CHAPTER 8

PHYSICAL AND LEARNING DISABILITIES IN OWI

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OWCs are not fully accessible to students with physical disabilities and learning challenges at this time. *A Position Statement of Principles and Example Effective Practices for OWI* (CCCC OWI Committee, 2013) addresses these accessibility issues. This chapter interprets OWI Principle 1 while providing a rationale for the need for accessibility. Drawing on research in the fields of disability studies, writing studies, and technical communication for a rationale for disabled access, the author outlines the main points of the Universal Design for Learning Guidelines 2.0, discusses the key accessibility barriers for disabled students in OWI, proposes a disability and accessibility agenda for writing programs and illustrates how educators can employ the OWI effective practices to move toward an inclusive and accessible pedagogy. The chapter ends with suggestions for conducting further research in OWI and accessibility.

Keywords: access, Braille Display, Disability Services, Universal Design for Learning

In this digital era with promises of seamless, ubiquitous, and virtual technologies, more often than not we teach online courses that do not reach our students who have visual, hearing, physical, learning, and dozens of other disabilities. Educational institutions spend millions of dollars to purchase computer equipment that cannot be used by all students, and we publish research that does not even give a nod to this group although they are already a sizeable minority in our colleges. In 2008, for example, 11% of US college students reported having a disability (US Department of Education, 2012). Examples of failure to address disability in otherwise excellent publications on OWI include those by Kellie Cargile Cook and Keith Grant-Davie (2005; 2013); Beth L. Hewett (2010), and Scott Warnock (2009). Researchers in OWI have overlooked disability in their discussions even when they are considering the questions of access (see, for example, Gibson & Martinez, 2013) although Hewett has made considerable additions regarding access in her updated version of *The Online Writing Con-*

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ference (2015b). While it may seem unnecessarily strident to call out scholars who are on the CCCC OWI Committee, their self-admitted previous failures in addressing inclusion and access for OWI and their determined goals of doing so in this book are hopeful for future OWC students and for OWI to become a morally, ethically, and legally just discipline.

The design of most online courses lags behind the innovative mainstream technologies and remains less than desirable for disabled students due to the inaccessibility of delivery tools or the content itself (Treviranus, n.d.) although many accommodations for students with print impairments or other disabilities can be accomplished with digital technology. We also cannot lose sight of the fact that "access to education provided by distance education is a necessity for all kinds of learners who are place-bound due to factors such as scarcity of public transportation, restricted employment possibilities, child-care demands, another family member's disability-related needs, or sheer remoteness of their domicile" (Rintala, 1998), issues addressed in more detail in Chapter 10.

College education can help disabled people become intellectually mature, acquire literacy skills to speak for themselves, and advocate for an equal place to live in the world. From a socioeconomic perspective, when a person with a disability or from any other underprivileged group is employed, the person's individual advantage also translates into benefits for the society in several sectors (Erisman & McSwain, 2006; Institute of Higher Education Policy, 1998). It takes them off the Disability Income rolls for financial support; improves the country's economic base through contributions to Social Security and other taxes, and offers greater opportunities to the disabled individuals to participate in the community's civic life. The benefits of the link between literacy and technology have been established in writing studies literature (for example, see Selfe, 1999). No doubt, with the added income, these meaningfully employed disabled college graduates also will have a higher consumption level and thus grow the national economy.

I am not making an essentialist argument about what online technology can do for the disabled and other place-bound students; rather, my arguments for accessible technologies regard the need to provide equitable educational tools to these populations so that they can have learning opportunities comparable to their non-disabled peers. Laura Brady (2001) cautioned about the dangers of essentializing contemporary digital tools, as well as OWI because access is not simply a matter of an up-to-date personal computer, an Internet connection, and enough funds to pay the college tuition. Exploring the questions of social and economic class in "Fault Lines in the Terrain of Distance Education," she mapped out three surface irregularities: access, students' perceptions of teachers' roles, and retention patterns in OWCs. She explained what she meant by these

"irregularities" or "fault lines" by asserting that:

> distance education holds out the same hope as education in general (equal opportunity for all) and combines it with a popular belief in the transformative power of technology: it emphasizes the ideal of anyone learning anytime, anywhere. The result is a powerful ideology that explains and perpetuates existing social relationships and that makes an individual's place within that order seem natural. (2001, p. 353)

As I reflect on these facts of disparity in online teaching that Brady recorded more than a decade ago, I am reminded of a recent email exchange on the Discussions in the Field of Disability Studies and Rhetoric and Composition ListServ by a number of writing studies scholars about an online instruction study. A team of researchers from Columbia University had released the results of a longitudinal study of online instruction in community colleges they conducted in my state, Washington, in February 2013 (Xu and Jaggers, 2013). As expected, scholars invested in disability research and online instruction on this list had picked up the report to see whether this time disability had been included in a high-visibility study. In its results, the study reported that "males, younger students, Black students, and students with lower levels of prior academic performance had more difficulty adapting to online courses" (p. 6). These researchers expanded on these findings in the discussion and conclusion sections by extrapolating that "these patterns also suggest that performance gaps between key demographic groups already observed in face-to-face classrooms (e.g., gaps between male and female students, and gaps between White and ethnic minority students) are exacerbated in online courses" (p. 23). Xu and Jaggars stressed that these findings were troubling to them from an equity perspective and they worried that "online learning could strengthen, rather than ameliorate, educational inequity" (p. 23). What troubled the disability and rhetoric Listserv readers most from another angle of equity was that these researchers had studied Washington State's online instruction for years but the disabled students never appeared on their investigative radar. What has happened yet again is that the category of "disability" failed to make it into these researchers' population charts. The omission probably felt more irksome to some of us who teach writing because "English and social science" were on the top of the authors' list where a high proportion of even nondisabled students had more difficulty adapting to the online environment (p. 24).

Several members of this national discussion list inquired about this omission to understand whether this was reflective of the overall state of "things disabled" in Washington. The group also wanted someone from CCCC OWI Committee

to voice this concern. I wrote back to say that:

> My suggestion is that any comments you send to CCCC should go both to all the members of the Executive Committee of the organization and the Committee on Online Writing Instruction (COWI). Ultimately, it is the [Executive Committee] EC that has the power to act and enact. I'm copying Beth Hewett on this message but a message from Brenda [Jo Brueggemann] to EC will be very helpful.

I further wrote:

> I'm on this committee and I'm pleased to note that Beth [Hewett, the Chair of the original CCCC Committee on Online Writing Instruction and present Co-Chair] has listened to my constant harangues about accessibility very patiently. Based on the field research we have conducted on the state of Online Writing Instruction over the past six years, we as researchers and as a committee have a sense that writing faculty across the country are interested in accessibility, want to offer accessible online courses but they also sorely lack technical, training, and pedagogical support from administrators. (February 24, 2013)

In our national survey in 2011, I had formulated a set of disability-focused questions to capture the accessibility dimension of online teaching, and what we learned did not shock me as a person with some experience with disability and accessibility. We heard that people did not know whether they were teaching disabled students; if they knew they were doing so, then they did not know what they could do to support them and they did not know where they could themselves get training to help these students beyond giving them the phone number for the Disability Services Office on campus. Some respondents blatantly admitted that they did not believe they were obliged to help disabled students in any way at all.

In contextualizing the survey, I further reported to my peers on this Listserv that:

> Consequent to this survey, our committee has embraced the concept of accessibility at the interface level and endorsed the concepts of Universal Design for Learning with emphasis on both accessibility and usability for the disabled students and faculty. You will see that the long expected Effective Practices

> for Online Writing Instruction document composed by our committee after six years of detailed academic research, including a nation-wide survey, interviews, focus groups, and of course, a thorough literature review, will reflect this disability and access focus. (February 24, 2013)

This is the baggage with which I enter into this conversation about OWI in this book, and, of course, in the CCCC OWI Committee, I wear the hat of so-called accessibility specialist. My goal in this chapter is to promote, explain, and exemplify OWI Principle 1: "Online writing instruction should be universally inclusive and accessible" and, whenever relevant in this meta-discussion of accessibility, wrap my fingers around some of the OWI issues in other chapters to provide further gloss on accessibility (p. 7). My point in providing the above anecdote about the Washington State report is to remind ourselves that disability and accessibility challenges are everywhere in America and, simultaneously, nowhere. We see disability as a fact of nature, but we do not recognize it as a fact of life, particularly of our academic work life, and even more crucially, our teaching life. Disability—and the concomitant need for access—still resides in that corner of the university, the college, and school where the Disability Services office is or where the disabled students' Resource Room is.

The purpose of this chapter is to interpret the OWI Principle 1 more completely to pull disability from the margins toward the center. Since this first principle is an overarching one, this chapter also should serve as a rationale for inclusivity and accessibility while enhancing our general understanding of accessibility issues. This chapter amply describes where we stand with the accessibility of OWI courses, but it aims at promoting accessibility practices and strategies for teaching writing online from various principles (See for example, Principles 1, 9, and 15). Other chapters in this collection contextually address other practices as a matter of designing inclusive pedagogy (particularly, see Chapter 11 by Lee-Ann Kastman Breuch.) I employ several programmatic and classroom scenarios throughout the chapter to substantiate the situations and problems I discuss so that WPAs and OWI instructors may consider how they can integrate disability inclusive thinking in their local settings. The chapter takes its bearings from research in the fields of disability studies, writing studies, and technical communication. In the remainder of this chapter, I explicate the first OWI principle in some detail, summarize the key points of the Universal Design for Learning (UDL) Guidelines 2.0 that further elucidate OWI Principle 1, discuss the key accessibility barriers for disabled students in OWI, and then explain how we can employ the OWI effective practices to move toward an inclusive and accessible pedagogy. In the concluding section, I speculate on some possible paths

for accessibility and disability research in OWI.

