

## INTRODUCTION

# UNIVERSAL DESIGN: THEMES AND EXPERIENCE

Roberta Null

Universal Design, now highly acclaimed and predicted to be a trend of the future, is a term coined in the 1970s by Ron Mace, Director and founder of the Center for Universal Design (formerly the Center for Accessible Housing), School of Design at North Carolina State University in Raleigh. The Universal Design philosophy is consistent with the pioneering efforts of many programs represented by members of the American Association of Housing Educators (Remember the “Step-Saving U Kitchen” and the “Heart-Saver-Kitchen” developed by researchers at Cornell University in the 1950s.)

The goal of this special Universal Design issue of *Housing and Society* is to provide design educators and researchers an opportunity to disseminate information about how they teach and study Universal Design concepts. A major difficulty in the promotion of Universal Design has been the identification and location of excellent examples to illustrate how well the concept really works. This difficulty is exacerbated by a general misunderstanding of the scope of the Universal Design concept. The concept of Universal Design promotes designing every product and environment so that everyone can use these products and environments to the greatest extent possible . . . every faucet, light fixture, telephone, bathroom, or entrance. Universal Design is both convenient and profitable. It is a philosophy of design that removes distinctions between varying abilities by adhering to four major principles, identified by Ron Mace as:

1. Universal Design is *supportive*, *i.e.*, it makes environments work for the individual, stressing ease of use and maintenance.
2. Universal Design is *adaptable*, *i.e.*, it serves a wide range of users whose needs change over time.
3. Universal Design is *accessible*, *i.e.*, the everyday comforts and conveniences that “normal” individuals enjoy are provided to all users of the environment. There are code and ADA guidelines for accessibility. Unfortunately, these guidelines are minimal and the interpretation of accessibility is frequently limited to providing access to buildings for people with impaired mobility.
4. Universal Design is *safe*, *i.e.*, it not only provides environments and tools for the presently disabled, but actually anticipates and prevents disabilities such as repetitive strain injuries.

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These principles have provided a standard against which products and environments can be measured. As the movement has grown, Universal Design principles have continually been evaluated and refined. The Center for Universal Design has developed an expanded list of Universal Design principles (under a grant from the National Institute on Disability and Rehabilitation Research). They are:

1. **Equitable Use:** The design does not disadvantage or stigmatize any group of users.
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
3. **Simple, Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. **Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended action.
6. **Low Physical Effort:** The design can be used efficiently and comfortably, with a minimum of fatigue.
7. **Size and Space for Approach & Use:** Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.

In the preface to the recently published *Strategies for Teaching Universal Design* (1995), Elaine Ostroff, director (Universal Design Education Project [UDEP]) and Polly Welch, editor, cited the problem that Design Education "continues to segregate and stereotype people who do not fit 'the norm' by ignoring their existence or, at best, teaching about them as separate subject matter" (p.viii). They added that "Well-meaning design research sometimes reinforces this separate treatment through its focus on specific groups having unique design needs" (p.viii).

An incentive-based, faculty-development program in Universal Design, UDEP had a goal of making the simple principles of Universal Design an integral component of design education. Both Nancy Canestaro and I were fortunate to be among the forty-five faculty members, representing twenty-two design programs, chosen for the UDEP pilot group. Even before we were involved in UDEP, we both recognized the value of Universal Design in teaching, research, and practice. My article, "Universal Design for the Elderly" appeared in *Housing and Society*, Vol. 16, No. 3 (1989). Because I have been an active member of the American Association of Housing Educators since the late 1960s, I saw *Housing and Society* as an ideal vehicle for design educators to showcase design and teaching strategies in Universal Design. When I proposed a special Universal Design issue of *Housing and Society*, I envisioned it as: 1) a supplement to our manuscript, *Universal Design: Creative Solutions to ADA Compliance* (1996) that could be disseminated to design educators who would adopt the book as a text for their classes.; 2) a stand-alone tool that would provide descriptions of successful research and teaching strategies for Universal Design; and 3) an opportunity for design

educators to present their Universal Design teaching and research strategies in a recognized refereed journal.

