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What is This?

Paying Attention to Accessibility When Designing Online Courses in Technical and Professional Communication

Sushil K. Oswal[1] and Lisa Meloncon[2]

Abstract
Roughly 1 out of 10 students in our classrooms has some form of disability, and now that a growing number of technical and professional communication (TPC) courses and programs are offered online, scholars need to adequately address accessibility in online course design. Calling on the field to "pay attention" to this issue, the authors report the results of a national survey of online writing instructors and use Selfe's landmark essay as a way to theoretically frame the results. They conclude by offering strategies for TPC instructors to design more accessible online courses.

Keywords
accessibility, pedagogy, online learning, course design

[1]University of Washington Tacoma, Tacoma, WA, USA
[2]University of Cincinnati, Cincinnati, OH, USA

Corresponding Author:
Lisa Meloncon, University of Cincinnati, 248 McMicken Hall, Cincinnati, OH 45221, USA.
E-mail: meloncon@tek-ritr.com

In the United States, around 56.7 million people, or about 18.7% of the population, have ''some level of disability'' (Brault, 2012, p. 3), and of those, 27% live with a disability that interferes with their daily living activities (Fox, 2011, p. 2). Framed by these national population numbers, reports of a growing number of students with disabilities in higher education are not surprising (Newman, Wagner, Cameto, Knokey, & Shaver, 2010; Snyder & Dillow, 2010). Estimates from 2007 to 2008 (the latest numbers available) show that 11% of undergraduates and 8% of graduate students reported having a disability (U.S. Department of Education, 2012).

If at least 1 in 10 students is disabled or has some form of disability, then students with disabilities are definitely in our technical and professional communication (TPC) classrooms—both face-to-face and online. The growth in online courses has opened up learning opportunities for students with disabilities because ''Web-based instruction may be the only way that some students can independently access courses and course-materials—something that is a powerful reminder of the need for accessible online distance education'' (Hinn, 1999, p. 9). Allen and Seaman (2011) reported that 31% of all students take at least one course online and that enrollment in online courses rose by 10% from a year earlier (p. 4). Currently, 11% of degree programs in TPC are offered fully online (Meloncon, 2012), and in a sample of 96 schools, 21% of service courses were being offered online or in a hybrid format (Meloncon, 2009).

Combining the number of students with disabilities and the increasing number of online classes and programs, we are forced to ask, as Dragga (2010) has (p. 223), Are TPC programs and instructors addressing issues of disability and accessibility? Are TPC instructors taking measures to accommodate students with disabilities in online classrooms? Are TPC scholars engaging in sustained scholarly and practical conversations about best practices for creating accessible online educational spaces? Are TPC instructors and scholars taking the lead within their institutions to advocate—in both theory and practice—for improved access to online educational spaces for students with disabilities?

Based on the literature in TPC journals, the answers to these questions are a surprising and shocking no. While TPC scholars have been leaders in discussing online education in general (see Cargile Cook & Grant-Davie, 2005, 2013), they have not readily taken up issues of disability and accessibility in a sustained way. Although they have examined the idea of merging disability studies and technical communication pedagogy (Meloncon, 2013; Palmeri, 2006; Walters, 2010; Wilson 2000) and have continued to research universal design (UD) and usability (e.g., Brizee, Sousa, &

Driscoll, 2012; Dolmage, 2009; Mbipom, 2009; Meiselwitz, Wentz, & Lazar, 2009), this research does not speak specifically about educational materials. Scholars in related fields have had limited discussions about disability in the face-to-face classroom (Dunn & De Mers, 2006; Lewiecki-Wilson & Brueggemann, 2008; Price, 2011; Salvo, 2005). Outside of TPC, information on accessibility is buried within texts concerning online writing (Brown & Brown, 2006; Coombs, 2010; Foley, 2006; Voithofer, 2003); however, these texts do not address disability and accessibility in depth. We could find only two recent essays by TPC scholars that specifically address teaching concerns about accessibility (Pass, 2013; Youngblood, 2013) and only one that discusses accessibility in online classroom spaces (Oswal & Hewett, 2013).

But how can the field engage in discussions about accessibility if the topic is barely on its radar? The paucity of such research and the growing number of students with disabilities in online classes indicate that the time is now to pay attention to accessibility and disability. After defining the key terms that we use here, we revisit Selfe's (1999) landmark essay on technology, using it to theoretically frame the results and discussion of a national survey on online writing instruction (OWI). This theoretical frame offers a way to think about how power and privilege could impede accessibility and accommodation. The results of this survey are necessary to help us understand that accessibility and disability issues have not been adequately addressed in the field and to help us contextualize the problem of accessibility issues in online learning spaces. Because "accessibility is fundamentally a rhetorical issue," as Slatin (2002) put it, "a matter of fleshing out (literally) our conception of audience to include an awareness that there are people with disabilities in that audience and developing effective skills and strategies for addressing the entire audience" (para. 37), we conclude by offering strategies for TPC instructors to create more accessible online courses. As TPC instructors, then, we need to embrace the rhetorical issue of accessibility and to shoulder the ethical responsibility of engaging the systemic and social issues of accessibility in our pedagogical practices.

Definition of Key Terms Surrounding Accessibility

We need to define the key terms that we use throughout this study because many of them could be interpreted in a variety of ways. To begin, when we talk about an *online educational space*, we are referring to the location for a course in which materials and interactions are exchanged either fully online

(no face-to-face meetings) or mainly online (with some face-to-face meetings).

