norwegian State Council on Disability (1997). Universal Design: Planning and Design for All. home.online.no/~bringa/universal.htm.

Connell, B, Jones, M, Mace, R, Mueller, J, Mullick, A, Ostroff, E, Sanford, J, Steinfeld, E, Story, M, & Vanderheiden, G (1997). The principles of universal design: Version 2.0. Raleigh, NC: The Center for Universal Design.

North Carolina State University, The Center for Universal Design (1997). What is Universal Design? www.design.ncsu.edu/cud/univ_design/princ_overview.htm.

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Pictograms for the Seven Principles of Universal Design © 2001 Beth Tauke, Center for Inclusive Design and Environmental Access, School of Architecture and Planning, University at Buffalo, The State University of New York.



Principle 1: Equitable Use

The building's design should make it equally usable by everyone. Ideally, the means by which people use the building should be the same (e.g., providing one means of entry to the building that works well for everyone). If it cannot be identical, the several means provided must be equivalent in terms of their privacy, security, safety and convenience. The building must never employ means that isolate or stigmatize any group of users or privilege one group over another.

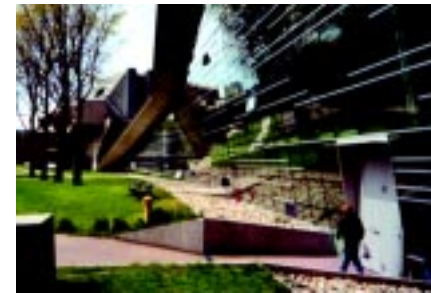
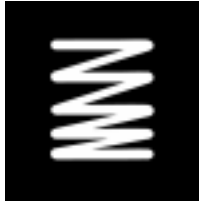


Figure 1. People who require an accessible entrance should not be exiled to a remote delivery area such as the one shown here.



Figure 2. A toilet seat that is height-adjustable can be used by people of all sizes and ages.



Principle 2: Flexibility in Use

The building's design should allow people to use its design features in more than one prescribed way (e.g., providing a countertop orientation map that is viewable from either a seated or standing position). It should accommodate both right- and left-handed use and be adaptable to the individual user's pace. The building's design should have the built-in flexibility to be usable even when it is employed in an unconventional or unanticipated manner.



Figure 3. The absence of detectable information makes these elevator call buttons difficult for first time users with reduced vision to recognize.



Principle 3: Simple and Intuitive

The building should make it easy for everyone to understand the purpose of each design feature and how to use it (e.g., providing washroom lavatory faucets that make their method of operation readily apparent and relatively easy). Moreover, its means of use should be intuitively obvious so that it operates as anticipated and, therefore, can be used spontaneously.



Principle 4: Perceptible Information

The building should provide all essential information in a variety of modes (e.g., written, symbolic, tactile, verbal) to ensure effective communication with all users regardless of their sensory abilities. The information provided must be presented with sufficient contrast to surrounding conditions so that it is distinguishable from its context and decipherable in all its various modes of presentation.



Figure 4. This high-contrast directional signage uses both text and pictograms to communicate to a wide group of users.



Principle 5: Tolerance for Error

Ideally, the building's design should eliminate, isolate or shield any design features that could prove hazardous to or inconvenience any user. When potentially dangerous conditions are unavoidable, users should receive warnings as they approach the design feature (e.g., providing proximity warnings in a variety of sensory modes near the top of stairs.) The building's design should also anticipate accidental or unintended actions by any user to minimize the inconvenience and/or protect the user from harm.



Figure 5. The boardwalk has raised edges to prevent users from accidentally leaving the path of travel.



Figure 6. This lavatory has up and down controls that allow each user to adjust its height.

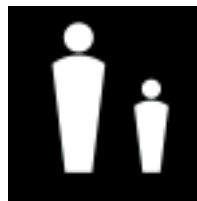


Principle 6: Low Physical Effort

The building's design should employ design features that require little or no physical force to use them (e.g., replacing a traditional door knob with a lever handle that does not require the ability to grasp and turn the wrist). If a low level of force is required, any user should be able to engage the feature without assuming an awkward or hazardous body position (e.g., providing a smooth travel surface with minimal slope along the path of travel leading to the entrance).



Figure 7. The height of the concession stand counter permits convenient use by customers of varying heights.



Principle 7: Size and Space for Approach and Use

A building's design features should provide an adequate amount of space that is appropriately arranged to enable anyone to use them (e.g., providing knee space under a washroom lavatory to enable use by someone in a seated position). In addition, the space needs to be arranged to provide a clear path of travel to and from important design features for all users.