A POSITION STATEMENT OF PRINCIPLES AND EFFECTIVE PRACTICES FOR OWI

The CCCC OWI Committee initially considered access in terms of the various constituencies: students faced with problems of technical and economic access to Internet technology, students who are developing linguistic proficiency in English, students living in remote rural areas confronted with an Internet connectivity gap, disabled students lacking access due to personal, technical, and institutional accessibility problems with technology, students lacking access to online writing pedagogy due to learning disabilities, and so on. As we mulled over these multifarious access issues and as we analyzed survey data from disability-related questions, we realized that many of the issues affecting disabled students also affected other constituencies. Our study of the fast-growing literature in the fields of disability and accessibility repeatedly informed us that the affordances provided by the flexibility and diversity of the disability-centered accessible pedagogy are equally beneficial for nondisabled students given various learning styles and approaches. We also realized that unless we moved these issues from the periphery to the center of OWI pedagogy, we could not address questions of access at the institutional and discipline level meaningfully. Some of this thinking also was based on our understanding of other findings of disability and accessibility research that repeatedly has proven that addressing these questions of accessibility after the fact (or from the periphery) results in temporary and generally poor fixes that provide only limited access and further marginalizes these constituencies.

While I do not subscribe to all the claims about accessibility made by the proponents of Universal Design, UDL, and interface-level design—numerous other social, market, institutional and other factors are equally responsible for the neglect of accessibility issues for these marginalized users—I believe that the frameworks afforded by these design and pedagogical perspectives offer a reasonable starting point to begin our systematic search for accessibility in OWI. For example, the principles of Universal Design, which originally were conceptualized in architecture for designing accessible edifices, are not adequate in educational settings because teaching and learning are dynamic interactions orchestrated by diverse actors. The contexts within which OWI pedagogical and learning acts occur are always fluid and they cannot be compared to building wheelchair ramps and placing Braille signs. Whereas the advocates of Principles for Universal Design might have some ground to claim that 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," OWI pedagogy, or any other pedagogy for this purpose, cannot find a stable ground to make such a wide-ranging assertion (The Center for Universal Design, 1997). Likewise, the UDL goal of serving all students with a general framework for accessibility is simply unachievable because student disabilities can be so varied and the individual accessibility needs of each disability are so different (CAST, 2011).

Returning to *A Position Statement of Principles and Example Effective Practices for OWI* (CCCC OWI Committee, 2013) and its OWI principles and example effective practices for accessible pedagogy, I also want to emphasize that merely following the document will not make our OWCs accessible. Instead, we need a fundamental attitudinal shift in our field. While OWI Principle 1 recommended "using multiple teaching and learning formats; welcoming students with disabilities in course syllabi; and including disability issues or perspectives in course content and faculty development workshops" (p. 7), these practices are merely places *to begin* thinking about disability and accessibility. Our educational institutions and our pedagogies have thus far been conceptualized only for able-bodied students and those with typical learning abilities and preferences. As a result, this conceptualization of the purposes and practices of the academy has rendered disability invisible. To make room for these additional and different bodies, we will need to overhaul every aspect of our academic infrastructure. OWI is in an advantageous space to integrate this population because the online media are still in developing stages and the OWI field has yet not fully defined its philosophies and practices. The CCCC OWI Committee's commitment to an accessible online pedagogy is the first concrete evidence of the CCCC's delivering its earlier promises of inclusivity and accessibility as stated in its "Policy on Disability in CCCC" (2006, reaffirmed 2011). While the members of the CCCC Committee on Disability Issues in College Composition have promoted access in their activities, the CCCC OWI Committee's position statement is the first major, organization-wide initiative. Another important aspect of the CCCC OWI Committee's recommendations is in the recognition of the intersections of disability, multilingual learning, and basic writing in face-to-face, hybrid and fully online OWI.[1]

The twelve example effective practices written for OWI Principle 1 are an effort to draw the OWI community's attention to certain focal points for beginning to consider disability and accessibility inclusively, conceptually, and pedagogically. For example, in OWI Effective Practices 1.1, 1.4, 1.6, and 1.10 (pp. 9-10), when attention shifts from pedagogy to audience/students in choosing a modality, the CCCC OWI Committee urged educators to stop conceptualizing OWI pedagogy for the erstwhile stock audiences who were assumed to

be able-bodied and enjoying all the access to technology that an institution of higher education offers. Likewise, OWI Effective Practices 1.2 1.3, 1.8, 1.9, and 1.11 draw attention to the reality that a sizeable segment of the student population (pp. 9-11), including disabled students, might not have had an opportunity to use the learning technologies and other resources educators might take for granted. These recommendations also draw attention to the institutional infrastructure that may or may not have any specialized technology available. Even if an institution has acquired this technology, it may not have a training program to assist students and faculty with such technology. The guidance about textbooks in OWI Effective Practice 1.3 pertains to the responsibility of instructors to choose only accessible textbooks (p. 9). While students cannot sue a publisher for offering inaccessible textbooks, they can take a college to court for assigning textbooks in inaccessible media. The textbook selection is one area where faculty have the power to choose accessible or inaccessible curricular materials. The Department of Justice's 2013 decision about the complaint against Louisiana Tech University has established that universities cannot pass on the responsibility of providing accessible curriculum materials to publishers (US Department of Justice, 2013).

OWI PRINCIPLE 1 AND THE UNIVERSAL DESIGN FOR LEARNING GUIDELINES 2.0

UDL Guidelines 1.0 were developed over time in the 1990s by David H. Rose and Jenna Wasson under the sponsorship of the Education Department at the Center for Applied Technology (CAST) and the National Center on Accessing the General Curriculum (NCAC) for secondary school settings; the guidelines began to be expanded to include higher education immediately (CAST 2008; Rose & Meyer, 2002; Rose & Meyer, 2006; Rose, Meyer, & Hitchcock, 2005). The UDL Guidelines 2.0 updated the earlier versions, particularly in the use of multi-modal means of representation and expression, and they have been applied broadly at all levels of education (CAST 2011). The UDL Guidelines 1.0 define Universal Design for Learning as "a process by which a curriculum (i.e., goals, methods, materials, and assessments) is intentionally and systematically designed from the beginning to address individual differences" (CAST, 2008). The Higher Education Opportunity Act of 2008 placed UDL in the legal domain by defining it inside the language of the act. According to this Act:

> the term Universal Design for Learning means a scientifically valid framework for guiding educational practice that: (A) provides flexibility in the ways information is presented, in

> the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient. (122 STAT. 3088)

The UDL framework aims at short-circuiting the need for retrofits by employing contemporary technologies to provide access to diverse learners with varying skills, abilities, and aptitudes. The framework provides guidelines for accessible curricula under three categories: (1) "provide multiple means of representation" or the *what* of learning, (2) "provide multiple means of action and expression" or the *how* of learning, and (3) "provide multiple means of engagement" or the *why* of learning (CAST, 2011).

Although the twelve specific guidelines that UDL 2.0 presented are targeted at a whole array of disciplines ranging from mathematics to music, from the perspective of teaching writing online, many of the guidelines in each of the three categories are relevant. As it has been extrapolated to the OWI Principle 1, under the first category, OWI instructors should include options for "the display of information"; provide alternative representations of auditory and visual information for students with visual, hearing, and learning disabilities; use straightforward language to state ideas; and make underlying structural features of abstract ideas explicit using concrete examples in different modalities. Under action and expression, OWI instructors should assure full access to learning technologies to students with disabilities and make navigation of tools accessible, make physical action possible through multiple options for interacting with technology (e.g., mouse, keyboard, headpointers, and the like), employ a variety of media for communication, give students options to compose in multiple media, and provide sufficient technical support to execute the aforesaid. In terms of engagement, OWI instructors should give students enough autonomy to make our curriculum their own, applying diverse techniques and methods of knowledge acquisition and interaction. UDL Guidelines are in sync with the current goal-oriented, self-motivating, collaborative, and interactive writing studies pedagogy.

BARRIERS TO DISABLED ACCESS IN OWI AND HIGHER EDUCATION

The barriers to accessible education for disabled students in higher education

are created by several internal and external factors. Academia's attitudes towards disability, non-inclusive institutional infrastructures, indifference of technology developers towards the accessibility of educational technologies, the stronghold of ableist pedagogy, and the relative small number of disabled students and faculty can be held primarily responsible for the current state of affairs.

Institutional and Disciplinary Barriers to Disabled Access in Writing Programs

In 1995, disability theorist Lennard Davis declared, "Disability is an unavoidable outcome of living" (p. 8); in other words, all of us will be disabled in one way or another at some time of our lives. Yet, the academy continues to ignore that fact. Considering that the severely disabled still are woefully under-represented in the student body and faculty from this group remain few and far between, it is difficult to report meaningful progress in this arena. While writing studies and technical communication programs have registered great progress in preparing future professionals and college teachers, we still know little about disability, Disability Studies, and how to teach those students in our courses who happen to be disabled. Likewise, academic knowledge of teaching technical communication and composition to disabled students online has so far come from our own experiences, class observations shared at conferences, and a small body of published research for online settings—a great deal of which is also based on personal teaching experiences rather than empirical research (Lewiecki-Wilson & Brueggemann, 2008; Meloncon, 2013). Put together—OWI and the variegated disabilities of students (and teachers)—we know even less because we do not understand how we could make our knowledge and pedagogy accessible to all of them; nonetheless, these students keep arriving in our portals. In an online setting, this lacuna also might exist partially because we may not even know that we have disabled students in our courses unless they self-identify and partially because our discipline has hardly started to think of paying attention to disabled students in its conceptualization of pedagogical inclusivity and access (Oswal & Meloncon, 2014).