While accessibility is our main focus, we are compelled to provide an overview of how disability has been defined. The Americans with Disabilities Act (ADA) has defined disability as ''a physical or mental impairment that substantially limits one or more of the major life activities of such individuals'' (U.S. Department of Justice, 2009). This legal definition of disability leaves much room for interpretation and conversation. Scholars in disability studies have shown that no single definition could account for the variety of disabilities found in the population (Wendell, 2006) and that ''the disabled community [is] so diverse and multifaceted . . . that no single, homogeneous definition could adequately describe the whole of the disability community/communities'' (Meloncon, 2013, p. 5). For our purposes, however, the ADA definition offers the most salient definition because it is the one that higher education institutions use in making decisions regarding special accommodations.

Online accessibility is often defined in terms of Web site accessibility, which ensures that individuals with disabilities can access and use Web sites as fully as people without disabilities (for sample legal policies, see British Standards Institute, 2010; U.S. Government, 2000). Accessibility in this sense is a legal obligation resulting from legislative acts, the regulations emerging from these acts, and related judicial decisions, and it is increasingly being mandated in a variety of countries. But the ADA expands the definition of online accessibility describing it in systemic terms:

> An accessible information technology system is one that can be operated in a variety of ways and does not rely on a single sense or ability of the user. For example, a system that provides output only in visual format may not be accessible to people with visual impairments and a system that provides output only in audio format may not be accessible to people who are deaf or hard of hearing. (U.S. Department of Justice, 2009)

Finally, in summarizing the work of Slatin and Rush (2003), Abou-Zahra (2008) provided a definition that broadens accessibility to include content, which is a key facet of TPC and of educational materials:

> Accessibility is an experiential measure of quality; it is less a property of the Web content but rather a result of the interplay between the Web content, the browser, and potentially the assistive technology that some people with disabilities may be using to access the content. (p. 103)

We approach accessibility through the lens of these three related definitions. Taken together, these definitions encompass the most important aspects of accessibility, framing it as integral to putting material online.

Closely related to online accessibility is the concept of UD. Although the idea has been around longer, Mace (1997), an internationally recognized architect, product designer, and educator, first coined the term *universal design* (UD) in the 1970s, defining it as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design." His principles for UD include "simple and intuitive use, equitable user perceptible information, tolerance for error, accommodation of preferences and abilities, low physical effort, and space for approach and use" (pp. 1–2).

But scholars have found this definition of UD to be problematic. The Inclusive Design Research Center (n.d.) in Canada avoids the label altogether because "individual[s are] multifaceted and the constraints or design needs they have may arise from a number of factors or characteristics, and they all need to be taken into account" (p. 4). Meanwhile, Burgstahler (2008), an education scholar who specializes in accessibility, found the definition to be limiting and simplistic because disabilities come in neither a one-size-fits-all nor a binary mode. People with disabilities can experience a disability at different levels depending on the time of the day, specific physical environment, and condition of their body at any particular moment. Thus, she extends the definition:

> UD does, however, require inclusive practices that address access and use issues related to diverse characteristics of members of the population for whom the application is intended. Considerations include level of ability to move, see, hear, read, learn, and process information; stature; age; race; ethnicity; culture; socioeconomic status; learning style and preference; dexterity; native language; intelligence; and gender. (p. 6)

We again invoke these related notions about UD to guide our understanding of how it relates to accessibility.

Paying Attention to Disability and Technology

In thinking through accessibility in the online TPC classroom, we immediately thought of Selfe's (1999) classic essay about the "perils of not paying attention" to technology. Selfe's overarching concern was that once technology and its use become so widespread, technology disappears from

view, and teachers, as well as students, run the risk of ceasing to critically evaluate how technologies are used and why decisions about technology are made. In the present curricular environment, few TPC instructors teach without using some sort of technology, so the issue is not whether we are using technology, but it is whether we are truly paying attention to the technology that we are using. In online courses, the entire learning experience is mediated by and through technology. TPC instructors have an ethical obligation "to understand and make sense of, to *pay attention* to, how technology is now inextricably linked to literacy and literacy education in this country" (p. 414) and how this connection affects students with disabilities in our online courses.

Part of the narrative of online education is that it opens up educational spaces to more people, granting additional flexibility. This narrative plays on the master utopic vision that casts technology in an overly optimistic role of savior to any societal problems, but this stance can be "dangerous in that it renders less visible the negative contributions of technology that may work potently and effectively against critically reflective habits and efforts of good teachers and students" (Selfe & Selfe, 1994, p. 482). Disability studies scholar Titchkosky (2011) expanded Selfe's concerns directly into the realm of disability when she examines how access "is spoken of, acted upon, and sometimes resisted in university life" (x). For Titchkosky, paying attention means understanding that disability is "a way of perceiving, a form of interpretation, a way to orient not only to people, but also to places, things, events" (p. 4).

If instructors have not paid attention to course design and technological access, then students with disabilities will be unable to orient themselves, interpret, and then act upon the course material. Not only do we have to pay attention to the technologies we use, we must also pay attention to how well those technologies provide access to our students, both those with and those without disabilities. To be able to bring technological critique—paying attention to technology—back to the forefront, we must first have a better understanding of what instructors in online TPC courses are doing and what problems they are encountering with access and accommodation for students with disabilities.

Results of an Instructor Survey

In 2010, the Conference on College Composition and Communication (CCCC) Committee for Best Practice in Online Writing Instruction (OWI) administered two nationwide surveys that resulted in state-of-the-art OWI.

One survey was targeted to those instructors who teach fully online courses whereas the other was targeted to instructors who teach hybrid courses. Each of the surveys included 77 questions, covering a variety of topics—from basic demographic information to pedagogical strategies. Participants in the surveys were from a wide range of academic institutions, and they taught a wide range of writing courses online. The data presented here combine the results from the online and hybrid groups because we found no statistical difference between the two groups. We focus on the data from six survey questions about accessibility; these data represent only those respondents (25% of the total number of respondents) who taught TPC courses online. (The University of Cincinnati's Institutional Review Board has categorized this research as exempt.) TPC courses pose additional challenges that many other courses may not face. For example, TPC courses often involve the use of specialized software, so incorporating a content-delivery system into these courses adds a layer of complexity for students. TPC courses often include group projects or client-service based projects that require frequent communication with other students, the client, and the instructor. Moreover, and most important, accessibility is inseparably tied to usability and user experience. Our programs should be modeling the types of behaviors we would like students to perform in the workplace.

