A revolution is about to transform higher education. To participate in this revolution, all of us in higher education need to explore a critical concept: “universal design.” Universal design was originally aimed at innovations in architecture, community spaces, and products, but today it is about creating services and products, from the beginning, in ways that will benefit the widest array of users, including those with disabilities, without the need for adaptation or specialized design. It is now time for universal design to make the jump to cyberspace: allowing everyone to engage fully in rich digital experiences is critical not only to a just world but also to a competitive higher education institution. Yet, we still have a long way to go if we are to embrace universal design fully as a core institutional value—and as a primary tool for creating effective electronic services for all members of the campus community.
Universal design has made a difference to all of us: services and tools that enhance accessibility invariably improve all of our lives. Curb cuts, automatic doors, speakerphones, text-to-speech capabilities, ergonomic keyboards and potato peelers, video captioning, zooming and other gestures on smart-phones and tablets, and motion-sensorlighting—although many of these improvements were originally driven by the needs of those with disabilities to participate or be included, the broader community has benefited enormously from the increased flexibility and convenience that universal design has brought. For those with disabilities, however, universal design is far more than a matter of flexibility or convenience; they face significant barriers in accessing the innovative and valuable services and tools essential for daily life. This is largely due to the fact that universal design is still viewed as a costly, after-the-fact consideration rather than a cost-efficient, basic component of procurement, design, and integration.

Although many people may not self-identify as having a disability, all of us occasionally have limitations that significantly affect our experience with physical or digital environments. If we live long enough, most of us will need universal design for our own participation in society. Just as important, we all learn and engage differently, and these differences, it turns out, are crucial to the competitiveness of higher education institutions, which thrive as centers of diversity and the excellence to which it contributes.

Universal design is critical for consumer electronics: we’ve seen significant dialogue recently on the accessibility of electronic readers, for example. But digital universal design is much broader. Because we live so much of our lives in the context of online services and information, we will see, over the next five years, a rapid shift in the focus of universal design across campuses nationwide. This shift will be toward Universal Design for Digital Environments (UDDE): designing electronic services and products effectively from the start so that they allow full engagement in the rich experiences of the electronic world, thus creating new capabilities that serve everyone. UDDE comprises universal design for electronic services, for web pages and web-based services, for electronic materials, media, and publications, and for electronic simulations, games, social networking, and online environments generally.

The Internet has matured to become the “front door” of academic life—more and more, the web is the center for learning, teaching, collaborating, and information sharing, as well as for provisioning and receiving financial, medical, and other services. Students, staff, faculty, and alumni alike make decisions on how they will become—and whether they will stay—engaged with the institution to a great extent based on perceptions shaped by their electronic interactions. Electronic publishing and online journals are now the norm for most academic disciplines. Universal design in technology-enhanced courses will ensure that students have multiple means to acquire information and knowledge, to demonstrate what they know, and to be engaged as learners. Students who are the first in their families to attend college or whose family members do not speak English at home are a growing part of the national demographic; participating through online discussion groups, rather than in-class discussions, may help such students to thrive intellectually. Alumni stay in touch mostly through electronic outreach, which creates higher-level opportunities for institutional giving.

Over the next years, campus leaders can expect to see the effectiveness and accessibility of electronic services and materials become a key measure of excellence for institutions of higher education nationwide. Indeed, the 2009 Campus Computing Project found that for CIOs, compliance with the Americans with Disabilities Act was among the top issues confronting online education over the next two to three years. Within five years, by 2015, many current problems need to have been solved: web pages whose navigation is “all over the place” and web-based courses that inadequately serve many members of the community, such as first-generation college attendees or those with learning disabilities; “cool” multimedia-intensive and digitized textbooks that provide separate-but-equal access to innovation and content; self-service administrative services that require phone-based handholding because they were designed in the days of paper forms. In addition,
even though the accessibility of web content has been improved on many campuses (a remarkable achievement), this process has often been one of remediation. Instead, UDDE is about taking a proactive approach to designing-in accessibility.

