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*Chapter 11*

**DISABILITY IN A DIGITAL WORLD: ONLINE  
PEDAGOGY FOR ENABLING LEARNING**

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**ABSTRACT**

This chapter addresses the pedagogical dimensions of online learning for university students with disabling conditions. Research reviews indicate that the technologies of online learning do not preclude the participation of students with disabling conditions. The increasingly high-tech design of online learning poses challenges for some learners. The principles of universal design for learning (UDL) are used to explain that proactive design allows educators to enable learning for diverse students. The chapter provides a practical summary of the pedagogical dimensions of online learning in the context of student diversity.

**INTRODUCTION**

*At the time of interview, Sarah was ... in the process of taking her third ... course toward a program offered entirely online. ... She described online presence as a form of 'escapism.' She discloses her visual impairment to the course instructor to avoid instances of inaccessibility. However, she avoids informing her student colleagues. She expressed that she appreciates the*

*opportunity to engage in educational discussions without the stigma of visual impairment. She feels judged for her scholarship and not for what the public perceives as her (in)ability to cope as a visually impaired learner.*

*Sarah described an instance in which she felt forced to disclose her identity as visually impaired to her fellow learners. Tongue in cheek, she paraphrased multiple postings of one of the students. She said that he is 'really enamoured with the technical aspect of working online and he was suggesting that we use HTML and do this and do that, and let's have some 'fun' with this course.' She described an increasing sense of confusion and frustration. ... 'So I respond by saying that this was not in the original prerequisites for the course ... and please stop because I'm legally blind and I can't see the screen anyway, and I'm just frustrated with this, and I'm speaking up!' (Kinash, 2006, pp.78-82).*

The excerpt inserted above depicts a true-life experience of a blind university student enrolled in online learning. This student's experience and her shared perceptions make a number of questions salient. Each of these questions is addressed in turn in this chapter:

- Do the technologies of online learning preclude the participation of students with disabling conditions?
- As online learning becomes increasingly high-tech, is it easier or more difficult for students with disabling conditions to participate?
- Who shoulders the primary responsibility for accommodation – the student with a disabling condition or the educator and the university?
- What are the pedagogical dimensions of online learning in the context of diversity?

Technological innovations in education have the potential to enable all learners to interact with content in a meaningful way (Beetham & Sharpe, 2007; Keppell, Suddaby, & Hard, 2011; Wenglinisky, 2005). Through online delivery of content and online facilitation of inquiry, learners are able to participate in the learning community at a place and time that suit their individual styles (Bonk & Zhang, 2008; Garrison & Anderson, 2003; Garrison & Vaughan, 2008). Online, learning takes place in a flexible platform, where content may be presented in multiple modes, thereby potentially enhancing accessibility for mainstream learners, as well as learners with disabling conditions (Bender, 2012; Seale, 2006). Consider and compare the learning opportunities available to a learner born today with disabling conditions, against those available to a learner just one generation ago with the same

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disabling conditions. Has the digital age offered learners the freedom to participate in a subject in a way they previously could not? How accessible is online pedagogy?

### **The Participation of Students with Disabling Conditions in Online Learning**

An important question to consider is whether it is possible for students with disabling conditions to participate in online learning. Do the accessibility requirements of the online platforms preclude the involvement of students with sensory impairments? What about mobility, coordination hardware requirements and students with physical disabilities? Do the interfaces and underlying cognitive structures work for students with learning disabilities or cognitive impairments?

Four extensive reviews, conducted over a twelve year period, revealed that while online learning raises significant challenges for students with disabling conditions, participation is indeed possible and can be highly effective. In 2001, Kim-Rupnow, Dowrick and Burke reviewed research at the intersection of disability and online learning. Their research question was, ‘do the increase in distance education programs and use of advanced technology indicate better access and outcomes in higher education for persons with disabilities?’ (p. 25). There was little research available at that time that was positioned to answer their question. However, based on the published research, the authors were optimistic about the potential for online learning to be a realistic model for students with disabling conditions. The response was aspirational rather than achieved, as the reviewed papers revealed numerous obstacles to accessibility. In 2004, Kim-Rupnow partnered with other researchers to revisit the research analysis (Kinash, Crichton, & Kim-Rupnow, 2004). Previously, in 2001, the authors found 10 articles addressing postsecondary students with disabling conditions enrolled in online learning. For the article published in 2004, the authors found 43. This was an indication of heightened interest. However, the content outcomes were not dissimilar to those published in 2001. In 2004, the authors wrote, ‘a techno-structuralist view of online learning balances the optimism of the potential of online learning to meet the needs of students with disabilities, with provisos and cautions. Full accessibility does not appear to be experienced by learners with disabilities’ (p. 12).