Why, so many years after the legislation of the ADA, is there not yet a long-term vision for accessible and usable OWI in this otherwise burgeoning field of education? We have not yet seen an LMS that offers multiple interfaces for interaction to users with diverse characteristics, learning styles, and adaptive devices (e.g., screen readers, headpointers, zoom software, and the like). We do not yet have a delivery tool that has truly adaptable parts and offers a range of features to cater to people who use digital technology differently. We do not think twice that a software package that can function perfectly only with a mouse might

be a useless string of code to a high percentage of users who have not been considered by its designer (to a degree this problem is one of the rhetoricity that Kevin DePew speaks of in Chapter 14). We do not know what is entailed in the design and development of a digital learning environment system that would permit gainful interactions by people of different abilities employing diverse adaptive technologies. We know that digital technology in itself is plastic enough, the World Wide Web is open enough to render its interfaces accessible to each student in a writing course, and HTML, the language of the Web, is versatile enough to accommodate the needs of a variety of users, but we do not know how we could persuade the developers of these interfaces to implement this flexibility in their online learning tools (Cooper & Heath, 2009).

Negative Attitudes towards Disability and Difference

Interesting parallels can be drawn between the view that cultural and racial differences are responsible for the English language "deficit" among multilingual students and the views about disability and the reasons for the success or failure of students with disabilities. Just as many times we fail to see that the English language reading and writing disciplines exclude anything that is not linguistically Anglo-Saxon, as able-bodied, highly intellectual professors, we also learn to design and teach courses for students who resemble our bodies and minds. We expect our students to perform the same functions with the same ease that we ourselves can exercise. Our convictions might have been validated in the past because a majority of our students succeeded in obtaining such competence. With the student demographics changing vastly because of the market demand for degreed workers, changing immigrant populations, the influx of disabled students, and the emerging historical research about the teaching of English during the past century, we are now learning that there always have been others who either are left to their own devices to fit themselves into the ableist mold or drop out of the higher education system. We should strengthen our own knowledge of linguistic differences, shed outdated teaching practices that were designed for an exclusionary era (Matsuda, 2006), and reinvent pedagogies and curricula to meet this different population. For example, efforts at educating deaf students so far have been concentrated on bridging the speech barrier between the hearing instructor and the ably-designed multimodal curricula through captioning, sound track transcripts, and interpreters. Very little research has been published in our field that proposes innovative pedagogies accounting for the linguistic differences between deaf and hearing learners. This research gap is particularly noticeable when it is a common knowledge that English is, at best, a second language for the deaf users of sign languages. Even the deaf-focused current

research has not yet addressed this linguistic difference at the pedagogical level (Babcock, 2012).

To buck this historic trend in the American university, English Studies scholar Brenda Jo Brueggemann (2002) and Technical Communication researcher Jason Palmeri (2006) have made a call to resuscitate disability as an "enabling and transformative insight" in our discipline. They question the precarious location that disability presently occupies in higher education. The disabled students and faculty on most campuses remain emblematic of their wheelchairs, white canes, guide dogs, and hearing aids rather than as dues-paying, permanent members of the academic community. The argument I want to extend in step with Brueggemann (2002) and Palmeri's (2006) call is that we need to devise means to understand how to culturally deconstruct and reconstruct disability in order to move away from the outdated notions of disability as a stigmatized, decayed body requiring help or healing; it should be placed next to other accepted, strategically situated, and celebrated categories so that our disabled students and faculty/staff colleagues can enjoy the same privileges that we take for granted as a matter of our presence in the academy.

Barriers Created by the Difficulty in Enforcing Disability Laws

Neither the ADA nor the other disability laws regulating education technologies restrict LMS manufacturers from introducing learning systems in the market without ascertaining their accessibility and usability for the disabled. Only the academic institutions have the power to enforce certain accessibility standards in their purchasing contracts; however, few colleges have yet taken this step to assure accessibility for their students, faculty, and staff. Most of the after-the-fact fixes provided by these developers fall way short of what a nondisabled user would find satisfactory from an ableist perspective. These retrofitted solutions rarely enable disabled students and faculty to perform at par with their peers and when it happens, it is only in selective pockets of the technology and lasts for only so long until the next system upgrade is implemented to undo the previous fix.

Even the proponents of adaptive system approach in the LMS industry, who draw upon the user data to design intelligent systems for driving the LMS, focus on the primary goal of efficiency rather than "to create an instructionally sound and flexible environment that supports learning for students with a range of abilities, disabilities, interests, backgrounds, and other characteristics" (Shute & Zapata, 2007). The problem with this last machine-centered approach of adapting LMS for individual users is that the users in this scenario are passive producers of data that gets scooped by the developers to figure out what the user

want. The users otherwise have no direct say in defining what they need; rather, it is the developer who tells them what they need on the basis of the intelligent system's analyses of the user interactions with the LMS. Moreover, these intelligent systems flatten all user data to fit it into pre-defined categories and the possibilities of custom designed access go out of the window even before it has been conceptualized.

Learning Management Systems and Their Inherent Accessibility Barriers

The next section expands on the chronic accessibility problems built into the design of latter-day content or LMSs, and it speculates on some of the classic causes for these problems to linger.

The History of Accessibility Problems in Early Online Delivery Tools

LMSs have had accessibility problems right from the beginning when they appeared on the academic market as bundles of tools built on diverse platforms lacking a foundational vision for interface-level access for a variety of users. Assembled from diverse sources, these commercially branded LMSs were targeted primarily at lecture classes, and their most attractive features for the instructors of these relatively large classes were the automated tools for quizzes. These LMSs eventually were to replace the faculty designed websites and hypertexts because of their greater interactivity. The university-based initiatives of this nature also started as an assemblage of tools and technologies suffering from the same accessibility gaps (see, for example, the University of Washington's home-grown assemblage of tools, Catalyst, which has otherwise been popular among faculty at a number of schools). We know through user experiences over the life history of these LMSs that the accessibility profile of these systems has not noticeably altered from that of their predecessors although they have many more contemporary tools available. Their developers have so far unrolled no master plans to amend the accessibility of these new tools (Oswal, 2013). Almost every one of the key players in the LMS market has implemented accessibility fixes from time to time under pressure from courts and organizations of the disabled, but an accessibility stalemate has so far lasted between what users need to learn or teach online and the commitment these developers are willing to make for this level of access. Their attention has remained on quickly adapting little-tested technologies and designs to compete in a trendy market rather than their pedagogical relevance.

From the perspective of Technical Communication and Composition Studies, even the innovative efficiency tools, such as Canvas SpeedGrader, do not

exactly meld into the process or post-process pedagogy due to its focus on evaluating student work quantitatively. What I want to underscore here is the impact of such innovations on the already restricted access available to the disabled. Designing a new academic tool almost a quarter century after George H. W. Bush signed the ADA into a law, the Canvas developers paid little attention to its accessibility for the disabled and it remains only partially accessible to screen readers after applying sporadic fixes. I do not have to belabor the point that presently a major gap exists between what LMS designers conceptualize as accessible systems and what their users' needs are. Designed with visual interface as the primary mode of interaction, these LMSs sorely fall short of what is usable through other modalities. Their designers also conceptualize accessibility as a crude, one-on-one correspondence of everything visual into speech device-readable text with little accompanying contextual information. Since these environments have been designed for the human eye, they do not lend themselves well to other senses. All other senses do not respond to surroundings as quickly as the human eye does and they require more contextual support for making userly decisions. They also lack the instinctive interfaces for use that otherwise have become available in mass-marketed consumer technologies employing iOS interfaces developed for the day-to-day applications by users with a variety of abilities and preferences.

Speaking in the context of instructor and student agency, Jane Seale and Martyn Cooper (2010) pointed to another contextual lacuna in these LMS tools from the perspective of instructor-student learning relationship:

> It is highly probable that teachers will need to use their teaching experience and knowledge of learner needs to judge how exactly to respond to advice or conclusions derived from the application of [LMS] tools. This might be because the advice privileges certain aspects above others or because it does not take into account the varied and complex contexts in which e-learning must demonstrate accessibility. These contexts might relate to the relationship that the learner has with the teacher (e.g. types of conversations and interactions) or the relationship that the learner has with the educational institution (e.g. types of systems that an institution puts in place to facilitate personalization of the learning experience by learners). (p. 1115)

Hence, OWI teachers themselves need to become aware of their students' needs as learners to begin to address the access problems of an LMS that fails the students.

LMSs and Non-Inclusive Learning Models

What Seale and Cooper (2010) underlined is true even for exclusive learning contexts where instructors are forced to co-opt into specific structures imposed upon by particular tools while potentially compromising the integrity of their curriculum and pedagogy. In the context of inclusive learning, these restrictive structures can be doubly damaging to the distribution of even the most inclusively designed curriculum and pedagogy unless they have been well tested both for their technical accessibility and human usability by mostly novice disabled student users. The interactivity tools—the chat programs and discussion boards— have serious accessibility flaws because they have been designed only for ocular efficiency and ease requiring significantly greater effort and time investment on part of the keyboard users. Not only do they lack instinctive interfaces, but they also fail to provide any meaningful ecological information to non-visual users. This information is readily available to the sighted.

LMS Industry's Unwillingness to Adopt Inclusive Design

Working within a content-oriented approach to accessibility, Martyn Cooper and Andy Heath (2009) addressed this problem of missing user-centered ecological access through a new model for designing access that moves the authority to determine what type of access a user needs from the producer, supplier, or author of an E-learning system to the individual user and the technological and human agents supporting this user. In this model, instead of an LMS telling the users what they can have, the users tell the system what they need. These researchers believe that such a system is possible through an upfront collection of metadata from users that could then be employed to drive the system interface design and content development process so that the users can have what they need upon demand. If implemented, such a system could stand for an extreme example of participatory design where users truly contribute to the design based on what they really want or need rather than what the designers think they want. Their model overcomes some of the weaknesses of the current participatory process where designers bring in users after they have already narrowed down the options and want user participants to mainly validate one or other of their choices. Under this current design regime, even when developers invite participants to brainstorm the design concept, user ideas rarely get the same consideration as the expert perspectives do and the participants seldom see through the complete product development process. Thus far, no one has come forth to implement this participant-driven model, which would not only help with access issues generally but with OWI specifically given that most LMSs have not been designed with writing instruction in mind.