Demographics of Respondents

The majority of the TPC respondents (65%) worked at 4-year universities, 22% worked in community colleges, 11% worked in for-profit institutions, and the remaining 2% selected *other*. Figure 1 categorizes the respondents by their faculty classification. The largest portion of the respondents were tenured faculty, with tenure-track and full-time non–tenure-track faculty composing the other largest segments. Figure 2 shows the respondents' teaching experience in face-to-face and online settings. Most of the respondents had 7 or more years of face-to-face teaching experience, but their online teaching experiences were evenly distributed across the categories for total years of teaching experience, with less than one third of the respondents having 7 or more years of such teaching experience.

Responses of Quantitative Questions

The surveys included three quantitative questions aimed at gathering information about instructor experiences. Figure 3 displays a breakdown of the responses to these three questions:
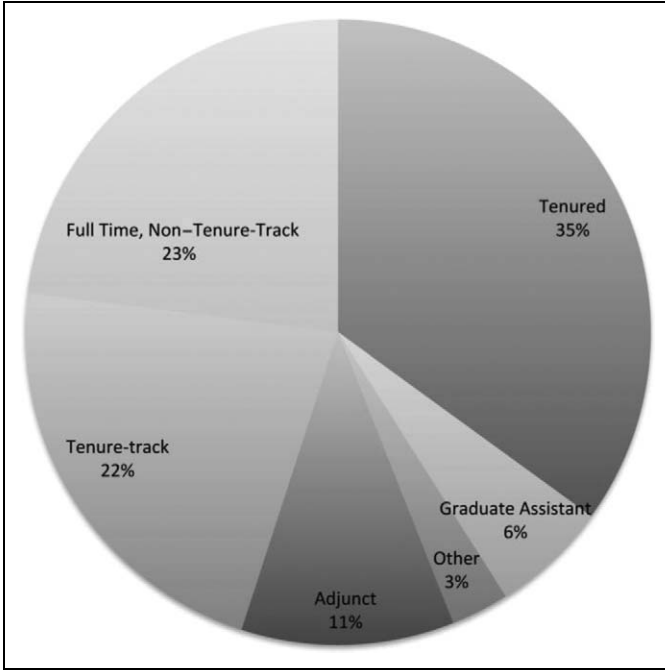
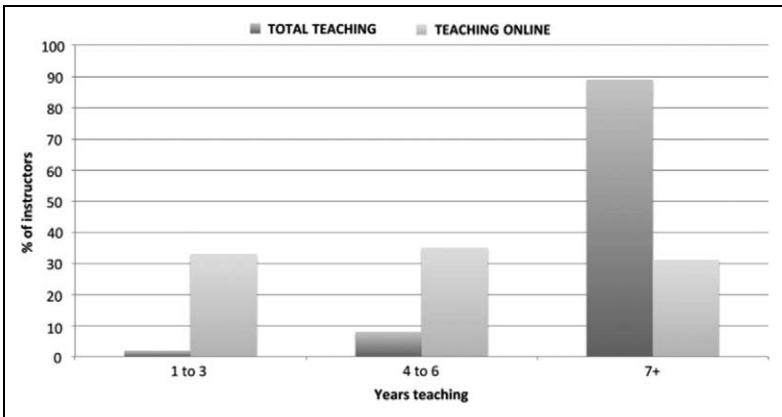**Figure 1.** Faculty classification of respondents (*N* = 100).

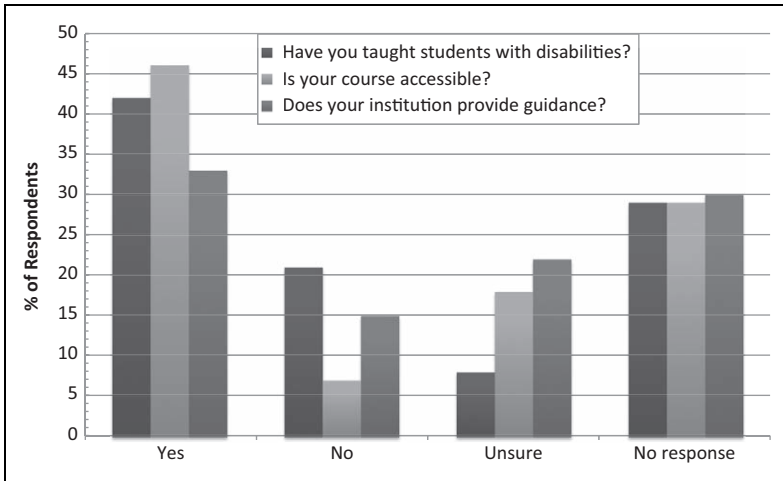**Figure 2.** Number of years teaching face-to-face and online (*N* = 99).

Figure 3. Instructors' experiences with teaching students with disabilities, creating an accessible online course, and receiving support from their institution ($N = 100$).

- Have you ever taught students with disclosed or obvious disabilities in an online course?
- To your knowledge, is your online writing course accessible to students with various disabilities (ADA compliant)?
- Does your institution provide guidance on how to make online writing courses accessible?

Less than half of the respondents (42%) reported teaching students with disabilities—surprising result, given the increasing prevalence of students with disabilities in online courses. Interestingly, 46% of the respondents stated that their courses were ADA compliant. What should raise our concern is the fact that 54% of these instructors said that their course was not accessible (7%), said that they did not know whether it was accessible (18%), or did not answer the question at all (29%).