Co-editor Nancy Canestaro assumed major responsibility for this special issue of *Housing and Society*. She handled the call for papers, recruited manuscript reviewers from the UDEP group, and supervised the referee and editing process. When I received copies of the ten accepted papers, I could not have been more pleased. Everything I had envisioned for this special Issue of *Housing and Society* was in place. In the following paragraphs I have highlighted some special features of these articles. An underlying theme is the importance of having design students accept Universal Design as a personal design philosophy.

- 1) “Internalizing Values: Universal Design in the Design Studio” - Benyamin Schwarz, Ruth Brent, and Gary Hennigh view the mission of educators as coaching students to internalize the values of Universal Design as a pivotal, sustained, and valid base for expansion of environmental design knowledge in discourse and application.
- 2) “Studio Strategies for Approaching More Universally Designed Residential Kitchens” - Tom Houser views adaptability as a key element of Universal Design and describes use of a simulated kitchen environment that provides students with opportunities to see what it is like to have less-able bodies, to use prosthetic devices, and to have difficulty interpreting spaces. The process helps them develop design philosophies embracing issues of the quality of experiences end-users will have within the designed spaces.
- 3) “Universal Design Facility: State of the Art Teaching Tool” - Betty Jo White and Patty Annis describe conversion of a former household equipment laboratory into a prototype Universal Design/Lifespan Design Research and Demonstration Facility.
- 4) “Universal Design: A Teaching Strategy for Students” - Betsy Gabb, Kathleen Lodl, and Virginia K. Wright stress that “It is critically important that students understand the functional implications of disabilities, for these occur in the same way no matter what environment a person experiences.” They also explore teaching strategies and describe student generated design solutions for creation of universally designed residential and commercial environments.
- 5) “Designing Independent Living Environments for Senior Age Clients” - Linda Fisher addresses demographics in her article and expresses the feeling that “An increased understanding of Universal Design concepts will enhance students’ abilities to create accessible, functional and aesthetically pleasing design for the able bodied, as well as for the homeowner with disabilities. This will enable tomorrow’s designers to creatively and successfully offer design solutions that meet clients’ ever changing lifestyle needs.”
- 6) “Simulation of Mobility Impairment: Experiential Learning toward Universal Design” - Margaret Boschetti reports on student essays demonstrating the power of simulation as an active learning tool to sensitize design students to the needs of persons who use wheelchairs, and to “think” Universal Design in

all design solutions. Essays written following a wheelchair exercise challenged students to reflect on how the experience might influence them as future designers.

- 7) "Application of Kolb's Learning Theory as a Framework for Teaching Universal Design"- Louise Jones states that "Universal Design is a change in attitude, a way of rethinking who constitutes the 'User'." She highlights the relationship between the elderly and persons with disabilities, stating, "With increasing age and the ensuing chronic health problems, elders often need many of the environmental accommodations typically provided for people who are disabled." A teaching strategy for presenting universal design is thoughtfully examined.
- 8) "Universal Design in Residential Spaces" - Elizabeth DeMerchant and Julia Beamish have identified four categories that should be considered in making design recommendations. They are: "adults, children, older adults experiencing age related changes, and people of all ages with disabilities." After presenting a well-researched history of codes, the authors state that, "If Universal Design can be achieved, it will no longer be necessary to examine design recommendations in light of special guidelines or codes; *e.g.*, if all houses were constructed with wide doorways as standard practice, then compliance with an accessibility code would not be an extra step in the design process."
- 9) "Universal Design: The Users' Perspective" - The Iowa State University team of Arvid E. Osterberg, Anne Marie Davis, and Lola D. Danielson report research findings from a university-wide study identifying and analyzing interior architectural elements that constitute the greatest barriers for people with disabilities. Questions were centered on participants' abilities to perform functions and negotiate specific elements, in light of a Universal Design philosophy, covered by ADAAG.
- 10) "Panels as a Means of Separation in an Elderly Residence" - Lennie Scott-Webber and Nancy Canestaro report on an experimental research study they conducted on the innovative idea of using office panels instead of cubicle curtains to separate persons in two-person rooms in senior-living facilities.

### References

- Null, R. L., & Cherry, K. F. (1996). *Universal design: Creative solutions for ADA compliance*. Belmont, CA: Professional Publications, Inc.
- Welsh, P. (1995). *Strategies for teaching universal design*. Boston: Adaptive Environments Center.