Applying a UDHE Framework to an Online Learning Program

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Abstract

Some students with disabilities cannot fully engage in digital learning opportunities because of the inaccessible design of many online courses. In this commentary on policies and administration, I describe how the Universal Design in Higher Education (UDHE) Framework can be used to guide the design of accessible and inclusive online courses and share examples of best practices in applying it. I also present potential roles key stakeholders can play in applying the UDHE Framework. Taking meaningful steps in this regard can improve online learning opportunities by making them accessible to and inclusive of more learners.

Keywords: disability, accessibility, universal design, accessible design, framework

Some students with disabilities cannot fully engage in learning opportunities because of the inaccessible design of many online courses. In this commentary on policies and administration, I describe how the Universal Design in Higher Education (UDHE) Framework can be used to guide the design of accessible and inclusive online courses and share examples of best practices for the framework's use in postsecondary education. I also present potential roles key stakeholders can play in promoting and supporting the design of courses that are accessible and inclusive. Taking meaningful steps can improve online learning opportunities by making them accessible to and inclusive of more learners.

Access Challenges and Solutions for Online Students with Disabilities

In the 2015–16 academic year, 19% of all undergraduates and 12% of all graduate students described themselves as having a disability; only 8% of postsecondary students registered with the disability services unit of their Institution (Postsecondary National Policy Institute, 2022). Reported reasons for not disclosing a disability include concern for being discriminated against, lack of understanding of the process for and benefits of disclosing, insufficient documentation for securing accommodations, and an expectation of not needing accommodations. Since few students with disabilities report them to the institution, faculty cannot expect that they will know which of their students have disabilities. Therefore, to address students' needs, online courses must be proactively designed to be accessible to students with a wide range of disabilities.

Students with disabilities access online courses in many ways. For example, some students who have disabilities that impact reading (e.g., dyslexia) use software to highlight words and phrases as they appear on the screen and simultaneously read them aloud; some students with mobility impairments rely on alternative keyboards (e.g., expanded keyboards, speech

recognition software, eye-gaze tracking systems); and some students who are blind use screen readers that vocalize text-based content and provide information about formatting of headings, tables, and other structural elements.

To provide full access to these and many other students, online instructors and designers need to ensure that the technologies, videos, and digital texts (e.g., PDF, Microsoft Word, and PowerPoint documents) they use are formatted in specific ways in order to be accessible to blind students using screen readers. Students with visual and some learning challenges benefit when web pages and documents use sans serif fonts, uncluttered pages, and plain backgrounds. Captions on videos benefit students who are blind or are English language learners and many other individuals. Proactively creating accessible documents and videos are examples of universal design (UD) practices. UD is defined by the Center for Universal Design (n.d.) as "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."

Applying a UDHE Framework to Online Learning

Many articles, books, and web resources about online learning design have not yet included discussions on removing barriers and creating solutions for people with disabilities. To address accessibility issues, online instructors and institutions often rely on a reactive accommodations-only approach employed by a disability services office that approves reasonable accommodations for students with documented disabilities. However, well-established UD-inspired principles, guidelines, and practices can be used to guide the design of technology and pedagogy used in online learning applications, reducing the need for accommodations (Burgstahler & Thompson, 2019).

I developed the Universal Design in Higher Education (UDHE) Framework (Burgstahler, 2000), as illustrated in Figure 1, over many years of engagement with stakeholders in projects funded through the Disabilities, Opportunities, Internetworking, and Technology Center (DO-IT, n.d.; Burgstahler & Thompson, 2019). The UDHE Framework is underpinned by three sets of UD-inspired principles, which are listed in the Appendix: (1) the set of seven principles of UD that apply to any product or environment (Center for Universal Design, n.d.); (2) the set of three principles that specifically guide the design of learning activities (Center for Applied Special Technology, 2018); and (3) the set of four principles for applying UD to the design of technology (World Wide Web Consortium, 2023). Each principle supports guidelines as well as best practices that can be applied to online learning technology and pedagogy used in courses that are offered fully online or in a hybrid format, where some teaching takes place on-site.

Figure 1

The UDHE Framework
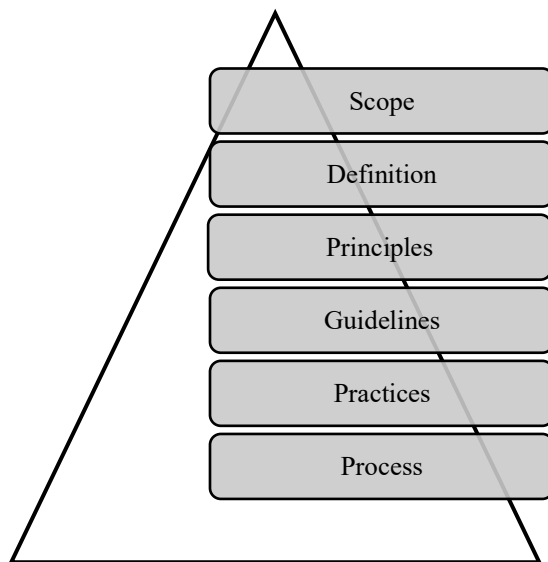
Note: Framework from Burgstahler, 2020, p. 36.