The most interesting and disturbing result is that for each of these three questions, almost 30% of the respondents did not provide a response. These three questions generated the least number of responses of all the 77 questions in the OWI survey, suggesting that respondents either had no interest in the questions or perceived the questions as not applying to them. One respondent even went as far as to write the comment "I have no interest" into the open-ended box.

Responses to the Qualitative Questions

The surveys included three qualitative questions that were designed to gain information about the pedagogical practices being employed to meet the needs of students with disabilities and to create an aggregate picture of the instructors' challenges and needs:

- What pedagogical or practical strategies do you use to accommodate students with disabilities?
- What are your major challenges in teaching students with various disabilities?
- What would you like to know about teaching students with disabilities in online settings?

Much like the quantitative questions that were focused on disability, these qualitative questions did not receive a high number of responses (53, 44, and 34, respectively), and the responses did not generate substantial data that could result in potential best practices. Only two pedagogical practices emerged: allowing longer time to complete assignments (from reading quizzes to larger projects) and offering materials in various formats. The latter is a key to UD, as well as a best practice for online delivery.

The two questions concerning challenges in teaching and what instructors would like to know resulted in several themes. First, the largest number of responses dealt with instructors' lack of knowledge about how to accommodate the many different kinds of disabilities and what technologies may be necessary to accommodate these disabilities. For example, students with visual problems require different accommodations than do students with dyslexia. Additionally, instructors responded that they did not have the knowledge or resources to be able to fulfill those requirements once they were identified. One respondent wrote that the challenge was "figuring out what modes will work best for them online and then finding the technology to do it." This theme suggests that instructors are open and willing to learn what is necessary to meet the needs of their students.

Closely related to that theme, another positive theme that emerged was that instructors acknowledge that they need more information and knowledge. Several respondents posed thoughtful, big-idea sorts of questions, such as "What are the most common challenges for students with disabilities in online courses?" whereas others asked more specific questions, such as about how to use videoconferencing or other tools. Other respondents noted that they were at "ground zero" when it came to teaching students

with disabilities. For example, in response to the question, ''What would you like to know about teaching students with disabilities?'' one respondent replied, ''everything, since I know nothing.''

The final theme to emerge was not a positive one. Numerous respondents (20%) commented that they had no challenges—in part because they perceived it was not their problem—and some respondents even commented that they had no desire to learn anything about teaching students with disabilities (e.g., ''This is not [a] big concern for me'').

Discussion of Survey Data

One contradiction in the data is that while many instructors thought that their courses were compliant, they admitted in their open-ended responses that they were not doing anything to accommodate students. This mismatch could be attributed to instructors' guessing that their courses are ADA compliant because the courses are delivered in a university-sponsored content management system or to their inflating the definition of compliance. Future work in this area should ask participants to define what they mean by ADA compliant, which might provide a clearer picture.

When asked what they wanted to know about teaching students with disabilities, many respondents answered that they wanted basic information about what the student's disability was and what the student needed for learning. Roughly, an equal number of instructors raised preliminary questions about what the disabled students' challenges were and about how they could make course content accessible, suggesting that they lacked any experience in teaching disabled students and that they were only now beginning to think about the issue. Some of these respondents frankly admitted that they ''had not thought about such students,'' others felt that ''support services at the university should be responsible for them [the disabled students],'' and yet others qualified their responses with such statements as ''they didn't mind doing some things, but as long as it wasn't overwhelming or too much work on their part they wouldn't mind making modifications.'' These survey responses indicate that most instructors feel that making online courses accessible is not really their problem; rather, they feel that it is the student's responsibility to tell the instructor or that their institution's disability services office should be responsible.

Most of the responses to the questions about what pedagogical or practical strategies they use to accommodate students with disabilities included a reference to the disability services on their campus. While we were encouraged to find that many TPC instructors knew such services existed

(which was not the case for the larger data set), the responses seem to indicate that these instructors feel that the pedagogical responsibility for accommodating such students falls on someone outside of the course. The data suggest that many instructors were not fully prepared to handle the needs of their disabled students and that these instructors often passed on this responsibility to the disability services on their campus. But none of the respondents linked the needs of students with disabilities to instructor training or student-orientation issues. That is, no one brought up the needs of students with disabilities when responding to the survey question "What is the single most important issue to cover in student orientation for online writing courses?" Likewise, the respondents did not connect the needs of students with disabilities to their college's writing-center facilities when answering questions about access to an online writing center for the able-bodied students.

The data do not clearly show whether most respondents understand their obligations for adapting their courses to meet the needs of students with disabilities. For instance, several respondents wanted to "know what accommodations are reasonable in an online environment." Another voiced an important concern:

> It is tough enough to design an online course; to design for accessibility adds another layer of design for which we have not been trained. The challenge is access to resources to make the courses ADA compliant, and time and personnel who can help with such issues.

Even those instructors who understood the need to adapt their courses voiced their frustrations with institutional limitations. For example, one respondent whose "courses have no tests, but do require classroom discussion and participation" commented that "the well-meaning folks in the Disabilities Services office . . . are so concerned with arranging test procedures for disabilities students that courses without tests get ignored." These responses indicate that the respondents lacked knowledge about what is required for making their online courses ADA compliant and fully accommodating and the resources for doing so.