The Role of Higher Education in Perpetuating Inaccessible LMS Designs

On the other hand, imagining that our universities do not have a major role in determining the design of these academic tools of the trade is simply mind boggling. How could our institutions be both the power houses for educating top-notch computer scientists and also be silent witnesses to these LMS designs with at best a less-than-desirable accessibility and usability record for users with visual, physical, and learning disabilities? Irrespective of who has what certification from which disability organization, not a single LMS during the past decade has been fully accessible to all disabled students (Petri, Rangin, Richwine, & Thompson, 2012). The instructor-side accessibility record of these management systems is even worse because totally blind instructors, for example, are a rarity and universities have not expended any significant efforts to make the LMS developers aware of these problems. Nevertheless, these accessibility problems are a major barrier for blind faculty in providing their students the same technology-rich learning experience as their sighted colleagues do. This access gap is not only an issue for students to receive an equitable learning experience in a blind instructor's course, it also affects that instructor in how the students evaluate them in comparison with their able-bodied counterparts.

Other Accessibility Barriers

Listed below are some of the other factors responsible for this accessibility-related techno stalemate in the United States:

- Lack of institutional policies for ensuring accessibility for the disabled
- Lack of implementation of disability policies when such policies exist
- Unwillingness of administrative departments—IT, libraries, student staff and faculty training, capital projects management, and purchasing and contracts—to view accessibility as their department's responsibility
- Leadership's own social attitudes towards disabled students, staff, and faculty
- Marginalization of disability and accessibility in almost every academic discipline in higher education

THE PROPOSED DISABILITY AND ACCESSIBILITY AGENDA FOR WRITING PROGRAMS

My practical purpose in composing this chapter has been to move educators—particularly OWI instructors—further along together so that those of us who are already committed to providing accessibility do not have to go on alone.

Speaking more directly, I would like WPAs—a hat I have worn—to know that full-time OWI teachers need your support in addressing this disability and accessibility agenda because nothing is more annoying than to hear on the disabled student discussion lists that they want to take online courses but these courses are simply not accessible to them if they are blind, deaf, or have hand-motor issues (see, for example, the archive of NABS-L, the Listserv of blind and visually impaired students run by the National Association of Blind Students). Within the local context, my appeal to WPA colleagues is that we should take the leadership role. We should act before online instruction gets set in a mold and becomes the new version of inaccessible face-to-face education. We should cry foul when our campus' IT czars adopt inaccessible LMSs. We should seek a seat at the table where these million-dollar decisions take place. We should argue for adequate training about adaptive technologies for our faculty so that they know what their students are using. We should invest resources in accessible content development from the start, and we should recruit disabled students actively. We also should hire disabled faculty so that we can cultivate a participatory atmosphere of accessibility for the disabled. OWI Principle 1 stated that we should adopt these measures as a matter of everyday academic life, not as a matter of legal expediency or an on-the-spot solution for providing "accommodations" because the disabled students are waiting at our campus gates (pp. 7-11).

Need for WPAs to Engage in the Technological Acquisitions by Universities

Because technological and pedagogical barriers are intrinsically interlinked in online instruction from the standpoint of catering to students with disabilities, one cannot teach without a delivery tool that is inaccessible to this or any other population. We should insist on our institutions adopting well-considered accessibility guidelines for acquiring and deploying new technologies for delivering online instruction both to meet their legal obligations and provide equal learning opportunities to all students. Student complaints about the accessibility of LMSs and other online educational tools are common now. Most recently, University of Montana and Louisiana Tech University have been in the news for failing to provide access to these resources (Szpaller, 2012; Department of Justice, 2013).

Technology and Pedagogy Are Intertwined in OWI

If we do not provide our faculty with accessible online interfaces to deliver curricula, whether it is our college's LMS, the online tutoring software, or just

the websites, we cannot expect to fulfill disabled students' needs. Angela Owusu-Ansah, Patti Neill, and Michele K. Haralson (2011) reported that, in general, "faculty are not in favor of the acquisition of distance education technology before the identification of programs and appropriate pedagogy." Since the primary purposes of universities from faculty's perspective are teaching and knowledge production, the high-level administrators' "tendency to invest in technology first and pedagogy or content second causes problems" (para. 26). These researchers' diagnoses are on the mark because a technical tool-driven curriculum and pedagogy serves technology first and our students last, something that Hewett (2013) argued against. It begins to control the learning process from the start and lets the curricular and personal goals fall to the wayside.

In the current social and legal milieu, writing programs will be served better by moving to an inclusive approach to technology adoption at the IT planning stages. WPAs should press for accessible technology options from university leaders just as we ask for up-to-date and pedagogy-appropriate technologies because inclusive pedagogy cannot be separated from accessibility. Douglas Levin and Sousan Arafeh (2002) claimed that their research indicates that many administrators interested in integrating new technologies throughout their campuses also have invested in resources for implementing distance learning appropriate pedagogy. With consistent effort and legal reasoning, such administrators also can be convinced to invest in accessible technologies.

Writing Programs Building Campus Coalitions for Promoting the Accessibility Goals

To achieve the goal of building an inclusive writing program that provides an accessible online learning experience for all students, designing an accessible institutional infrastructure is an imperative. To accomplish this task, the program leaders should work with administrative leaders across the campus to advocate for accessible technologies, library systems, tutoring services, and other academic infrastructure used by online students (see Chapters 5 & 6). Those WPA leaders who cannot develop such partnerships may have to opt for adopting simpler Web options for delivering online curriculum. The California State University system has tried to move in this direction by establishing university-wide accessibility standards for purchasing technology.

Need for Close Interactive Relationship between Writing Programs and Disability Services

WPAs with a disability-inclusive vision of their programs need to work with

the student services administration to have their staff develop disabled students' orientation programs that will benefit not only OWCs but also all other online and onsite writing curricula as well as teacher training (see Chapters 11 & 12). Such programs will help Disability Services staff understand student needs, plan essential services, and assist these students to plan for themselves. Students with severe disabilities, such as blindness and deafness, require better-than-average skills to succeed at college. They do not only need to learn how to navigate the eclectic learning environments of American postsecondary institutions but also to learn to mix and match accessible and inaccessible technologies to get the school work done. Our nondisabled students acquire all this through regularly offered technology workshops, well-organized learning tutorials by most campus libraries, and of course, working with technologies that have been custom-designed for their psycho-physical profile, tested with users similar to them, employing ably conceptualized methodologies, and made fully accessible and usable.

While we should incorporate disabled audiences as we design skills workshops on our campuses, the Disability Services staff also can point students to other available learning resources outside the institution that would enable them to function effectively in a technology-pervasive college, and afterwards work, environment—online and off.

Need for Developing Faculty Training in the Area of Accessibility and Disability

WPAs also will find that as the pressure from the enforcement agencies grows on colleges to become compliant with online course content, on-campus Disability Services will pass on these tasks to faculty for making the content of their courses accessible (see Ingeno, 2013). As the case law in the area of disability builds, institutions will have a difficult time avoiding the questions of adequate accommodations for disabled students at curricular and pedagogical levels. A vast body of UDL-based research has shown that the faculty fears about the loss of academic freedom also have so far not proven true (see Konur, 2007 for an excellent summary of the relationship between providing access to the disabled and its effect on academic freedom and standards). In our own field of writing studies, Sharon Crowley (1998) explained that whenever a new population group is first admitted to the university, an academic crisis always is imagined or created in response to the threat posed by the newcomer to the existing structure. Providing accessibility to the disabled often results in greater access to the curriculum for all students. While reconceptualizing and redesigning accessibility-focused curricula and pedagogy require a major effort and involve

a significant investment of time, in the long run the resulting improvements help WPAs and instructors meet their curricular goals much more effectively, increase student satisfaction, and raise retention levels. The Communication Access Realtime Translation system for the deaf (CART), for example, is for supporting deaf students, but it also can provide professionally finished class notes to all students when instructors deem it to be appropriate to share this information for later review.

Options for Addressing Ethical and Institutional Exigencies

I am arguing not only that it is our ethical responsibility to be inclusive of the disabled students but I also want to stress that accessibility is no longer optional. Being prepared for this group of students is an exigency because our interpersonal interactions with our students in online settings are mediated by technology that neither favors, nor prejudices against, disability but certainly makes these students' differences invisible. On the student end, unless adopted with due care by institutions of higher education, this very technology might raise additional barriers in the path of learning for our students in onsite, hybrid, and fully online settings. While in onsite, face-to-face settings, faculty might accommodate a student's needs upon arrival or even mid-semester, in an OWI course, by the time a student comes forth to report the problem with a course component or requests for a special arrangement, it might be too late to work in the required changes without upsetting the overall design of the course. The definition of being "access ready" in legal terms is not to make "just-in-time" alterations; it is to be access ready even if we do not expect a single disabled student to enroll in the course.

The following heuristic, based on the earlier discussed UDL Guidelines 2.0, can assist WPAs and OWI instructors in their own planning tasks and shift the curricular focus to include accessibility at every level of the course design:

1. Do the course goals address students with disabilities?
2. Has the curriculum been developed to address these goals, serving the needs of all students including students with disabilities?
3. Has the course content been selected with prior consideration of disabled students? Are there other, more accessible content choices that could meet curriculum needs while serving this group a bit better?
4. Have the technology choices for delivering this curriculum been tested with actual disabled students? If the campus LMS is not fully-accessible, what other delivery choices have been considered? Can the writing instructors do more with less technology in order to make these courses

accessible to all the students?

