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Universal Design for Academic Facilities

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Universal design (UD) is an evolving and expanding concept with varied definitions and meanings. Ultimately it is design that both allows access to a facility or element and facilitates users’ empowerment. It is a concept that started in architecture, but is now being applied to an increasing number of fields of human endeavor, including the design of the Web, product design, housing for aging people, and academic curricula, to name but a few.

Universal design can play a role in many aspects of academic life and is often thought of in the context of learning. However, this chapter focuses on the impact of UD on the design of facilities in a university or campus setting. Universal design has the potential for transforming universities into truly egalitarian institutions that accommodate all users regardless of their size, age, or physical capabilities, allowing them to flourish, learn, and unleash their true potential. Universities are especially good facilities for the application of UD because they accommodate a wide range of transient users. Since one size does not necessarily fit all, the application of UD needs to be appropriate to the institution’s scale, facility type, and program for it to be completely effective. Universal design accommodates not only people who use wheelchairs or are blind, but also older learners, parents with children, and nontraditional learners of all sorts. The effort to provide UD can also help institutions comply with the Americans with Disabilities Act (ADA), section 504 of the Rehabilitation Act of 1973, and other state and local accessibility regulations. This chapter explains the differences between accessibility and UD and discusses methods of accommodation and areas of opportunity for UD on campuses.
Accessibility Compliance Versus Universal Design

People frequently think that accessibility compliance and universal design are synonymous. They are not, and in fact, the difference between UD and accessibility is profound. Accessibility is about compliance with regulations that protect a small percentage of the population. Universal design is about empowering the entire population to reach its potential. Accessible design is accomplished through compliance with state, local, and national building codes and standards that establish a minimum level of design necessary to accommodate people with disabilities. Universal design is the art and practice of design to accommodate the widest variety and number of people throughout their life spans. It can be thought of as the process of embedding choice for all people into the things we create. As we learn about human needs and abilities and as new technologies develop, the practice of UD evolves and improves. In truth, it might be better to think of this field as universal designing, so as to focus on the decision-making process rather than some end product that may be improved in the future.

In the United States, three formal levels of guidance affect the accessibility of the built environment: laws, regulations, and standards. Laws are promulgated by a legislative body, such as the U.S. Congress or a state legislature, to address a public concern. An applicable law that guides accessibility is the ADA, which the U.S. Congress passed in 1990 to address discrimination against people with disabilities. Regulations are usually created by an enforcement agency of a government entity to implement a law. Standards are technical criteria defining compliance for an issue area. The ADA is federal civil rights law. As such it is broad reaching and must be applied to situations even when no technical criteria are provided. The civil rights nature of the ADA and the resemblance of its criteria to building codes lead many to believe that compliance with only the technical criteria will ensure compliance with the law. This is not the case. When lawsuits that claim non-compliance with the non-discrimination requirements are embodied in the accessibility standards for facilities found in the ADA Title III, the courts are often turning to the spirit rather than the letter of the law. For instance, in movie theaters and sports arenas, seating for people with disabilities is supposed to provide lines of sight to the screen or playing field that is comparable to the lines of sight that other attendees have. Because there are no technical criteria for what comparable means, courts are making their own interpretations.

Universities must comply with a variety of federal laws and regulations, depending on the financing of the operations or facilities of each particular campus:

- The ADA covers all higher education facilities and requires access to programs, facilities, and services that are provided and open to the public. For state or local government institutions, Title II of the
ADA may also apply. The primary concept in the Title II regulations is program accessibility: the program when viewed in its entirety must be accessible, though not every element needs to be accessible. For example, if dormitories are provided for some students, some of the dormitories must be accessible, though all dormitory rooms are not required to provide accessibility features. The ADA Standards for Accessible Design set out the criteria that must be met in the design of new or renovation of existing campus facilities. (These standards were updated in 2010 and are now called the 2010 Standards.)

- If the university offers housing units with four or more units per building, the Fair Housing Act of 1988 applies. All ground-floor units and all units in buildings with elevators are considered “covered units” and must comply with accessibility guidelines.
- Section 504 of the Rehabilitation Act of 1973 requires that the programs of any recipient of federal funding, whether for research, construction, or programs, must be accessible when viewed in their entirety. This earlier law is similar to the ADA’s Title II requirements, which apply to any institution receiving state or local funding. In addition, state laws, regulations, and standards often require compliance with a state building code. Most states have adopted the International Building Code and use its reference standard ICC/ANSI A117.1 for accessible and usable buildings and facilities.

It is vitally important for universities and colleges to follow federal, state, and local laws and regulations with their referenced standards, but embracing UD may be the best way to ensure compliance while also improving usability for the entire academic community. Universal design, however, is different from accessibility in that it does not have a set of standards. (The Global Universal Design Commission is currently developing voluntary UD standards for use in public buildings. See http://www.globaluniversaldesign.org.) Voluntary efforts are the name of the game in UD, and they go beyond accessibility in many cases to provide usability for people regardless of their age or ability. Universal design is the process of embedding choice into the things we create for all people. Giving people options in the way that they use the environment is critical as our population becomes more diverse. Universal design is ultimately a process that empowers people by giving them more control over their lives and choice in the things that they do or the way in which they do those things.