Additionally, some responses signaled a blatant misunderstanding of the needs of students with disabilities. For example, one respondent commented, "I find them no different than non-disabled students." And another one remarked, "If they are different, somehow less, than other students, convince me." A generous reading of these responses would suggest that instructors do not want to differentiate students with disabilities from those without disabilities; that is, they do not want to call attention to the disabilities. But, this view

discounts that most students with disabilities will need some sort of accommodation in an online course because such courses are typically designed with an able-bodied audience in mind. In contrast, the following respondent, who identifies with students who have disabilities, does understand the need for such accommodation:

> As someone with a minor disability myself, I cringe at the thought of online education for these students. We don't have the appropriate scaffolding in place for these folks. That being said, I work hard to deliver material in multiple modes. If we ever get easy access to audio and video then I think my institution will be ready to meet these students' needs.

Further, the number of respondents who indicated that they had no challenges with teaching students with disabilities, that questions did not apply to them, or that they had not had to make any adjustments to their pedagogy combined with the number of respondents who skipped answering these questions altogether suggest that the instructors have a fundamental misunderstanding of the need to make their courses accessible. Based on the number of students with disabilities in college, TPC instructors cannot ignore that such students are present in our courses. Moreover, many students with disabilities do not readily seek help from disability services. Research has found that many students with disabilities have a desire to forge an identity that is not related to their disability (Lightner, Kipps-Vaughan, Schulte, & Trice, 2012; Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010) and that 60–80% of students with disabilities choose not to disclose their disabilities for a number of reasons (Schelly, Davies, & Spooner, 2011; Wagner, Newman, Cameto, Garza, & Levine, 2005).

Most of our educational environments are constructed to erase difference, to normalize all individuals and experiences. As Titchkosky (2011) pointed out, "access addressed as the gap between what is and what ought to be can lead to questions that arise in the gap between the experience of learning, physical, psychic, or sensory disabilities, and the particular environment where this learning occurs" (p. 24). When our courses fail to be accessible, we are perpetuating these limiting practices and endorsing exclusionary pedagogies by assuming that all students are abled and would conform to a norm; that is, knowingly or unknowingly, we are participating in the "politics of the interface" (Selfe & Selfe, 1994).

The lessons from Selfe and Selfe's (1994) discussion of the politics of the interface are important in considering online education and accessibility. Selfe and Selfe argued that the computers we use in our classrooms

are often involved in establishing and maintaining borders themselves—whether or not they acknowledge or support such a project—and thus, in contributing to a larger cultural system of differential power that has resulted in the systematic domination and marginalization of certain groups of students. (p. 481)

The core themes in Selfe and Selfe's article have stood the test of time. From the computer interfaces—so new to mainstream teaching in 1994—to structures of content management systems, educational technology maintains ideologies that represent the dominant culture and limit the interaction of those outside of that culture. Issues of access, as they relate to technology and to the instructors' understanding of these issues, work to maintain the abled as the normative ideology and minimize the need to make accommodations for the disabled. The same "computer-supported writing environments" used by instructors "to enact educational practices that are more democratic and less systematically oppressive" (p. 483) can also be systems that restrict access to students with disabilities. To overcome these problems and move toward a true democratic teaching environment, we have to reenvision our understanding of making courses accessible, which is highly contingent on fully understanding what accommodation means.

Titchkosky (2011) told us that "how we talk about matters of access or accommodation has something to teach us regarding who we are. . . . Matters of access and accommodation rely on, and constitute, conceptions of who belongs" (p. 37). As the qualitative answers from the national survey indicate, the in attention to and lack of understanding about accommodating students with disabilities—and in some cases the overt stance that "it's not my concern"—indicate the stance of some instructors about who should belong in our online TPC classrooms. Coming full circle back to paying attention, according to Titchkosky, requires "that we attend to our interpretations of disability and, in so doing, pay attention to the politics we make use of to respond to the place of disability in our society" (p. 129). So when are faculty supposed to pay attention? When they are told? When they have time? When the student identifies? Survey participants emphasized several times that pedagogy must come before technology; however, when asked about the need for training, the instructors overwhelmingly stressed training in technology over training in pedagogy. But in none of the responses in other parts of the survey about technology, training, and pedagogy did we find references to training or pedagogy in order to meet the needs of students with disabilities. This is problematic for TPC because, as Zdenek (2009) reminded us, "students with disabilities are in danger of being either

excluded from the new media revolution or accommodated as after-thoughts of pedagogies that fail to anticipate their needs.''

While many of the instructors indicated that they would do more for these disabled students if they had resources, the overall picture emerging from the results of this nationwide survey beckons toward a gap in institutional leadership and a certain degree of indifference among online instructors. By not paying attention to how the technology and the interfaces exclude students with disabilities, we are, in effect, normalizing all our students into a homogenous whole, devoid of bodies and mind—abled, disabled, or other—that is simply meant to consume the courses we construct. Accessibility should ground online writing pedagogy and be the starting block for all decisions. The next section provides strategies to achieve this goal.

Strategies for Paying Attention

Considering the lack of sustained research along with the results of the OWI survey, we can see that TPC has not fully engaged with issues of accessibility in our online and hybrid classrooms. In other words, we have not been paying attention to the politics of the interface. So how does TPC go about becoming leaders in this area? What can overworked and overextended instructors and administrators do? Since technical and professional communicators are problem solvers, we want to offer some suggestions for tackling the problems we have highlighted. In what follows, we provide some easy-to-implement solutions to help the majority of students with disabilities in online courses. Institutional differences do matter and can have a major impact on creating and implementing online courses. While most universities have a disability services office, those offices vary in the type of support they offer. For example, at one of our institutions, disability services are limited to assisting only with testing procedures, and the office of distance education offers no resources for making courses accessible. In addition, we acknowledge that teaching labor (see Scott, 2007) also affects course accessibility. For instructors teaching four courses and 120 students per term, course accessibility becomes more problematic. The following solutions can be adapted no matter the institutional setting; however, these suggestions are not all encompassing.