5. Are the pedagogical methods and techniques differentiated enough through "multiple means of representation," "expression and action," and "engagement" as described by Universal Design for Learning?
6. Do these techniques match and support the learning goals of a range of abilities and skills, the selected delivery tools, and the chosen curriculum?

Here is a WPA scenario with one of many possible physical disabilities: *Tomorrow is the first day of classes and one of your faculty just realized that the online multimodal module they are using for the first unit of the five sections of their introductory OWC has no captions. Only this morning, the Disability Services have given them a heads up about a student with hearing disabilities being enrolled in one of these sections. If you post a message for captioning services help on one of the Disability Services discussion lists, the chances are that in response you will receive a link of this sort, www.automaticsync.com, with the warning that quick fixes are expensive. It is likely that your OWI instructor will not have the captioned module for the student for more than a week because many other instructors across the country have made similar discoveries at the same time.*

In writing studies, we have tried to confront the core issues underlying most of the problems we have addressed during the past three decades as a disciplinary community with an identity: basic writers, multilingual writers, gender, and more recently, plagiarism. Hence, I would argue that we take a more comprehensive approach to respond to this contingency as WPAs. After we have convinced the academic technologies boss to pay the enormous bill for this quick-fix captioning job described above so that the institution meets its legal obligations, we still will need to get to the core of the real problem. Writing program faculty seem to be unaware of the implications of the disability laws to their curricula and pedagogy. They do not seem to understand that "readiness" for disabled students means "being always ready" and not running around for fixes after the student's accommodations letter is in their Inbox. It is also possible that the textbook adoption policy in this program has not been revised since the passage of the ADA.

To be inclusive and persuasive to faculty in such a situation, the WPA can set up a conference call or Web conference with the entire writing studies faculty—not only those who currently teach with OWI—for the purpose of starting the formulation process to achieve a functional policy document spelling out a summary of the institution's and writing program's disability accommodations policy and how to implement it. Also, the WPA can set a deadline for submitting requests for such accommodations by instructors irrespective of whether they expect a disabled student in their courses, and the WPA can provide details on how the overall process works. Working with a smaller group of instructors on

this all-inclusive outline of the document to produce a final draft, the WPA can produce a collaborative plan for responding to such contingencies in the future. Consulting the Disability Services and Special Education faculty for additional suggestions and verifications during this second phase can be helpful. Posting the document online and making time in the ensuing program meeting to walk everyone through the document for Q&A is an important step in getting the faculty to buy in. During this policy inaugural meeting, inviting the Disability Services and library accessibility staff to make quick presentations relating their accessibility services can get the faculty started with the process of updating their courses. Finally, producing a checklist from the program's newly minted policy implementation document for everyone to have in their teaching folders or to pin on the office wall can further reinforce the importance of accessibility.

To prevent this particular contingency in the future, it is crucial to write the textbook adoption policy to reflect the important curricular changes resulting from the influx of multimodal content in these writing courses. It also is necessary to describe the accessibility considerations that instructors should make before adopting any materials for their courses, including contacting the publishers and the college library for the status of captioning for hearing impaired on audio-visual items, audio description for the visually impaired on video content, availability of electronic text and/or recorded versions of your textbooks for students with learning and visual disabilities. On some campuses, these steps are performed by the Disability Services personnel as a routine function; so, faculty should first inquire if such help is there.

Faculty using complicated print textbooks with many visuals and graphs should check with the Disability Services about how to make such inaccessible book content accessible to disabled students (for a discussion of accessibility in technical communication textbooks, see Wilferth & Hart, 2005). Multimodality can be used constructively to solve such problems. Complicated graphs can be drawn tactilely employing a low-cost drawing kit from the American Printing House for the Blind, and the instructor can produce a transcript to describe each of the elaborate visuals and post them online for everyone's use. In a study of students receiving a mixture of asynchronous audio and text-based feedback, Philip Ice, Curtis Reagan, Perry Phillips, and John Wells (2007) recorded "extremely high student satisfaction with embedded asynchronous audio feedback as compared to asynchronous text only feedback" (p. 3). The authors suggested that what might be suitable for students with visual or learning disabilities might also serve others well, as is the contention in OWI Principle 1 as Hewett describes in Chapter 1 (see also Hewett, 2015a). Their interview data analyses revealed that the audio feedback was perceived to be more effective than text-based feedback for conveying nuanced comments. The students associated audio feedback with

feelings of increased involvement, enhanced learning community interactions, increased retention of content, and with instructor being caring. How often do our students miss an important detail simply because their eyes have yet not become trained enough to pick those minutia? Christine Neuwirth, Chandhok Ravinder, Davida Charney, Patricia Wojahn, and Loel Kim's (1994) study of voice and written annotations in reviews also provided interesting findings about these modalities. Instructors of multimodal composition and technical communication also can develop full-fledged assignments around such inaccessible course materials where the combined abilities of the whole class can be put to work, including the disabled students.

We also need to understand who is responsible for the accessibility of third-party content. Suppose the campus is increasing the number of online classes and expanding the use of technology in the on-campus classes. Specifically, faculty are increasingly linking their course pages to third-party websites, video clips, old radio programs, and podcasts that they did not create. Offices of Distance Education often assist with access for only the course materials that they help faculty create. The issues arising out of the faculty-created course content often fall outside the purview of these instructional design departments. For example, often there is a streaming video with no captioning, or transcript of the sound track. What can WPAs do to educate faculty regarding their responsibilities? Simply speaking, we should make faculty responsible for generating accessible content through enforceable policies. Faculty interested in experimenting with multimodal composing of course content also must learn how to make this content accessible. Likewise, faculty who use wide-ranging third-party content are responsible for making it accessible to all students.

Here is another scenario designed to convey the ethical and legal obligations in the OWI classroom: *An OWI .instructor has a student who is blind in a hybrid OWC where multimodal composing is taught and expected. Six problems are presented with the appropriate actions for addressing the problems directly following each one.*

1. The instructor posts the homework on Canvas, but the student states that Canvas is not very accessible with JAWS screen reader.

The institution is responsible for adopting an accessible LMS, and it is the instructor's job to report the problem to the department chair. The student has the right to file a complaint with the Justice Department if the institution does nothing.

2. In the onsite, synchronous sessions of this course, the instructor gives in-class short writing assignments to inspire students with the assigned reading or writing tasks. The prompts for these short assignments are placed in front of the class on a PowerPoint slide, but the student's screen reader cannot read these slides.

The instructor can learn to make accessible slides that can be read by a screen reader. Another option is to email this prompt to the student at the same time or before the class. (See this inexpensive resource for learning to design accessible documents by TechVision at http://www.yourtechvision.com/).

3. The instructor writes on the electronic whiteboard during class discussions and brief lectures in these synchronous sessions so that visual learners can stay connected, but the blind student cannot read from this electronic board.

Most technical communication textbooks explain that visual presentation of information is not enough. Reading displayed information aloud assists all students in comprehension and assimilation (Johnson-Sheehan, 2012). Information Design research also explains that a combination of text and images serves all readers best and enables greater comprehension (Kahn, Tan, & Beaton, 1990; Sadoski & Paibio, 2001; Schriver, 2013).

4. The major multimodal assignments for this course require the use of audio-visual tools, particularly Flash, and the blind student doesn't know how to use it with the screen reader. The instructor also realizes that these assignments will require visual composing and the question is how the student will handle it.

In any of the situations described above, it is important to mind Gail Hawisher and Cynthia Selfe's (1991) repeated advice to critically appraise technologies before allowing them into our pedagogy. A simple answer is that OWI teachers cannot choose tools that are not accessible to certain learner groups. Flash is extremely difficult to use without sight although it now does have some accessibility features built into it. Students with other disabilities or health conditions also can react negatively to Flash; therefore, researching technology choices for their accessibility to the disabled before adopting them should be included in course planning. Students should have a few alternatives when multimodal tools are central to the curriculum. After the signing of the 2008 ADA Amendments Act, the Department of Justice has pursued universities when students complained about the choice of inaccessible technologies by their schools. (See, for example, the 2010 joint "Dear Colleagues" letter to all US college presidents about Amazon's Kindle ebook reader from Education and Justice Departments. Most recently, in February 2015, the National Association of the Deaf and other disability rights groups have sought class-action status in a lawsuit against MIT and Harvard, claiming that their failure to include closed captioning in their otherwise freely available online course offerings constitutes discrimination and violation of the ADA (Lewin, 2015).) In case students are expected to learn these multimedia tools on their own, OWI teachers should check beforehand that the learning resource's particular tools also are accessible for students with disabilities. If teaching these tools is part of the course content, pedagogical techniques should be tailored for disabled students even though OWI Principle

2 stated that educators are not responsible for teaching technology. In this case, the exigency is that teaching the technology to the disabled student is crucial to the student learning to write in the course. The legal concept of "equal opportunity" kicks in automatically in this situation because as instructors we chose to include this learning unit in our writing classes. The distinction holds up even in curricular terms because these multimedia tools then become a segment of the course content.

5. The blind student is a fluent Braille reader, but the college Disability Services has only provided him with an audio-recorded version of the assigned text. The student claims that recorded books put him to sleep and he learns more by reading to himself in Braille. The instructor also believes that reading some of the sections closely in Braille is important, but the Disability Services states that Braille books are expensive to produce. After much cajoling on the instructor's part, they have found a tagged version of the E-text the other students use for the student to read on a Braille Display. Unfortunately, this student neither owns a Braille Display, nor does he have a Braille printer; so, he still cannot read this E-text in Braille.

