

Universal Design



A review of Universal Design conducted by John Paul Harris, coordinator for Wyoming AIM Clearinghouse, Wyoming Institute for Disabilities (WIND)

What is Universal Design?

- Rooted in the field of architecture
 - “Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, **without the need for adaptation or specialized design.**”
–Ron Mace
 - The authors
 - working group of architects
 - product designers
 - engineers
 - environmental design researchers
- “When UD principles are applied, products and environments meet the needs of potential users **with a wide variety of characteristics**. Disability is just one of many characteristics that an individual might possess.”
 - –Sheryl Burgstahler
- Classic examples of UD:
 - Curb cuts
 - Automatic door openers
 - TV audio captions

7 Principles (from the Center for Universal Design)

Equitable Use: the design is useful and marketable to people with diverse abilities.

Guidelines:

- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- **Avoid segregating or stigmatizing any users.**
- Make the design appealing to all users.

Flexibility in Use: the design accommodates a wide range of individual preferences and abilities.

Guidelines:

- **Provide choice in methods of use.**
- Provide adaptability to the user's pace.

Simple and Intuitive Use

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

Guidelines:

- **Eliminate unnecessary complexity.**
- Be consistent with user expectations and intuition.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.

Perceptible Information

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

Guidelines:

- **Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.**
- Provide adequate contrast between essential information and its surroundings.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

Tolerance for Error

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

Guidelines:

- **Provide fail safe features.**
- Discourage unconscious action in tasks that require vigilance.

Low Physical Effort

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

Guidelines:

- Allow user to maintain a neutral body position.
- Minimize sustained physical effort.

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.

Guidelines:

- 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.

Other uses for UD

- Its application to education is apparent with:
 - Human Centered Design,
 - Universal Design for Learning (UDL)
 - Universal Design for Instruction (UDI)
 - Universal Design for Education (UDE)
- Universal design (UD) refers to a design approach that strives to ensure that environments are useable by the **broadest possible spectrum of people rather than being designed to accommodate the needs of either disabled or non-disabled people alone** (Lusher & Mace, 1989).
- The postsecondary accommodation process follows a medical model—the student becomes the focus of interventions determined by a disability resource professional.
 - Responsibility is placed within the disability resource department rather than the student and faculty.
 - Can put disability service providers at odds with faculty.
 - Modifications are retroactive.

Smith, R. E., Buchanan, T. (2012) Community Collaboration, Use of Universal Design in the Classroom. *Journal of Postsecondary Education and Disability*, v25, n3, 259-265.

Article Highlights

Smith, R. E., Buchanan, T. (2012) *Community Collaboration, Use of Universal Design in the Classroom*. *Journal of Postsecondary Education and Disability*, v25, n3, 259-265.

- “If this design technique offers so many benefits, why aren’t more people using it? Simply put, they don’t know how. While several sets of guiding principles for UD have been developed to assist in implementation, UD is a dynamic process and a theoretical framework.”
 - This echoes the principles of UD: **The principles are not intended to constitute all criteria for good design, only universally usable design.**
- Implementation example:
 - “Choice of assessment method. Where possible, assignments were designed to allow student choice. For example, a student could choose to complete a project, write a paper, or participate in a service activity. This allowed the student to decide which method would best demonstrate their learning in the course.”

Edyburn, D. L. (2010). *Would You Recognize Universal Design for Learning if You Saw it? Ten Propositions for New Directions for the Second Decade of UDL*. *Learning Disability Quarterly*, 33(1), 33-41.

- "In the 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA), the term universal design was officially defined within U.S. federal law (20 U.S.C. § 1401) governing special education: "The term universal design has the meaning given the term in section 3 of the Assistive Technology Act of 1998" (U.S.C. § 3002)."
- AT Act of 1998: "universal design" means a concept or philosophy for designing and delivering products and services that are usable by people with the widest possible range of functional capabilities, which include products and services that are directly usable (without requiring assistive technologies) and products and services that are made usable with assistive technologies. (U.S.C. § 3002)"
- "In order to achieve the promise of UDL, I believe the profession must recognize that the essence of UDL lies in the field of instructional design rather than architecture."

References

Smith, R. E., Buchannan, T. (2012). *Community Collaboration, Use of Universal Design in the Classroom*. *Journal of Postsecondary Education and Disability*, v25, n3, 259-265.

Edyburn, D. L. (2010). *Would You Recognize Universal Design for Learning if You Saw it? Ten Propositions for New Directions for the Second Decade of UDL*. *Learning Disability Quarterly*, 33(1), 33-41.

Burgstahler, S. (n.d.). *Universal Design: Process, Principles, and Applications*. Retrieved from <http://www.washington.edu/doit/Brochures/Programs/ud.html>

Additional Resources

Do-IT Program:

<http://www.washington.edu/doi/Resources/udesign.html>

Process of Universal Design: step-by-step guide to apply UD

1. Identify the application
2. Define the universe
3. Involve consumers
4. Adopt guidelines or standards
5. Apply guidelines or standards
6. Plan for accommodations
7. Train and support
8. Evaluate

What is the difference between accessible, usable, and universal design?

<http://www.washington.edu/doi/CUDE/articles?337>

Center for Universal Design

http://www.ncsu.edu/www/ncsu/design/sod5/cud/about_ud/udprinciplestext.htm

User Interface Engineering

\$300 million button: http://www.ue.com/articles/three_hund_million_button/

Jakob Nielsen—Nielsen Norman Group

10 usability heuristics for user interface design

1. Visibility of system status
2. **Match between system and the real world**
3. User control and freedom (undo and redo)
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

<http://www.nngroup.com/articles/ten-usability-heuristics/>

Ed Roberts Campus

<http://www.edrobertscampus.org/>