Prepare Instructors to Embrace Accessibility

As the survey data indicate, instructors rely on students to identify themselves as needing special accommodations. But instructors should be

proactive rather than reactive, especially because an accessible course benefits all students. Research has shown that not all students request accommodations, so we are not surprised that instructors have limited experience with making accommodations (Phillips, Terras, Swinney, & Schneweis, 2012, p. 337). Instructors can also better prepare themselves by performing a ''cross-sectional reading'' of institutional landscapes as a way to systematically address the multitude of questions that arise when deciding to teach online. Potential online instructors need to consider the personal, pedagogical, technological, institutional, and managerial aspects of teaching online (Meloncon, 2007, pp. 43–47). This approach can be expanded to include accessibility issues. For example, a personal consideration might include how much extra time an instructor is willing and able to devote to ensure an accessible course whereas an institutional consideration might include finding out what offices on campus offer support to make courses accessible (e.g., does the campus have a resource that would help with adding caption or text transcripts for audio and video materials?). Ways in which instructors can be more proactive include

- *visiting with your disability services or distance education office.* By directly interacting with these disability services personnel, some of whom are well educated in accessible pedagogies, instructors can gain a better sense of the types and kinds of support that are available to them. This visit can also shed light on what these offices can and cannot provide to both instructors and students.
- *talking to learning specialists in the College of Education.* Although TPC instructors are definitely ahead of the curve in understanding how to design effective interfaces, we should seek out those experts on campus who know more than we do about different learning and access modalities. With such a wide variety of disabilities, it is impossible to know the best approaches for all of them. When faced with a specific problem, do not hesitate to seek out an expert on campus or on one of the online-instruction discussion groups who is able to help.
- *attending related training sessions.* Most campuses have teaching and learning centers that provide professional development opportunities around a specific topic. Be on the lookout for these sessions as they relate to online course design and to accessibility and accommodation. Also, if no session on accessibility is routinely offered, ask the director of the center whether they would put together one because this is an issue that concerns all instructors teaching online.

Moreover, be on the lookout for opportunities at conferences. Faculty specializing in accessibility and disability are beginning to teach professional workshops for online instructors at major writing conferences (e.g., two accessibility-related workshops are scheduled for the 2014 CCCC, Developing an Online Writing Course Initiative: Preparing Teachers and Students and Breaking Down Barriers and Enabling Access: (Dis)Ability in Writing Classrooms and Programs), and these workshops can be extremely comfortable educational spaces to get your feet wet in accessible writing pedagogy and to form serendipitous peer-support networks.

- *creating homegrown internship or service-learning opportunities*. Part of preparing instructors to embrace accessibility is ensuring that they have the proper materials for their courses. Many of the courses in our existing TPC curricula could integrate a course project that would fulfill the need of creating accessible pieces for online courses. For example, a desktop publishing or information design course project could be to create existing handouts in multiple formats, or an online documentation, publishing, or editing course project could be to make PDF files accessible.

- *preparing your students*. Although students do not always identify as having a disability, they are likely to disclose it to you at some point in the term. Once a student identifies as having a disability, insist on having a telephone or TTY (text telephone) meeting to inquire about their special needs and preferences for material delivery. The Office of Disability Services will insist on certain accommodations according to the documentation received from the student's health care provider and the student's individual disability, needs, and preferences, but you should also understand the student's learning style and work habits in order to optimize pedagogical strategies for delivering the course curriculum. Take the opportunity to clarify course expectations and to discuss the student's right to seek help. Encourage students to try out the delivery tools before the semester.

In addition, some instructors trying to prepare to teach online classes have disabilities themselves. These instructors might encounter difficulties in trying to navigate how to teach online. TPC journals have not yet published in this area, but scholars (Oswal, 2013; Price, 2011) are publishing in venues outside of TPC, and this work examines what it means to be a faculty member with a disability. In creating an online course, instructors with disabilities would take many of the same steps that an instructor would

take in creating such a course for students with disabilities. For example, when selecting a delivery tool, instructors with disabilities need to consider their own limitations in using that tool.

Incorporate UD for an Accommodating Course

Most faculty members who teach in TPC programs are familiar with the basic tenets of usability, user experience, and effective information architecture. These ideas are the building blocks of creating an accessible course that meets or exceeds the expectations of students with disabilities and are closely related to principles developed for accessible online learning. The Center for Applied Special Technology (2004), has developed a UD for Learning (UDL) that offers a framework comprising education-specific principles for designing accessible curriculum and pedagogy. The three main principles of UDL address issues of representation, expression, and engagement:

1. *Provide multiple means of representation*. Employ multiple modalities—vision, hearing, and touch—to represent course materials so that the essential information can be perceived and comprehended by all learners. For example, print content supplemented by visual and auditory channels could assist students with blindness, dyslexia, and certain psychiatric disabilities to intake this information more accessibly and efficiently because they would be more likely to make connections within and between concepts when applying more than one of the available senses in order to work with multiple representational modalities.

2. *Provide multiple means of action and expression*. Learners vary in their ability to process language, graphics, and symbols; therefore, decode all such information and provide illustrations in differing modalities to reach a range of abilities. Likewise, they might face certain disability-related constraints in representing their own ideas to others; therefore, provide assignments in different formats. For instance, a print assignment accompanied by an instructor podcast can go a long way for students with dyslexia and attention issues. Similarly, offer options for expressions through a variety of means—multimodal projects using print and sound, sound accompanied by visuals, and visuals supplemented by print—without stressing one over the other. For example, students with a significant visual impairment might have a better facility with representing

their work through a multimodal composition, and students with a hearing disability might not prefer the same multimodal means if the assignment requires the use of all senses.