Building on a collaboration with Ron Mace and I, Ruth Lusher used the term universal design in 1988 for an article in Construction Specifier magazine. We wanted to come up with a positive slant on accessibility requirements and to acknowledge the potential for good design that could be achieved by people who embrace the idea of making the world fit people better rather than looking at it as a regulatory requirement. North
Carolina State University’s Center for Universal Design convened a number of experts at the end of the twentieth century to come up with principles of universal design. Seven were identified:

1. Equitable use
2. Flexibility in use
3. Simple and intuitive
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

These principles are a tool for analyzing facilities, products, and programs and helping to identify opportunities for enhancing usability through careful design selection. The principles embody goals, strategies, and objectives and can be found at the Center for Universal Design’s Web site (http://www.design.ncsu.edu/cud/index.htm).

In short, accessibility is about compliance, and universal design is about design that empowers people. They are similar in that both affect the user-environment interface, However, UD has the potential for being for everyone, as opposed to a specialty element that benefits only a small population.

**Methods of Accommodation**

The wide variety of user abilities, coupled with the wide variety of academic and other programs, services, and facility types, implies an almost infinite number of possibilities for customizing the environment to accommodate individuals. Infinite customization is currently unrealistic for any organization or technology, but one method of accommodation is illuminated by comparing a fixed menu to a buffet. One of the key techniques of ensuring usability for a wide range of people is to provide a wide range of offerings, similar to a buffet, where a diner can select vegetarian, gluten-free, or high-protein meals or just dessert. A universally designed campus allows people choices of how they enter buildings, residential accommodations, and options for sitting in classrooms together or separately regardless of their mobility. Contrast this with a fixed-menu restaurant that attempts to satisfy everyone with one set of menu items and compare it with an old-style tiered classroom with fixed writing surfaces. Movable chairs on a tiered surface accessed by ramps allow a wide variety of users to participate in classroom experiences regardless of their size or space needs if the appropriate furniture is in place.

The concept of one-size-fits-all is elusive though not impossible. For example, an air door provides an entrance through which anybody can move regardless of abilities or limitations; however, an air door is a large energy consumer and may not be appropriate in a green society except in
extreme circumstances. Usually, however, multiple methods provide choice that can fit a wide range of users. Where information is given, redundant modes of information delivery allow people to retrieve the information in more than one sensed modality. For example, alarms and warnings should be both visual (to warn people who cannot hear) and audible (for people who cannot see), or the menu at a food outlet could be available on a printed list for people who cannot hear, or staff can explain the menu or read it to a person who is visually impaired.

Trying to provide access by using only one method frequently can be costly and unaccommodating to some populations. Instead five methods of accommodation can be used to match users to the environment. Drawing on all of these methods in combination helps designers arrive at highly effective solutions that reach a broad population and in a cost-effective manner. These methods are:

- **Architecture.** Architecture refers to modifying the building, grounds, and other facilities, including ramps and doors, providing grab bars, and so on. The method is a permanent solution that provides long-lasting effect.

- **Personal assistance.** At the other end of the spectrum is the concept of providing direct assistance, such as readers or note takers for students who have visual limitations or hearing impairments. This is direct personal assistance from human to human. It is highly effective and very sensitive to the actual need, but it is expensive, must be maintained, and has the potential for affecting other human relationships in a detrimental fashion because dependence can breed power struggles.

- **Procedures.** Similar to personal assistance but implemented at the organizational level are changes of procedures. Procedures can be modified to accommodate physical limitations, for example. New methods or new technologies, such as Web-based learning, can allow people with mobility limitations to attend a class in a nonaccessible location. Another example is to offer tests in a non-time-constrained manner for students who have difficulty writing.

- **Equipment.** Equipment can be used to improve the human-environment interface. A variety of consumer products can make life easier. Automatic can openers for people with one hand and crank adapters for double-hung windows are examples.

- **Medical intervention.** Technology has allowed us to replace human body parts, provide drugs, and use prosthetic devices such as glasses or splints. Although these interventions are typically within the realm of medical practitioners or the individual, the aids and devices may provide an accommodation that empowers the person to do something on his or her own rather than being dependent on others.
Universities that understand these concepts and use these techniques can go beyond compliance with the minimum criteria found in accessibility regulations and create universally designed campuses and communities that empower all people.

**Areas of Opportunity: Tips and Design Ideas**

This section provides a few examples of areas of campus design where application of UD concepts can benefit all members of the academic community.