In the Argenyi v. Creighton University (2013) case appeal, the Eighth Circuit stated that both the ADA (1990) and Section 504 of the Rehabilitation Act (1973) require the provision of necessary auxiliary aids and services to individuals with disabilities. Turning to the case law, the Eighth Circuit further noted that a person is required to receive meaningful access to a University's program and activities. Although this "meaningful" access standard means that aids and services are not required to produce the identical result or level of achievement for persons with disabilities and those without disabilities, these aids and services still need to provide equal opportunity to the person with a disability in order to gain the same benefit. OWI instructors also should note that whatever services are available to on-campus students at an institution of higher education, the distance students also should have access to those resources.

Returning to the textbook issue, tagged E-text files, if done correctly, can facilitate reading with a screen reader. They also can be optimized for Braille Displays, but without a device to display or print Braille, a Braille copy is not possible. Since other students have an accessible E-text that does not require the purchase of a separate device, the college has the minimal obligation to lend a Braille Display to the student. Preferably, it should provide a hard copy of the book, which can be printed on a Braille printer in the Disability Services Office. Most Braille Displays offer only one line of text at time, so they do not allow a close study of a complete sentence or paragraph. Blind readers with the knowledge of the code often prefer to read the materials requiring close attention in hard copy Braille rather than listening with a screen reader. The claims about the cost of producing Braille copies often are exaggerated. Unless the institu-

tion's Disability Services has no one who can learn to operate a Braille printer, paper copies can be produced at a reasonable cost from the publisher-provided electronic text. The Braille production of books certainly does not cost any more than many other electronic software resources available to other students. The need for Braille is comparable to deaf students' need for interpreters and CART services, and on many campuses, deaf students also have to fight for these services.

6. The student owns a Perkins Brailler for taking notes, but he complains that the instructor explains concepts rather visually and he loses track of what is going on.

Multimodality is the forte of all twenty-first century writing professors; so, reaching OWI students using a variety of explanatory modes—visual, auditory, kinesthetic, and the like—is appropriate for this context.

In sum, the accessibility-related responsibilities in OWI can be divided into three categories:

1. Course delivery and student support infrastructure
2. Course curriculum and content development
3. Student-instructor interaction for content delivery and further content generation in the form of participative learning

While the WPA and the student service/technology personnel are obviously the point persons for arranging an accessible delivery and support infrastructure, the OWI instructor is in charge of both producing and delivering content that is accessible to everyone enrolled. If instructors have to work with an existing course template, they should work with the WPA on modifying this template to construct accessibility in the course without being inhibited by the idiosyncrasies of the template. If the institution provides pre-made courses to OWI instructors, then instructors should underscore the limitations of these canned courses to the WPA and play the role of an advocate for disabled students. In curricular matters, these disabled students, who might otherwise have gone through the struggle for access and accommodations with their parents during their earlier schooling, may not have the academic knowledge or intellectual maturity to represent their own problems as an instructor can do by advocating for them. We also can support students by teaching them how to advocate on one's own behalf through course content—readings, assignments, and class activities, pedagogical methods, and approaches that involve advocacy techniques, and by foregrounding the lessons of the aforesaid in other online spaces of courses.

Mary Lee Vance (2007) drew attention to the most challenging problem disabled students confront in the academy through a simple, generalized claim: "First-generation disabled individuals are forced into living in a world where able-bodied people have had generations of role models to assist them, and where

the world is designed to address their needs" (p. 13). She continued, "Because society reinforces ableism, the first-generation disabled must carve out alternate paths to reach the same destinations, and on occasions the alternate paths may take longer to build, much less traverse" (p. 14). The point I want to emphasize is that contemporary disabled students have no reason to carve their paths all alone. The disability laws demand that education be inclusive and that pedagogy should reflect this inclusiveness in every aspect of the institution's functioning. We should not need reminders that this type of advocacy is not new to our colleges because we have gone through this process during the past five decades for accommodating women; racial minorities; lesbian, gay, bisexual, transgendered, and queer (LGBTQ); and various other minority students groups. Certainly, we should not forget that these dissatisfied disabled students are not good for the publicity of OWI programs.

Irrespective of what type of control WPAs and OWI instructors have over curriculum and content, they are in the driver's seat for making the student-instructor interaction accessible for content delivery and further content generation in the form of participative learning. Our task is not only to deliver this curriculum in an accessible manner but also to make sure that students have an amply accessible scaffold to interact with teachers and their peers, with the texts they generate in any of the modalities prescribed or elected, and with the overall delivery system—the ePortfolio software, the basic LMS tools, and those ubiquitous portable documents. It is an area of online learning where writing instructors can shine and literally make a huge contribution to online learning. The general research literature in distance education has not looked at the significance of such interactions in student knowledge-making processes as closely as the process theorists in face-to-face writing studies have done during the past four decades (Bazerman, 1988; Emig, 1970; Myers, 1985; Selzer, 1983). Again, OWI instructors can carve new paths for ourselves and disabled students by collaboratively devising innovative interactional techniques that would work both for disabled and nondisabled students for comprehending, analyzing, and synthesizing others' ideas. We can build accessible scaffolds for composing with our students and have them test these with one another and on themselves as they practice participatory learning and produce texts and iTexts for OWI-based writing assignments.

Extending Access to Students with Learning Disabilities

While students with sensory disabilities face major challenges in accessing the current curriculum, we do not yet know the extent of challenges faced by students with learning disabilities and those who have different learning styles.

These students are entering postsecondary institutions in large numbers but we know very little about the different types of learning disabilities and how to address the needs of this highly diverse group. In addition to following UDL Guidelines 2.0, OWI instructors can benefit from knowing Web Content Authoring Guidelines 2.0 (WCAG 2.0) for curriculum content and interaction design, which provide useful information for addressing the needs of diverse learners. Beginning with the first three guidelines and eventually constructing a full repertoire of accessibility techniques, instructors can learn to integrate accessibility in their Web design, create accessible Web and PowerPoint presentations, and receive abundant guidance for making both dynamic and static content accessible even though the latter is not the purpose or focus of these guidelines.

Anne Meyer and David Rose (2005) stated that "more differentiated use of media for instruction reveals that individuals who are defined as learning disabled within print-based learning environments are not the same individuals who are defined as learning disabled within video- or audio-based learning environments" (24). Indeed, the range of learning challenges consists of difficulties with text (reading or writing), visual comprehension (reading or using images), hearing (auditory processing and comprehension), and the need for tactile/kinesthetic approaches to content and skills. There is much that this chapter cannot detail regarding learning disabilities, but OWI teachers, as Hewett pointed out in Chapter 1 (see also Hewett, 2015a) need to learn more about how their students learn and appeal to those styles through a variety of modalities and media. Those students who are classified as "disabled" may have more significant challenges than the average student, but most students have preferred learning styles to which OWI should provide inclusion and access.

CONCLUSION AND RECOMMENDATIONS

A need exists for a calculated effort at building institutional and programmatic research on disability, disabled students, and writing pedagogy. Kenneth Leithwood and Robert Aitken (1995) explained that a learning organization is "a group of people pursuing common purposes (individual purposes as well) with a collective commitment to regularly weighing the value of those purposes, modifying them when that makes sense, and continuously developing more effective and efficient ways of accomplishing those purposes" (p. 63). While WPAs and OWI instructors can learn from external research, local data about students' performance can be even more influential in evaluating mutual successes and failures (Peterson, 2001; Sullivan & Porter, 1997; see also Chapter 17). For this purpose, as OWI Principle 15 indicated, data gathering should be an ongoing process for all OWI administrators and instructors in the near future until a

threshold of understanding about inclusive pedagogies for OWI is found. Developing pre- and post-semester surveys both for students and instructors can help to create a profile of the students' preparation for online learning as they enter OWI courses and the post surveys can indicate how efforts at inclusive learning are succeeding. These surveys should be geared to register details about students' abilities, technology use, technology proficiencies, learning styles, experiences with the inclusive course design and pedagogy, and the interactions with instructors and peers. OWI teachers also can begin their courses by asking students to compose a literacy narrative where they cover all the basic categories listed on their pre-course survey. Such a narrative can educate instructors about their students' learning preferences, skills, and needs while engaging them in a purposeful writing activity that naturally reveals writing strengths and weaknesses. These front-end information gathering activities can be followed by more intense feedback-gathering activities during the semester. Modified Small Group intake by a third-party instructor or administrator in online settings can be done without an interruption in the course schedule. Such a mid-semester evaluation can provide the instructor with feedback about their efforts at designing an inclusive course and give a chance to make changes with the same student group.

Underscoring the significance of Web accessibility for college students in face-to-face settings, Susanne Bruyere (2008) expressed that:

> Web-based technology can open or close doors to students with disabilities; admissions applications, financial aid information, schedules, class assignments, bursar bills, and the like are typically posted on the Web. Inaccessible websites can pose significant barriers to people who are visually impaired or deaf or have learning disabilities. (p. 37)

WPAs and OWI teachers should be primary in removing—not in creating—barriers.

WPAs and writing faculty research writing, teach writing, tutor writing, and compose their own writing. As a group, we challenge the manufacturing model of instruction by arguing for small size classes for our students, as articulated in OWI Principle 9 (pp. 20-21), and we do so while remaining one of the lowest paid workforces in the academy. When our arguments lose in the face of administrative imperatives, we serve students anyway and always at the cost of our own economic, professional, and personal well-being. Our battles are not limited to confronting the administrative powers; we also regularly fight those unending battles on our campuses with colleagues in other disciplines about how to best improve students' writing. Likewise, in this age of New Media and multimodality, we should put up a stiff fight about which technologies to adopt

and which ones to shun in favor of humane and student-centered pedagogies. We should engage ourselves in the campus-wide conversations on technology choices and technology services before the die is cast for the coming decades of online instruction and hard to reverse decisions are made on the behalf of our disabled students and faculty. We should not lose sight of the realities of the front of the room blackboards morphing into PowerPoint presentations with the instructor-centered pedagogies of the pre-1980s era returning to our face-to-face, hybrid, and fully online courses with a vengeance.