3. *Provide multiple means of engagement.* When we talk about engagement, we must note that students do not always fail to engage in our courses simply because of a lack of ideas or interest; they may also fail to engage because they lack the operational means to connect with their instructors and classmates. For example, information about due dates should appear in multiple places and modes, such as on the announcements page and also in an audio file, so that the student with dyscalculia does not miss the information that has been represented only in numeric values on the class calendar. In the same vein, in class discussions, employ oral, written, and nontextual visual means for interaction. Multimodal technologies can serve the needs of all the students impressively if we are flexible in applying these technologies and careful in setting up our prompts for such interactions. The use of an electronic discussion board with access for students to post instantly accompanied by an overlapping traditional, synchronistic class discussion using an audiovisual interface in an online course can engage many more learners with varying sensory and print disabilities, not to mention the shy able-bodied students. The most important rule in choosing such multimodal interactions for our classes is to remember that the selected technologies have to be accessible, easy to use, and available to all students and faculty.

Select Your Delivery Tool

Many instructors either are required to use the institutions learning management system (LMS) or they elect to because that is what will be supported for online classes. If your school offers an option for more than one LMS, read the recent reviews on their accessibility from third-party sources. All of the major LMSs meet the legal definition of accessibility, but all also require attention to providing materials following the key concepts of UD. If the institution only offers one option, then it becomes even more important to ensure that the content is structured in a way that is accessible for students. All elements such as discussion boards, supplemental materials in powerpoints or PDFs, and audio and video supplements need to be accessible.

Today's commercial LMSs, such as Angel, Blackboard, Canvas, and Desire2Learn, and the open-source software, such as Moodle and SAKAI, present a panoply of tools for delivering curriculum. Based on our own

experiences with testing these systems as well as current research (Lanier, 2010; Rangin, Petri, Thompson, Humbert, & Hahn, 2013), we know that not all these tools are accessible to students and instructors with disabilities.

To begin with, no meaningfully accessible discussion boards, chat programs, or Wiki tools exist in any LMSs at this time. Even when providers promise full accessibility, they imply a mechanical accessibility of the system. For example, a screen reader can read many LMS interfaces; however, the output that the screen reader produces makes it impossible for the student (or instructor) to follow. In this case, the LMS is technically accessible, but from a student's viewpoint, the material is inaccessible. Other typical LMS-accessibility problems that screen readers and other keyboard-only users face include poorly organized information (i.e., due to an unsystematically structured Web page coding that ignores HTML rules), carelessly designed navigation menus, and missing or incorrect labels on user controls. For instance, in an LMS such as Canvas, students with disabilities cannot know what and how much information is displayed on the page at a time, which causes unnecessary confusion. The exam and quiz tools built into the LMS also impose rigid time limits to finish these activities online. According to their accommodation letters from the college disability services, students with various disabilities receive extra time for completing such work depending on the nature of their disability, but instructors do not know how to provide students with this extra time.

While some improvements to LMSs have been made, the systems are still cumbersome and add a layer of complexity that would prohibit a student with disabilities from taking multiple courses online because of the enormous amount of time it would take them to work through the LMS. The same holds true for instructors with disabilities who have to use the LMS tools. Thus, in an online environment in which manipulating information and page controls becomes tenuous, student's learning can easily be compromised.

Although the nonprofit organizations behind open-access LMS lack interface-level accessibility due to the absence of industry standards for such access, they also struggle to provide timely solutions once end users flag accessibility problems due to fiscal difficulties in improvising costly retrofits. Volunteer programmers often support these LMSs, and not all of them are trained in the area of accessibility. They often come from technology departments rather than from the TPC teaching faculty and tend to make choices based more on novel technological characteristics than on the pedagogical needs of instructors and the learning needs of students. Last, LMSs are also constantly updated, and rarely do all the accessibility features of the previous version get carried forward to the new version.

Other more fundamental development decisions also complicate the accessibility problem-solving process. Since these LMS developers did not start with the disabled users' needs when choosing a platform or designing the system interface, the retrofitted accessibility work arounds in the form of scripts and fixes are even more difficult to carry forward from one version to another without yet adding more retrofits. Thus, early choices about excluding disabled users from the conceptualization of LMS design have long-lasting costs both for users and manufacturers. As Lanier (2010) pointed out, "the brittle character of maturing computer programs can cause digital design to get frozen into place by a process known as lock-in," and "the process of significantly changing software in a situation in which a lot of other software is dependent on it is the hardest thing to do. So it almost never happens" (p. 7). This routine of one step forward, two steps backward is the result of a system in which access is retrofitted instead of constructed on an inclusive interface with disabled users and with the range of adaptive technologies that allow these users to interact with LMSs.

But online instructors might avoid these accessibility pitfalls by creating their own Web pages for delivering the course content. In fact, before major LMSs emerged in the education market, researchers had strongly advocated for such homegrown delivery systems (Gillette, 1999; O'Sullivan, 1999). Simply delivered online instruction can be more inclusive because it eliminates the physical barriers raised by technologies primarily designed for able-bodied consumers. Self-designed delivery systems can offer enhanced learning opportunities through the deployment of diverse delivery tools that are especially handpicked for catering to students with a variety of disabilities and needs (Debenham, 2002; Di Iorio, Feliziani, Mirri, Salomoni, & Vitali, 2006). Instructors can build their pages with students' needs in mind, keeping out any unnecessary bells and whistles. The Web Content Accessibility Guidelines 2.0 (2008) produced by the World Wide Web Consortium are extensive, and other less ambitious guidelines, such as the ones provided by Theofanos and Redish (2005) or by the Illinois Information Technology Accessibility Act (2007), are easy to work with and offer sufficient support for designing accessible instructor Web sites. Many master's level programs already include Web-design courses; we suggest integrating Web accessibility units, such as those outlined by Pass (2013), and Youngblood (2013) into those courses so that tomorrow's community-college and university faculty are equipped to code accessible Web pages.