**Digital Access Problems**

What do we mean when we say that many individuals with disabilities have problems with digital access? Unfortunately, Internet-based courses and applications have created a digital divide for many students, faculty, and staff who have disabilities due to vision, hearing, motor skills, cognition, or photoepilepsy. They are often unable to access content or functions on the Internet, even with assistive technologies that allow them to do so. Although barriers to Internet access are generally the result of the design of web pages and applications, these design barriers can be prevented. High-end designs, even those with embedded media, can be made accessible without substantial changes to look or feel. For example, to access class content, a student who is blind and uses a screen reader (assistive technology that “reads” the content of the screen to the user and provides audio output) needs to have text equivalents for all non-text elements (e.g., descriptions of graphs, tables, and pictures). A student who is deaf requires that video content have captions and that audio-only content (e.g., podcasts) have a link to a transcript. A faculty member who has quadriplegia and uses a voice-recognition program requires that all elements of web pages be keyboard-accessible in order for the software to function properly, yet many developers typically require the use of a mouse and rely on “mouse-only” functions in their development practices.

The technical capability is within our grasp. With more scholarly materials and even textbooks moving online, we need universal design to ensure that these electronic materials are organized and presented in an accessible way. Just as e-publishing needs to adapt to different form factors for viewing—e-readers, large displays, smart-phones—it also needs to adapt to different viewers. Often the same adaptable technology that encodes the underlying layout and metadata can serve to increase both accessibility and flexibility in how the text and multimedia of a next-generation publication are presented. Today, with almost all publications starting life electronically, the current practice at many institutions—ripping apart and scanning paper textbooks—needs to be replaced with a better way to ensure that all students can read the publications and that all faculty can teach from them.

Universal design will also help ensure that all faculty and staff can execute the full range of digital job functions without alteration and can participate in the increasingly digital campus community in meaningful ways without accommodation. As part of administrative streamlining, many campuses are recognizing that well-designed administrative systems—with high-quality, easy-to-navigate “knowledge bases”—can save money by dramatically reducing the number of high-cost helpdesk calls and by simultaneously increasing customer (faculty, staff, and student) satisfaction.

**Project GOALS**

To assist college/university leaders and their staffs in creating and maintaining an accessible online presence, Project GOALS (Gaining Online Accessible Learning through Self-study) has developed a collection of materials and processes specifically tailored to help higher education institutions plan for, and achieve, enterprise-wide web accessibility. These materials have culminated in the GOALS Web Accessibility Benchmarking & Planning Tool.

This web-based tool consists of a set of institutional indicators and benchmarks that outline best practices. It guides the institution’s appointed team through a process of self-study via a series of questions, which are used to create a snapshot of the institution’s web accessibility. To assist the team in creating a customized action plan for improving accessibility, the tool provides resources, generates reports, and allows institutions to compare the results of their current cycle of assessment with previous results—or with those of other institutions.

To learn more about the Web Accessibility Benchmarking & Planning Tool or any of the GOALS materials, visit <http://ncdae.org/goals>.
Well-designed, accessible administrative systems are good business.

The community need is present—and growing. In 2009, almost 12 million students took some or all of their classes online. This growth is exponential, with estimates that more than 22 million students will be taking classes online by 2014.7 Online course elements are used in both distance education and traditional campus-based courses, making significantly higher the number of students using the web as a critical component of learning. Roughly four of every five Americans are online; however, for the 8.5 percent of the U.S. population who have at least one disability that affects computer and Internet use, inaccessible websites can inhibit or severely restrict their participation in higher education.8

Even though modern assistive technologies and digital media can enable unprecedented access to information and services for students, faculty, and staff with disabilities, equal participation requires equal access. This is a critical point to emphasize: in addition to ensuring that those with disabilities have access, we must provide equal access with comparable, not lesser, experiences.

Call for Action

IT administrators and their colleagues must take a lead role both in bringing these principles to the cabinet and other senior forums and in changing the paradigm to incorporate universal accessibility into everything done online. Yes, incorporating universal accessibility is the law and the right thing to do. In addition, doing so

- reflects institutional mission, leadership, and values;
- serves all constituents (from students to post-baby boomer alumni);
- makes sound fiscal policy; and
- adds value to the institution.

Reflecting Institutional Mission, Leadership, and Values

An institution’s online presence is a visible manifestation of its values. Web accessibility promotes the institution as being socially responsible and engaged with the needs of both the campus and the broader community. Most important, it underscores an institution’s commitment to quality student outcomes and employee productivity, and it supports diversity at all levels. Yet even though 86 percent of institutional mission statements contain language supportive of web accessibility in higher education,9 many colleges and universities have yet to incorporate web accessibility into their institutional plan.