To establish a new model of college education for all, we should bring together OWI and UDL with the aim of designing an inclusive curriculum in the hands of ambitious instructors backed by an adequately accessible infrastructure to deliver OWI. If we employ these digital tools of distance learning with the awareness that they can be judged as better only if they can reach those who have previously been overlooked, ignored, or under-served, then we can move quickly beyond the novelty factor and become savvy adopters who concentrate on these tools' relevance to the task of teaching writing inclusively. We also may realize that rethinking our pedagogy through these accessibility-centered principles will initially demand additional work for preparing ourselves for such teaching, but, in the long run, our reconceptualized courses might offer much more in terms of content, pedagogy, and comprehensibility for all students.

The following are recommendations for WPAs and OWI teachers:

- WPAs should advocate to university administration for accessibility readiness for disabled students.
- Understand the legal and ethical obligations to provide equal access to our courses for all students, including students with disabilities.
- Keep in mind that accessibility does not stop with technology; it must become a part of all curricular and pedagogical thinking.
- Do not lose sight of the fact that reading and writing are even more important for disabled students because these literacy skills can help them become financially independent, prepare them to speak for themselves, and equip them to claim an equal place to live in the world.
- Do not forget that disabled students also have diverse needs and skill levels, and educators need to address their problems individually.
- Always place accessibility at the beginning of all planning; it should remain an integral part of all subsequent course design and delivery processes.
- Reach out to disabled students before or at the very beginning of the academic term so that all necessary arrangements for providing access can be made in time.
- Expand our repertoire of accessible teaching tools beyond the limits of

the UDL framework, even though it is a reasonable starting point for accessible course design and pedagogy.

The following are recommendations for readings that will help to equip WPAs and OWI teachers with the understanding and facts to argue for the rights of the disabled in policy meetings and in developing curricular changes:

Coombs, Norman. (2010). *Making online teaching accessible: Inclusive course design for students with disabilities*. San Francisco, CA: Jossey-Bass.

Jarrett, Caroline, Redish, Janice (Ginny), & Summers, Kathryn. (2013). *Designing for people who do not read easily*. In Lisa Meloncon (Ed.), *Rhetorical accessibility* (pp. 39-65). Amityville, NY: Baywood Publishing.

Kanter, Arlene S. & Ferri, Beth A. (Eds.). (2013). *Righting educational wrongs: Disability studies in law and education*. Syracuse, NY: Syracuse University Press.

Kleege, Georgina. (2005). Blindness and visual culture: An eyewitness account. *Journal of Visual Culture 4*(2), 179-190.

Seale, Jane K. (2006). *E-learning and disability in higher education*. Oxon, UK: Routledge.

Wyatt, Christopher Scott. (2010). *Online pedagogy: Designing writing courses for students with autism spectrum disorders* (Doctoral dissertation, University of Minnesota). Available from ProQuest Dissertations and Theses database. Retrieved from http://search.proquest.com/docview/597211269

Yergeau, Melanie. (2011). *Disabling composition: Toward a 21st-century, synaesthetic theory of writing* (Unpublished doctoral dissertation). The Ohio State University, Columbus, Ohio.

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NOTES

1. Regarding the text of *A Position Statement of Principles and Example Effective Practices for OWI*, this document leans heavily for its terminology on Sheryl Burgstahler and Rebecca C. Cory's (2008) research because our national surveys on OWI failed to locate a shared terminology among OWI instructors for discussing disability-related accessibility practices. Our own knowledge of the recommended practices has

been drawn from the cumulative disability literature in Education and Pedagogy, Accessible Computing, Human-Centered Design, and Disability Studies. As the discipline dedicates its pedagogical energies on these accessibility challenges across the country, I am confident that it will develop a set of writing-centered effective practices, as well as, a shared language to elucidate them.

REFERENCES

American Printing House for the Blind. (n.d.). Retrieved from www.aph.org

Americans with Disabilities Act (ADA). (1990). 42 U.S.C. § 12101 et seq (1993). Retrieved from http://www.ada.gov/pubs/adastatute08.htm

Argenyi v. Creighton University, 703 F.3d 441 (8th Cir. 2013). Retrieved from http://www.disabilityrightsnebraska.org/what_we_do/michael_argenyi_case.html

Babcock, Rebecca. (2012). *Tell me how it reads: Tutoring deaf and hearing students in the writing center*. Washington, DC: Gallaudet University Press.

Bazerman, Charles. (1988). *Shaping written knowledge: The genre and activity of the experimental articles in science.* Madison, WI: University of Wisconsin Press.

Brady, Laura. (2001). Fault lines in the terrain of distance education. *Computers and Composition, 18*(4), 347-357.

Brueggemann, Brenda Jo. (2002). An enabling pedagogy. In Sharon Snyder, Brenda Brueggemann, & Rosemarie Garland-Thomson (Eds.), *Disability studies: Enabling the humanities* (pp. 317-336). New York: The Modern Language Association.

Bruyere, Susanne. (2008). Total access: Making college web sites accessible to students with disabilities. *Community College Journal, 79*(1), 36-39.

Burgstahler, Sheryl & Cory, Rebecca C. (Eds.). (*2008*). *Universal design in higher education: From principles to practice*. Boston: Harvard Education Press.

CAST (2008). *Universal design for learning guidelines version 1.0.* Retrieved from http://www.cast.org/library/UDLguidelines/version1.html

CAST (2011). *Universal design for learning guidelines version 2.0.* Retrieved from http://www.udlcenter.org/aboutudl/udlguidelines

Cargile Cook, Kelli, & Grant-Davie, Keith. (2005). *Online Education.* Amityville, New York: Baywood Publishing.

Cargile Cook, Kelli, & Grant-Davie, Keith. (2013). *Online Education 2.0.* Amityville, New York: Baywood Publishing.

CCCC Committee on Disability Issues. (2015). Retrieved from http://www.ncte.org/cccc/committees/disabilityissues

CCCC Committee on Disability Issues in College Composition. (2006/2011). *A Policy on Disability in CCCC*. Retrieved from http://www.ncte.org/cccc/resources/positions/disabilitypolicy

CCCC OWI Committee for Effective Practices in Online Writing Instruction. (2011a). *Fully online distance-based courses survey results*. Retrieved from http://s.zoomerang.com/sr.aspx?sm=EAupi15gkwWur6G7egRSXUw8kpNMu1f5gjUp01aogtY%3d

CCCC OWI Committee for Effective Practices in Online Writing Instruction. (2011b). *Hybrid/blended course survey results*. Retrieved from http://s.zoomerang.com/sr.aspx?sm=%2fPsFeeRDwfznaIyyz4sV0qxkkh5Ry7O1NdnGHCxIBD4%3d

CCCC OWI Committee for Effective Practices in Online Writing Instruction. (2013). *A position statement of principles and effective practices for online writing instruction (OWI).* Retrieved from http://www.ncte.org/cccc/resources/positions/owiprinciples

The Center for Universal Design North Carolina State University. (1997). *The principles of universal design*. Retrieved from http://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm

Cooper, Martyn & Heath, Andy. (2009). Access for all to e-learning. In A. Méndez-Vilas, A. Martín, J. A. Mesa González, & J. Mesa González (Eds.), *Research, reflections and innovations in integrating ICT in education* (pp. 1139-1143). Milton Keynes, UK: Open University Press.

Crowley, Sharon. (1998). *Composition in the university: Historical and polemical essays*. Pittsburgh: University of Pittsburgh Press.

Davis, Lennard. (1995). *Enforcing normalcy: Disability, deafness, and the body.* New York: Verso.

Emig, Janet. (1970). *The composing processes of twelfth graders.* Urbana, IL: National Council of Teachers of English.

Erisman, Wendy & McSwain, Courtney. (2006). *Expanding access and opportunity.* Washington, DC: Institute for Higher Education Policy.

Gibson, Keith & Martinez, Diane. (2013). From divide to continuum: Rethinking access in online education. In Kelli Cook, & Keith Grant-Davie, *Online Education 2.0: Evolving, adapting, and reinventing online technical communication* (pp. 197-212). Amityville, NY: Baywood Publishing.

Hawisher, Gail E. & Selfe, Cynthia L. (1991). The rhetoric of technology and the electronic writing classroom. *College Composition and Communication*, *42*(1), 55-65.

Hewett, Beth L. (2010). *The online writing conference: A guide for teachers and tutors*. Portsmouth, NH: Boynton/Cook.

Hewett, Beth L. (2013). Fully online and hybrid writing instruction. In H. Brooke Hessler, Amy Rupiper Taggart, & Kurt Schick (Eds.), *A guide to composition pedagogies* (2nd ed.). (pp. 194-211). Oxford, UK: Oxford University Press.

Hewett, Beth L. (2015a). *Reading to learn and writing to teach: Literacy strategies*

for online writing instruction. Boston, MA: Bedford/St. Martin's Press.

Hewett, Beth L. (2015b). *The online writing conference: A guide for teachers and tutors* (Updated). Boston, MA: Bedford/St. Martin's Press.

Houston, Lori. (n.d.). Working with learning disabled writers. Retrieved from http://compfaqs.org/LearningDisabledWriters/WorkingWithLearningDisabledWriters

Ice, Philip, Reagan Curtis, Perry Phillips, & John Wells. (2007). Using asynchronous audio feedback to enhance teaching presence and student sense of community. *Journal of Asynchronous Learning Networks, 11*(2), 3-25.

Ingeno, Lauren. (2013). Online accessibility a faculty duty. *Inside Higher Ed*. Retrieved from https://www.insidehighered.com/news/2013/06/24/faculty-responsible-making-online-materials-accessible-disabled-students

Institute for Higher Education Policy. (1998). *Assuring quality in distance learning: A preliminary review.* Washington, DC: The Council for Higher Education Accreditation.