We observe the following benefits in applying the three sets of UDHE principles:

- students have multiple ways to learn, demonstrate what they have learned, and engage; and

- all technologies, facilities, services, resources and strategies are accessible to individuals with a wide variety of abilities.

Practitioners can apply UDHE principles to the overall design of online courses (e.g., using multiple accessible and inclusive teaching strategies) as well as to specific practices such as

- providing clear instructions and expectations;

- using descriptive wording for hyperlinks (so screen readers can use a shortcut to read aloud all link text);

- avoiding PDFs and instead using accessible HTML for primary content;

- captioning videos;

- using examples and assignments relevant to a diverse audience;

- providing outlines and other scaffolding tools;

- avoiding long lectures and massive slide decks;

- giving feedback on parts of assignments and corrective opportunities; and

- providing an overview at the beginning and a summary at the end of lessons (Burgstahler, 2022).

Because UDHE practices are proactive, applying them benefits students with both disclosed and undisclosed disabilities and minimizes the need for accommodations. Although this article focuses on students with disabilities, UDHE practices address the needs of all

students, regardless of their race, ethnicity, sexual identity, cultural background, socioeconomic

level, age, or religious beliefs.

The UDHE Framework can be fleshed out and used to underpin campus-wide policies

and practices as well as those for a specific unit, such as an online learning program. The model

presented in Figure 2 illustrates a process leaders can follow as they apply UDHE throughout an

organization, such as an online learning program. Key steps include identifying the

organization's vision and values; embracing the UDHE Framework to guide the initiative (by

fleshing out the six elements listed in Figure 1); listing current practices paired with the more

desirable UDHE practices; identifying outputs and outcomes that will measure success;

collecting evidence of impacts; and revising practices accordingly to ensure continuous

improvements.

Figure 2

Online Learning Program Initiative Underpinned
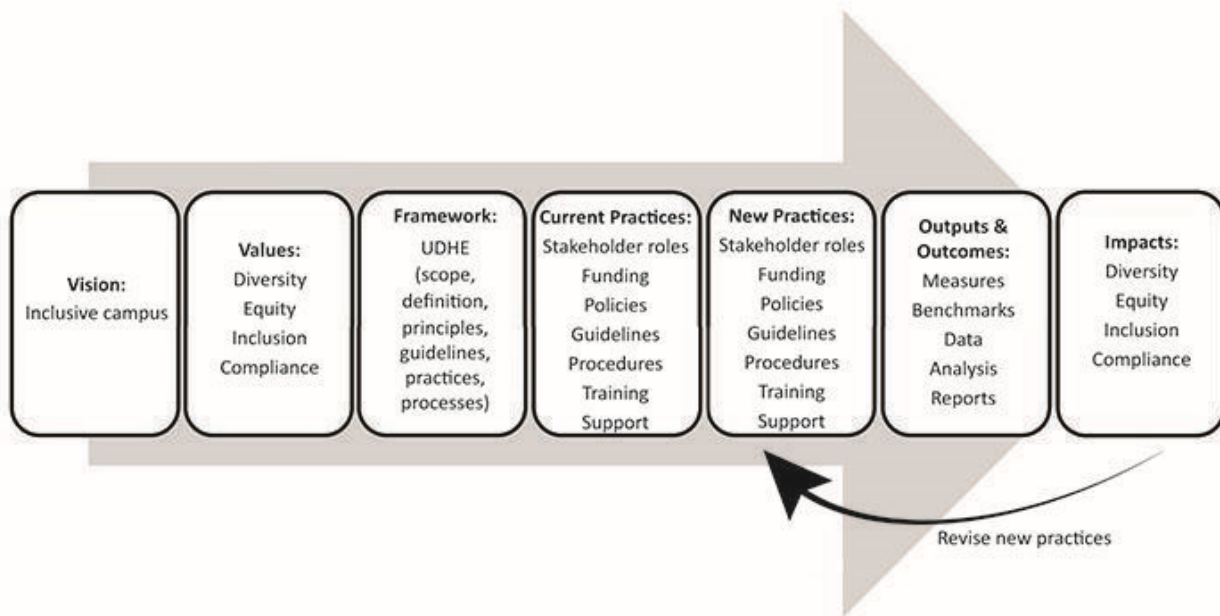
Note: From the UDHE Framework (Burgstahler, 2020, p. 187).

Potential Stakeholder Roles

A campus that wishes to move from an accommodations-only framework to a more proactive approach such as the UDHE Framework for their online learning program should consider two issues: (a) how key stakeholders can promote the use of accessible technology and the practice of inclusive pedagogy, and (b) how they can work with faculty members and support units to maximize the impact. All stakeholders will likely need opportunities to gain knowledge and skills that will help them level the playing field for students. To create these opportunities, awareness-building and professional development may need to be tailored to each stakeholder group listed below.