When a leader’s commitment to web accessibility is echoed in the institution’s strategic plan, values become aligned, and students and staff members benefit. Strategic planning on web accessibility is also advantageous during the accreditation or reaffirmation process. For example, the standards and criteria of the regional accrediting bodies that represent higher education underscore issues such as providing quality education and services to all students, instituting a policy of nondiscrimination, focusing on public service, supporting lifelong learning, and emphasizing ethics and integrity.10 Any of these items can be referenced during reaffirmation when describing web accessibility efforts.

Serving All Constituents

Student success is a result of policy, planning, and process. A reactive approach to students’ needs creates unnecessary delays, when timing is of the essence. Students’ learning, outcomes, and satisfaction are negatively affected if they are unable to access web-based course materials at the same time as their peers or if they must wait for after-the-fact accommodation of institutional processes (e.g., registration, financial aid, student employment, housing options). As Sachin Dev Pavithran, a blind student and employee, noted: “Inaccessible websites make it difficult for me to do any online research that is associated with my school or job. Having to wait for assistance or materials while my peers have instant access is frustrating and limits my opportunities for participation, which in return could also be an obstacle for me for any advancement at my place of employment.”11 In today’s technology-rich environment, pedagogical principles such as just-in-time learning, engaged learning, and student-centered instruction are lost if a student must wait for accommodations due to an inaccessible website.12

Likewise, working with the Internet has become an integral part of most academic job descriptions. Faculty and staff in higher education are expected to be on a par with their students, many of whom are digital natives.13 Essential operations such as test delivery and
course administration are handled through online learning management systems, and critical administrative functions such as financial tracking and student enrollment have largely migrated to an online infrastructure. For many faculty and staff, effectively and efficiently performing their jobs means that they must be able to work within these programs and access other necessary online information and materials without having to wait for accommodations or to rely on others for assistance.

In addition, the utility of the web in recruiting students, faculty, and staff is incontrovertible. More than 65 percent of college-bound students reported that the web was more valuable than print resources for choosing an institution. According to a 2006 Pew Research Center study, 42 percent of Americans said that the Internet played a major role when they decided on a college for themselves or their children, and 14 percent said that the Internet played a major role when they switched jobs. Given the significance of an institution’s website in the recruitment of potential students, faculty, and staff, a website that exhibits an understanding of and concern for the needs of students and employees with disabilities is more likely to attract and retain those the institution hopes to recruit. An accessible web presence underscores an institution’s commitment to diversity and can aid in efforts to achieve and retain a diverse student population and workforce. Retention is especially critical considering that the estimated cost for recruiting a single student to a four-year institution today ranges from $400 to $2,000.

The institutional website also helps to build and maintain relationships with the local community and alumni, who look to it for information on institutional activities, academic programs, and sporting events. College websites are proving to be an important fund-raising and development tool as well: a 2005 survey by the Council for Advancement and Support of Education (CASE) reported that the 100 schools responding to its survey raised $4.8 million dollars online. With aging populations experiencing disability or diminished function at a higher rate than younger people, the need for accessible websites is apparent as an increasing number of alumni approach retirement age.

### Making Sound Fiscal Policy

As higher education institutions face repeated economic challenges, finding ways to improve efficiency and reduce costs while maintaining quality is essential. Too often, accommodations for inaccessible web content are made only after the fact, when the student or faculty requests them. Although this may meet the legal requirements (i.e., to supply reasonable accommodations for students under Section 504 of the Rehabilitation Act and for employees and other community members under the Americans with Disabilities Act), it can lead to an inefficient use of limited resources. This inefficiency is similar to retrofitting a house after it is built: doing so costs much more in the long run. When web content is created once, rather than re-created or repurposed to provide access to some, it will cost less to do so.

Moreover, when an institution relies on after-the-fact fixes and accommodations, it can lead to an inequitable situation for those with disabilities. Often these accommodations take time, and those with disabilities must rely on the work schedule and workload of others whereas their peers can access necessary information at any time. This leads to significant disadvantages for students and staff and is increasingly a focus of legal complaints. When the issues affect the timeliness and the effective communication of materials, courts have consistently found in favor of plaintiffs.

Complaints and litigation can be expensive for any institution. The United States has many protections in place to ensure that people with disabilities receive equal treatment under the law. Students, staff, and faculty with disabilities are more informed than ever before regarding these laws and their civil rights. Activists and advocate groups are effective in securing equal participation in higher education. An institution with an inaccessible web presence is in danger of becoming the target of a complaint or lawsuit that, regardless of the outcome, could result in negative publicity and added costs to the institution. Although an enterprise-wide commitment to web accessibility does not guarantee protection from complaints or suits, an active and enforced policy demonstrates good faith and can help mitigate the effects.