**Grounds: Creating Choice in the Exterior Environment.** Kutztown University in Kutztown, Pennsylvania, was built on a hilly site. Over the years, sidewalks were constructed between buildings, with stairs and often steep ramps that were difficult or impossible to use by students, faculty, and visitors with limited mobility. Universal Designers & Consultants (UD&C) helped the university’s architect identify the accessible pedestrian paths and devise a system of directional signage and alternative accessible paths around barriers so that all students and visitors could navigate the campus. It promoted access in the most direct manner possible within an existing hilly environment.

A complaint against the university’s accessibility had triggered a self-evaluation and the realization that pedestrian circulation could be improved for all students by identifying certain key paths within the campus that needed accessibility and allowing secondary paths to include nonaccessible-level changes where necessary to meet topographical conditions. This system provided at least one accessible route to every building, and in most cases multiple routes, allowing access to all programs using accessible routes.

An important part of this project was the need to provide information about where the accessible routes are located. This was done through maps provided on the university Web site, signage on the grounds, and pamphlets that are available to visitors indicating accessible entrances to buildings and accessible routes on the campus.

**Classrooms and Assembly.** Georgetown University Law School in Washington, D.C., wanted to respond to the needs of and requests from students with disabilities in a proactive rather than reactionary basis. UD&C staff worked with the disability services and facilities management departments to conduct a workshop with students to identify UD opportunities in a collaborative format. Participants identified a number of cost-effective ways to improve accessibility—for example:

- Modifying tables in classrooms to offer accessible seating
- Providing yardsticks for the bookstore manager to ensure merchandise aisles are wide enough for wheelchairs
- Recommending vertical-facing, instead of typical horizontal-facing, merchandise in the cafeteria refrigerated units
• Installing sensor-activated automatic doors in student residences to assist students with disabilities

Innovative and cost-effective solutions resulted from facilitated collaboration between students and the administration, and in the process, providing an excellent model for use at other universities.

The Student Athletic Building at the George Washington University in Washington, D.C., built in the 1960s, presented many barriers to students with disabilities as participants in or spectators at student athletic events. When the university decided to refurbish the building, one of the highest priorities was to provide access to all areas for students who are unable to climb stairs. To ensure this, the university required the selected design firm to hire a third-party accessibility and UD expert, and UD&C was engaged.

The building was originally equipped with two small elevators that created great congestion at the time of sporting events. Adding an elevator and reworking exterior access relieved congestion and provided accessible paths to all areas. In addition, spectator and other common use areas were enhanced to accommodate not only people who have physical limitations but also people who want privacy for cultural reasons. Among the additions were:

• Dispersed accessible seating
• Audio and visual scoreboards
• Multiheight counters at food vending areas
• Tables and seating areas with accessible knee and toe clearance
• Family rest rooms for those who needed assistance
• Private and accessible public showers and lockers

These changes empowered the entire student body. Recreation is an important aspect of rehabilitation for many people, allowing them to maintain their self-image and their strength, especially after a traumatic injury.

**Residential.** Students and faculty with disabilities come in all sizes, shapes, and colors. Their residential needs therefore reflect the range found in the general public, such as individual students out of high school, married students with children, and adult learners who want communal residential environments. Accordingly, accessibility should be provided in all types of residences that are provided on campus, from dormitories to married student housing, and sorority and fraternity housing to conference housing.

Roll-in showers in residence halls allow people who have mobility limitations to bathe safely and conveniently. Other people may choose to have soaking tubs to allow them to relax after a long day. Dormitory buildings laid out for wheelchair accessibility assist not only students in wheelchairs but also students with bicycles and everyone else, especially on moving day.
Conclusion

Academic planners who understand and use UD can incorporate choice into the design of university programs, services, and facilities. In this way, they will allow the broad range of students, faculty, and visitors to interact and create the types of academic communities that empower and liberate everyone through higher education.

Appendix: Additional Resources

Americans with Disabilities Act (ADA) Home Page: The US Department of Justice established this web site to provide information about, and technical assistance on, the Americans with Disabilities Act (ADA). (http://www.ada.gov)

Association on Higher Education and Accessibility (AHEAD): A professional membership organization for individuals involved in the development of policy and in the provision of quality services to meet the needs of persons with disabilities involved in all areas of higher education. (http://www.ahead.org)

Center for Inclusive Design and Environmental Access (IDEA Center), SUNY at Buffalo: dedicated to making environments and products more usable, safer, and healthier in response to the needs of an increasingly diverse population. (http://www.ap.buffalo.edu/idea/)

UniversalDesign.com: A broad-based, philanthropic web site that supports the growth of the Universal Design industry through information, commerce, and professional networking. (http://www.UniversalDesign.com)

Universal Designers & Consultants, Inc.: A team of expert architect and design professionals who provide Universal Design and Accessibility Consulting services to business owners and companies who want to improve customer access and make their establishments compliant with the Americans with Disabilities Act and/or the Fair Housing Act. (http://www.UDConsultants.com)

References


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