Two of the authors of the 2004 review searched the literature again in 2007 and their review was published in the *Handbook of Distance Education*

(2<sup>nd</sup> edition). This time, the authors found 67 publications at the intersection of online learning and disability (Kinash & Crichton, 2007). While the increased publications indicate practitioner attention to addressing the accessibility issues for students with disabling conditions pursuing online learning, the original question as to whether online learning produced better educational outcomes and access for students with disabling conditions could not be affirmatively answered. The same authors returned to the literature for the third edition of the *Handbook of Distance Education* (2013). The authors found a new maturity to the empirical research and thereby reduced, rather than increased, the number of reviewed articles, as it was now possible to sort for direct relevance and substantial contribution to the topic (Crichton & Kinash, 2013). The overall sentiment of the authors was notably raised.

Emerging topics reflected in the convergence of the fields of disabled students and distance education include disability education as a human right, a recognition that the profile of disabled learners is changing, and that technology advances are changing the tools available to disabled students and their teachers. (p. 228)

In 2001, Kim-Rupnow, Dowrick and Burke asked, ‘do the increase in distance education programs and use of advanced technology indicate better access and outcomes in higher education for persons with disabilities?’ (p. 25). In 2013, with caution due to unresolved accessibility and equity considerations, the response is optimistic in that online learning is a realistic opportunity for students with disabling conditions to fulfil their education goals.

It is important to recognize that all people have the right to an equitable educational experience (Ashman & Elkins, 2002; Keeffe & Carrington, 2006; The Roehrer Institute, 1996). All learners should have opportunities to: enter or sign-in to the room; engage with other learners; access the textbook; hear or watch what the teacher presents; observe, manipulate and experiment; and demonstrate learning through assessment, no matter what type and degree of diversity is involved. Education professionals have an obligation to ensure that each and every learner is not disabled by pedagogy. Seale (2006) wrote, ‘at this point in time, most practitioners in higher education know that they should make e-learning accessible’ (p. 1). As much as possible, the opportunities learners receive in the traditional face-to-face learning environment should be mirrored (or exceeded) in the online environment (Moore, 2007; Moore, 2013). Because the online environment is often characterized by asynchronous communication, it can be more difficult to accurately gauge whether each learner is *plugged in* to the community. Consequently, it is a greater

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imperative for online educators to ensure that each learner is able to access an equitable educational experience, and not disabled by online pedagogy.

### **The Consequences of High-Tech Online Learning for Learners with Disabling Conditions**

Technology is not a static entity. New designs, merging platforms, and user-discovered applications blur the distinctions between definitional categories of technology. Educational policy shifts toward inclusive education resulted in prioritization of technologies that enable access to the general curriculum. Emerging technologies bring new educational possibilities. Printed books, for example, limit readers to the print format before them, and nothing else. On the other hand, enhanced electronic books allow readers to click on hyperlinks in the *Table of Contents* for easier navigation. They can click on key terms and read a definition. For readers with a disabling condition, technologies such as screen readers and optical character recognition are functional, thereby making the book accessible. Readers can also pull the book in the desired format, such as electronic audio, enlarged font or embossed in Braille. When the book is in print, the text is only available in the font and size selected by the printer. All of these changes blur the distinction between technologies for those with and without disabling conditions.

Emerging technologies are both a solution and a problem for persons with disabling conditions. Technological innovation means that a person with a removed larynx can speak using a voice box. However, speech recognition software cannot accurately detect his words, meaning that he cannot use this innovation. Now, quadriplegics can eat independently using a head pointer device, but they cannot text their friends. A student with Down syndrome can use spell-check to proofread her work, but cannot escape the proliferation of visual images that send the message that her physical beauty is not the type that society values (Kinash, 2006). Each of these examples illustrates how technological innovation ameliorates problems for persons with disabling conditions, and at one and the same time raises mainstream technological potential creating and/or making new problems salient. The rapidly evolving nature of technology often means that the accessibility gap is widened faster than it is bridged for persons with disabling conditions.