Current web standards recommend that accessible content be integrated into
web design from the outset. Accessible websites provide better value for students, faculty, and staff with disabilities. They are also more efficient, allowing those who are tasked with providing accommodations to focus on special needs rather than having to spend time and limited resources on fixes that could easily have been incorporated in the initial development. Accessible design does not need to affect the quality or the look-and-feel of an institutional website or of its programs.

Requirements for digital accessibility are now starting to appear in grants and contracts funded by many sources, including the U.S. federal government, many state and international governments, and private foundations. It is important that an institution be equipped to address new requirements in proposal narratives. If the accessibility of web content and digital products resulting from research is not addressed, institutions may lose points during a competitive peer-review process, reducing their competitiveness in securing grants and contracts. Of course, failure to acknowledge stipulations in existing grants could also result in a violation of the terms of an already awarded contract.

One mechanism for fighting increasing budget challenges is the educational collaborative. Many institutions have embraced coordinated efforts as a way to stretch limited resources. Faculty sharing and course-delivery arrangements are now part of most regional educational collaboratives. They provide a venue to disseminate and administer courses across the member institutions. As institutions within these collaboratives adopt policies that mandate web accessibility to specified standards, those institutions that do not meet the criteria may find their collaboration opportunities limited.

The demand for web accessibility extends beyond the borders of the United States. The United Kingdom, Australia, New Zealand, Canada, Mexico, Japan, and the European Union all have regulations requiring web accessibility for content used within their borders—even if the content is created and housed elsewhere. Currently 174 countries are signatory states to (and 95 have ratified) the United Nations Convention on the Rights of Persons with Disabilities, which includes stipulations for web accessibility. If an institution wants to compete and collaborate in an increasingly global market, it will need to ensure that its web content meets the accessibility standards of other countries.

Adding Value to the Institution
In the physical world, curb cuts—the breaks in sidewalks that allow wheelchair access—are also useful for parents with strollers, people with carts, skateboarders, and cyclists. Likewise in a virtual environment, accessibility features offer benefits to a wide range of people. For example, captioning web-based video content provides multimodal support for different learning styles and helps index content so that it can be searched. Individuals can turn to captioned media if they find themselves in noisy environments, without computer speakers or headphones, or in quiet locations such as libraries or labs. In addition, second-language learners (including students and employees) can use captioned materials as a tool to improve understanding of the content and overall language skills.

Moreover, several attributes of accessible web pages can promote technology innovation on campus:

- They generally load more quickly in browsers.
- They require less bandwidth.
- They are easier to maintain and update.
- They tend to have a higher return in prominent search engines (e.g., Google), which means that the resources required for search engine optimization can be reduced.

Standards-compliant websites are also more likely to be compatible with newer browsers and emerging technologies. Institutions that desire to offer services and information via netbooks, smart-phones, tablets, and other mobile devices will benefit if their content is already accessible and if they have systems in place to sustain accessibility.

The Need for Leadership
Although it is critical for institutions to have dedicated, selfless champions for the accessibility of online services, far-reaching solutions must be implemented enterprise-wide. The decentralized nature of most institutions can marginalize the work done by individual champions or even
outstanding departments. Often, accessible web content is surrounded by inaccessible content beyond the control of these advocates. Because the interconnected nature of the web requires that an individual navigate around a site, not a page, the most accessible web page in the world is still inaccessible if a user with disabilities must navigate inaccessible pages to get to it.\(^27\)

Successful implementation of web accessibility thus requires enterprise-level action.\(^28\) Leaders must help staff understand why enterprise-wide web accessibility is important and must provide the resources and motivation to make it happen. To assist in integrating universal design into the fabric of the college or university, leaders must guide institutions in fundamentally committing to UDDE throughout all levels of the enterprise. It’s not only the right thing to do; it’s the smart thing to do.

**Notes**

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13. Scott L. Howell, Peter B. Williams, and Nathan K. Lindsay, “Thirty-two Trends Affecting Distance Education: An Informed Foundation for Strategic Planning,” *Online Journal of Distance Learning Administration,* vol. 6, no. 1 (Fall 2003), [http://www.westga.edu/~distance/oida/fall03/howell01.html](http://www.westga.edu/~distance/oida/fall03/howell01.html).


20. See the Southern Regional Education Board’s Electronic Campus (http://www.electroniccampus.org/) and the Western Interstate Commission for Higher Education's Internet...
Universal Design for the Digital Environment

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