Jarrett, Caroline, Redish, Janice, & Summers, Kathryn. (2013). Designing for people who do not read easily. In Lisa Meloncon (Ed.), *Rhetorical accessability: At the intersection of technical communication and disability studies* (pp. 39-66). Amityville, NY: Baywood Publishing.

Johnson-Sheehan, Richard. (2012). Preparing and giving presentations. In R. Johnson-Sheehan, *Technical Communication Today* (4th ed.) (pp. 573-610). New York: Pearson.

Kahn, Michael, Tan, Kay, & Beaton, Robert. (1990). Reduction of cognitive workload through information chunking. In D. Woods & E. Roth (Eds.), *Proceedings of the Human Factors and Ergonomics Society 34th Annual Meeting* (pp. 1509-1512). Santa Monica, CA:

Konur, Ozcan. (2007). Computer assisted teaching and assessment of disabled students. *Journal of Computer Assisted Learning*, 207-219. Retrieved from http://www.catea.gatech.edu/scitrain/kb/FullText_Articles/Konur_Computer-Assisted.pdf

Leithwood, Kenneth & Aitken, Robert. (1995). *Making schools smarter: A system for monitoring school and district progress.* Newbury Park, CA: Corwin.

Levin, Douglas & Arafeh, Sousan. (2002). *The digital disconnect: The widening gap between internet-savvy students and their schools.* Washington, DC: Pew Internet & American Life Project.

Lewiecki-Wilson, Cynthia, & Brueggemann, Brenda Jo (Eds.). (2008). *Disability and the teaching of writing: A critical sourcebook.* Boston, MA: Bedford/St. Martin's Press.

Lewin, Tamar. (2015, February 15). Harvard and M.I.T. are sued over lack of closed captions. *The New York Times*. Retrieved from http://www.nytimes.

com/2015/02/13/education/harvard-and-mit-sued-over-failing-to-caption-online-courses.html?_r=0

Matsuda, Paul K. (2006). The myth of linguistic homogeneity in US college composition. *College English, 68*(6), 637-651.

Meloncon, Lisa (Ed.). (2013). *Rhetorical accessability: At the intersection of technical communication and disability studies.* Amityville, NY: Baywood Publishing.

Meloncon, Lisa & Arduser, Lora. (2013). Communities of practice approach: A new model for online course development and sustainability. In Kelli Cook & Keith Grant-Davie, *Online education 2.0: Evolving, adapting, and reinventing online technical communication* (pp. 73-90). Amityville, NY: Baywood Publishing.

Meyer, Anne & Rose, David H. (2005). The future is in the margins: The role of technology and disability in educational reform. In David H. Rose, Anne Meyer, & Chuck Hitchcock (Eds.), *The universally designed classroom: Accessible curriculum and digital technologies,* (pp. 14-35). Cambridge, MA: Harvard Education Press.

Myers, Greg. (1985). The social construction of two biologists' proposals. *Written Communication*, *2*(3), 219-245.

National Federation of the Blind. (n.d.). *Blindness statistics.* Retrieved from http://www.nfb.org/nfb/blindness_statistics.asp

Neuwirth, Christine, Ravinder, Chandhok, Charney, Davida, Wojahn, Patricia, & Kim, Loel. (1994). Distributed collaborative writing: A comparison of spoken and written modalities for reviewing and revising documents. *Proceedings of the Computer-Human Interaction '94 Conference* (pp. 55-62). New York: Association for Computing Machinery.

Oswal, Sushil K. (2013). Accessible eportfolios for visually-impaired users: Interfaces, design, & infrastructures. In Katherine Wills & Rich Rice (Eds.), *ePortfolio performance support systems: Constructing, presenting, and assessing portfolios* (pp. 133-152). Anderson, SC: Parlor Press.

Oswal, Sushil K. (2013, February 24). Online learning and disabled students [electronic mailing list comment]. Retrieved from https://lists.ucdenver.edu/cgi-bin/wa?A0=DS_RHET-COMP

Oswal, Sushil K. & Hewett, Beth L. (2013). Accessibility challenges for visually impaired students and their OWI teachers. In Lisa Meloncon (Ed.), *Rhetorical accessability: At the intersection of technical communication and disability studies* (pp. 135-156). Amityville, NY: Baywood Publishing.

Oswal, Sushil K. & Meloncon, Lisa. (2014). Paying attention to accessibility and disability in technical and professional communication online course design. *Journal of Business and Technical Communication, 28*(3), 271-300.

Owusu-Ansah, Angela, Neill, Patti, & Haralson, Michele. (2011). Distance

education technology: Higher education barriers during the first decade of the twenty-first century. *Online journal of Distance Learning Administration, XIV*(II). Retrieved from http://www.westga.edu/~distance/ojdla/summer142/ansah_142.html

Palmeri, Jason. (2006). Disability studies, cultural analysis, and the critical practice of technical communication pedagogy. *Technical Communication Quarterly, 15*(1), 49-65.

Petri, Ken, Rangin, Hadi, Richwine, Brian, & Thompson, Marc. (2012). A comparison of Learning Management system accessibility. Paper presented at the EDUCAUSE Midwest Regional Conference, Chicago, IL.

Peterson, Patricia Webb. (2001). The debate about online learning: Key issues for writing teachers. *Computers and Composition, 18*(4), 359-370.

Rintala, Jan. (1998). Computer technology in higher education: An experiment, not a solution. *Quest, 50*(4), 366-378.

Rose, David H. & Anne Meyer (2002). Teaching every student in the digital age: Universal design for learning. Alexandria, VA: Association for Supervision and Curriculum Development.

Rose, David H. & Meyer, Anne. (2006). *A practical reader in universal design for learning*. Cambridge, MA: Harvard Education Press.

Rose, David H., Anne Meyer & Chuck Hitchcock (Eds.). (2005). *The universally designed classroom: Accessible curriculum and digital technologies*. Cambridge, MA: Harvard Education Press.

Sadoski, Mark & Paivio, Allan. (2001). *Imagery and text: A dual coding theory of reading and writing.* Mahwah, NJ: Erlbaum.

Schriver, Karen. (2013). What do technical communicators need to know about writing? In Johndan Johnson-Eilola & Stuart Selber (Eds.), *Solving problems in technical communication* (pp. 386-427). Chicago: University of Chicago Press.

Seale, Jane & Martyn, Cooper. (2010). E-learning and accessibility: An exploration of the potential role of generic pedagogical tools. *Computers and Education, 54*(4), 1107-1116.

Selfe, Cynthia. (1999). *Technology and literacy in the twenty-first century: The importance of paying attention*. Carbondale: Southern Illinois University Press.

Selzer, Jack. (1983). The composing processes of an engineer. *College Composition and Communication*, *34*(2), 178-187.

Shute, Valerie & Zapata-Rivera, Diego. (2007). *Adaptive technologies.* Princeton, NJ: Educational Testing Service.

Sullivan, Patricia & James E. Porter. (1997). *Opening spaces: Writing technologies and critical research practices*. Greenwich, CT: Ablex.

Szpaller, Keila. (2012, September 18). Disabled UM students file complaint over inaccessible online courses. *Missoulian*. Retrieved from http://missou-

lian.com/news/local/disabled-um-students-file-complaint-over-inaccessible-online-courses/article_d02c27ac-0145-11e2-bc26-001a4bcf887a.html

Treviranus, Jutta. (n.d.). *The electronic campus and equal access to higher education.* Retrieved from http://idrc.ocad.ca/index.php/resources/idrc-online/49-articles-and-papers/108-the-electronic-campus-and-equal-access-to-higher-education

US Census Bureau. (2011). *Disability*. Retrieved from http://www.census.gov/people/disability/

US Department of Education & Department of Justice. (2010). *Electronic book reader dear colleague letter.* Retrieved from http://www2.ed.gov/about/offices/list/ocr/letters/colleague-20100629.html U.S

Department of Education, Laws & Guidance. (2008). *Higher education opportunity act-2008.* Retrieved from http://www2.ed.gov/policy/highered/leg/hea08/index.html

US Department of Education, National Center for Education Statistics. (2012). *The 2012 Statistical abstract, table 285. Students' reported disability status by selected characteristics 2007 to 2008*. Retrieved from http://www.census.gov/compendia/statab/cats/education.html

U.S Department of Justice, Office of Public Affairs. (2013). *Justice Department Settles with Louisiana Tech University over inaccessible course materials*. Retrieved from http://www.justice.gov/opa/pr/2013/July/13-crt-831.html

US Equal Employment Opportunity Commission. (2008). *ADA amendments act of 2008*. Retrieved from http://www.eeoc.gov/laws/statutes/adaaa.cfm

Vance, Mary-Lee. (2007). *Disabled faculty and staff in a disabling society: Multiple identities in higher education.* Huntersville, NC: AHEAD.

Warnock, Scott. (2009). *Teaching writing online: How and Why.* Urbana, IL: National Council of Teachers of English.

Wilferth, Joe & Charles Hart. (2005) Designing in the dark: Toward informed technical design for the visually impaired. *Computers and Composition Online.* Retrieved from http://www.bgsu.edu/departments/english/cconline/wilferthhart/wilferthhart.htm

World Health Organization (WHO). (n.d.). *Disabilities*. Retrieved from http://www.who.int/topics/disabilities/en/#navigation

Web Accessibility Initiative. (n.d.). *Web content authoring guidelines 2.0*. Retrieved from www.w3c.org/wai/

Xu, Di, & Jaggars, Shanna Smith. (2013, February). *Adaptability to online learning: Differences across types of students and academic subject areas*. (CCRC Working Paper No. 54). New York: Community College Research Center. Retrieved from http://ccrc.tc.columbia.edu/media/k2/attachments/adaptability-to-online-learning.pdf