While developing their own Web sites, instructors can also be proactively selective in deciding on the interaction tools, such as the software for chat and collaboration, by taking into account the differing abilities of their

students. Doing so might help them to create a system that serves a diverse population. None of the present LMSs have such flexibility.

Further, instructors should plan for an alternative delivery mode in case things do not work out as expected. Currently, no commercial E-book readers are fully accessible. The commercially available, all-purpose digital or e-texts are rarely accessible, and none offer note-taking, text-extracting, or quick reviewing tools for users employing screen readers. For example, if students with visual disabilities cannot access PowerPoint slides with a screen reader, instructors could deliver the information via an e-mail attachment. If a discussion board is confusing for students with learning disabilities, those students could submit their comments via e-mail.

Build Capacity

With the growing number of programs in TPC and the large number of composition PhD programs, program administrators can create an environment that stresses the importance of accessibility in course and program design. The most obvious and ideal place to create this environment and build capacity for this sort of training is in the pedagogy course that most graduate students (both MA and PhD) are required to take. At the course planning level, we can serve our students with disabilities on a par with other students if we take the time and effort to understand the nature of accessible online instruction and to identify pertinent pedagogical strategies for overcoming barriers. Curricular content and design should integrate UD, and course resources should be organized in a format that provides maximum access and ease of use to disabled students. Incorporating accessibility into the unit on course planning is a simple step to start building capacity around this important issue. Rao and Tanners (2011) offered an overview of the various approaches to UD as it relates to education. They also created a course-mapping chart that can be easily adapted to TPC and used to map course elements to UDL principles. In addition, we have found Higbee and Goff's (2008) ideas and concepts to be useful in understanding how UD can be implemented across higher education, and Seale's (2006) work is a must read for administrators because it considers accessibility from multiple institutional standpoints. All of these sources could be used as supplemental texts in any number of graduate classes.

Further, recent scholarship (Meloncon & Arduser, 2013) has argued for the creation of communities of practice for online TPC course and TPC program sustainability. Simply stated, a community of practice is a "group of people who share a concern for something they do and learn how to do it

better as they interact regularly'' (p. 74). Meloncon and Arduser described the creation of a community of practice in designing, building, and maintaining online courses; in this community, instructors can share resources and knowledge (p. 81). Thus, by creating a community of practice, TPC faculty could easily share information about best practices, tips, and techniques for creating accessible online courses.

With increasing pressure on university budgets, professional development opportunities are more often than not homegrown within departments and programs, but at the program level, we must offer instructors adequate training to attain understanding of accessibility issues and to achieve proficiency in the use of technologies that are appropriate for an accessible classroom (Center for Applied Special Technology, 2004). A low-cost alternative is to provide a series of workshops to expose faculty to accessibility and disability concerns. Many of the sources that we have cited here are excellent starting places to expose faculty to both the theory and the practice associated with constructing accessible courses.

Another way in which to build capacity for accessibility in online courses is to actively recruit faculty with disabilities. Based on the continuing number of conference presentations, graduate students are working on disability-related projects in TPC, composition studies, and rhetoric, and many of these graduate students have identified themselves as having disabilities. By attending the various disability-related sessions and participating in meetings of disability- and accessibility-related special interest groups at these conferences, interested program administrators might locate such candidates.

Accessibility Should Start Our Work

The survey results indicated that TPC has much work to do to ensure that online courses are accessible for the growing numbers of students with disabilities. The strategies that we have provided offer ways to make such courses accessible, but the practical necessity of doing so carries greater import when placed within Selfe's (1999) landmark work on the perils of not paying attention to technology. By expanding Selfe's work to include issues of accessibility, we were able to provide a theoretical framework for critiquing the systemic issues of power and privilege within which accessibility issues arise. The field needs more pedagogically focused research about accessibility and disability issues. Future research needs to explore answers to questions such as these: What strategies have programs used to integrate accessibility into online TPC courses? What do students—both

those with disabilities and those without disabilities—find to be the most useful elements of UD? What are best practices in creating accessible online course design? Research should also focus on questions related to specific practices such as those found in the CCCC's (2013) statement on effective practices for OWI.

The implication of our argument about paying attention to accessibility is that technical and professional communicators should put into practice what our scholarship has long touted—that is, putting the user first. In doing so, TPC instructors should start course preparations with accessibility in mind. The strategies we have provided are merely ways to get started because effectively implementing accessibility across programs requires a fundamental shift in ideology; it requires starting with accessibility as a parallel to learning outcomes. Doing so ensures that we are creating better online learning spaces for all students because, as Burgstahler (2002) put it, "designed correctly, distance education options create learning opportunities for everyone. Designed poorly, they erect barriers to equal participation in academics and careers for potential students and instructors with disabilities" (pp. 22–23). More than three decades ago, Miller (1979) situated our then nascent discipline in a humanistic grounding so that it could overcome the restraints of instrumentality. Because accessible online courses for students with disabilities also offer a richer experience for all students through multilayered and more flexible user interfaces, we hope that TPC instructors will pay attention to the students who exist outside the stable categories of abled and disabled. By picking up the gauntlet of accessibility, TPC, as a discipline and as a profession, will once again be engaged in another humanistic pursuit for bridging the digital divide in higher education.

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Author Biographies

Sushil K. Oswal is an assistant professor at the University of Washington, Tacoma. His research focuses on accessible digital technologies, disability, and technical communication. His work has appeared in *Kairos*, *Communication Design Quarterly*, *Business Communication Quarterly*, and several collections of essays.

Lisa Meloncon is an associate professor of technical writing at the University of Cincinnati and director of the Urban Health Research Center. Her teaching and research focuses on medical rhetoric and health communication, which includes disability and accessibility issues.