- *Administrators and Policy Makers*. Campus leaders can set policies and allocate funds to support inclusive online learning practices. They can work with relevant governing bodies (e.g., state agencies); establish expectations that all online offerings be accessible and inclusive; develop and promote standards for accessible design; provide professional development of faculty members and designers; and create supporting units with staff to help instructors meet expectations.

- *Disability Service Providers*. Disability support staff who offer accommodations to students with disabilities can promote to faculty members and administrators the campus-wide adoption of more inclusive design practices that reduce the need for remediation of documents, captioning of videos, and other accommodations. They can also encourage faculty members teaching courses in which a student needs accommodations to proactively adopt accessible design in order to decrease the need for accommodations for future students with disabilities.

- *Technology Staff.* Central and departmental technology staff can develop guidelines

  for procuring and developing accessible technology that is used in online learning;

  offer training to online instructors and designers; and support those who wish to make

  their websites, digital documents, videos, and online learning courses that are

  accessible to *all* students.

- *Procurement Staff.* Procurement personnel can build accessibility requirements into

  contracts with technology vendors and work with accessible IT staff regarding the

  evaluation of products for accessibility.

- *Faculty*. Instructors can develop knowledge and skills and apply practices to make

  their courses more inclusive. They can also advocate for more resources with respect

  to professional development and increased capacity of departmental and campus-wide

  units to support them by taking on specific roles, such as captioning videos. Faculty

  members in design fields, including engineering, architecture, user interface design,

  and computer science, could increase the development of more accessible products in

  the future by teaching accessibility-related topics such as UD in their courses.

- *Teaching and Learning Centers*. In their professional development courses,

  communities of practice, and individual consultations, teaching and learning

  professionals could integrate content regarding the design of accessible and inclusive

  learning opportunities.

- *Technology Companies*. Through procurement policies and practices, postsecondary

  institutions could encourage technology companies to offer products that are

  accessible to people with disabilities. Successful efforts to promote accessibly

  designed learning management and conferencing software should be replicated. Such

efforts might create a sea change toward the availability of more accessible

technology and put technology developers on notice that institutions of higher

education expect accessible products to be available.

- *Individuals with Disabilities*. People with disabilities and those who advocate for

    equity for this often-marginalized group can push for the use of technologies and

    information resources that are accessibly designed in online components of all

    courses and services. For example, they could establish a student group that provides

    input to leadership regarding accessibility issues, including those related to online

    learning. If the group is a subgroup of the student governing body, it will have clear

    institutional support, and its input may carry more weight than it would outside of this

    structure.

- *Researchers*. Researchers in technology and pedagogy design could routinely include

    individuals with disabilities and accessibility considerations in every phase of design,

    development, and evaluation processes.

Conclusion

There is little evidence to suggest that many online instructors and designers routinely

employ practices that address access issues faced by some students with disabilities, even though

established principles, guidelines, and practices currently exist in many higher education

institutions to guide the development and use of accessible and inclusive technologies and

pedagogy. UDHE can be viewed as an attitude, a goal, and a process that values diversity,

equity, and inclusion. It takes a proactive approach and promotes best practices without lowering

standards or limiting innovation. As a result, a UDHE-guided course design benefits all students

and minimizes the need for accommodations. In order to achieve systemic changes toward more

accessible and inclusive courses, multiple stakeholders need training, support, best practices, and

other resources tailored to their particular roles, and they need to find ways to work together to

maximize their impact.

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Acknowledgement

Appendix

Principles That Underpin UDHE

Universal Design Principles (Center for Universal Design, n.d.)

- *Equitable use*. The design is useful and marketable to people with diverse abilities.

- *Flexibility in use*. The design accommodates a wide range of individual preferences and abilities.

- *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.

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

- *Tolerance for error*. The design minimizes hazards and the adverse consequences of accidental or unintended actions.

- *Low physical effort*. The design can be used efficiently, comfortably, and with a minimum of fatigue.

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

Principles that Underpin the Web Content Accessibility Guidelines (WCAG, World Wide Web Consortium, 2023):

- *Perceivable*. Users must be able to perceive the content, regardless of the device or configuration they are using.

- *Operable*. Users must be able to operate the controls, buttons, sliders, menus, etc., regardless of the device they are using.

- *Understandable*. Users must be able to understand the content and interface.

- *Robust*. Content must be coded in compliance with relevant coding standards in order to ensure it is accurately and meaningfully interpreted by devices, browsers, and assistive technologies.

Universal Design for Learning Principles (Center for Applied Special Technology, 2018):

- *Provide multiple means of engagement*. For purposeful, motivated learners, stimulate interest and motivation for learning. Three UDL guidelines under this principle promote the development of curriculum and instruction that includes options for perception; language, expressions, and symbolism; and comprehension.

- *Provide multiple means of representation*. For resourceful, knowledgeable learners, present information and content in different ways. Three UDL guidelines under this principle promote the development of curriculum and instruction that includes options for physical action, expressive skills and fluency, and executive functions.

- *Provide multiple means of action and expression*. For strategic, goal-directed learners, differentiate the ways that students can express what they know. Three UDL guidelines under this principle promote the development of curriculum and instruction that includes options for recruiting interest, sustaining effort and persistence, and self-regulation.