### **The Accessibility Onus of Responsibility: The Student or the University**

Self-advocacy and social justice efforts of Disability Studies scholars provoked a paradigm shift in the way in which disability is understood (Albrecht, Seelman, & Bury, 2001; Longmore, 2003). Shapiro (1993) described the disability rights movement as ‘the new thinking by disabled people that there is no pity or tragedy in disability, and that it is society’s myths, fears, and stereotypes that most make being disabled difficult’ (p. 5). Within the context of education, this means that the reason students find it difficult to participate in online learning is not because they have a disabling condition, but because their universities and educators have not attended to making the experience equitable and accessible. Edyburn (2010) challenged ‘educators to think of their curriculum as disabled, rather than students’ (p. 34). Whereas a student can *be disabled*, they cannot *have a disability*, in that the disability is not a primary characteristic of the person. This is more than semantics and it is important to the way in which technologies, including those used for online learning, are chosen and supported.

Disability is a product of the environment. For example, someone in a wheelchair is not disabled if there is a ramp and he/she is therefore able to enter an elevated building. On the other hand, a blind person is disabled if he/she is unable to engage with a lecture because he/she cannot read the whiteboard. In other words, it is the responsibility of the educators and universities to design online learning so that students with disabling conditions can experience the efficacious pedagogical dimensions of online learning.

### **Pedagogical Dimensions of Online Learning in the Context of Diversity: Universal Design for Learning**

Most readers have likely heard the phrase that *necessity is the mother of invention*. Disabled people can be considered to experience more instances of *necessity* in that they have more accessibility needs that might be resolved by technologies. As such, people with disabling conditions might be considered to have led the way for other technology users (O’Connor, 2000). A blind colleague demonstrated her talking GPS nearly a decade before it became a mainstream technology and her friends purchased their own. Jacobs (2004) traced the origins of many technologies used by people on a regular basis, such as telephones, email and flatbed scanners, which were initially designed to meet the needs of people with disabling conditions. The technology moved out

of the realm of disability when it was discovered that the applications would benefit the mainstream population.

The concept described above is referred to as *Universal Design for Learning* (UDL). The most basic definition is implementation of the proposition that ‘good design for people with disabilities benefits everyone’ (Edyburn, p. 34). The concept of UDL is an extension of the architectural concept of Universal Design (UD). The most common example in the literature is of flexible countertops. Universally designed countertops can be easily lowered by the user in a wheelchair and raised for use by a tall person.

The Center for Universal Design (1997) established seven principles of UD. The first principle is equitable use, in that the design should afford access and functionality to accommodate as much user-diversity as possible. Second, features should be designed so that they are flexible rather than fixed and static, so that they meet the unique needs of the user. Third, it is important that the design is simple and intuitive to use. This relates to the fourth principle, which is that the usage information is perceptible. If there are cues as to how to specialize, these identifiers must be easily perceived. Fifth, there must be tolerance for error. The design must also mean low physical effort (sixth principle). Returning to the flexible countertops, the operating lever should not require extensive physical force. The final principle is size and space for approach. The innovation should not take-up much more room than the original non-UD design.

It was immediately evident that UD applied beyond architecture, and particularly, to education. Three principles define the core tenets of UDL. The first is multiple means of *representation*. This means that the educator builds planned redundancy into instruction. The educator’s lessons, lectures and/or tutorials use a combination of text, image, metaphor, audio, video, demonstration and hands-on experimentation to convey educational messages. The second principle is multiple means of *engagement*. This principle acknowledges that learners are motivated in different ways. Some attend only to reach graduation, whereas others are authentic lifelong learners and are stimulated by ideas and reflection. Some learners prefer individual study, while others thrive in group-work. UDL advocates pre-planned, yet flexible combinations of these various approaches and means of engaging learners’ motivations. The third principle is multiple means of *demonstration*. Rather than tightly defined, fixed assessment tasks, UDL means allowing students the degrees of freedom to determine how to best provide evidence of their learning. Some students will write an essay and others will create a podcast or video. The essential element of UDL is that it is pre-planned. UDL is designed

into curriculum and pedagogy from the outset, rather than retrofitted or adapted on-the-spot (Opitz, 2002).

Despite widespread belief in the efficacy of UDL, there is a paucity of well-designed empirical literature providing evidence that this approach is making a difference in education. Edyburn (2010) believes that, in part, this might be explained in that the UD principles outlined above have incomplete application to learning, leaving educators guessing in regard to appropriate solutions in UDL implementation. Edyburn posed the question, ‘Would you recognize universal design for learning if you saw it?’ By this question, Edyburn captures the fear that there are numerous instances in which educators and researchers claim to be teaching through UDL, when upon closer investigation, the principles are not upheld. Accessible and equitable education is complex, and therefore, the means of achieving effective pedagogies must be individualized and multi-faceted.

As such, Edyburn (2010) articulated ten propositions for the effective implementation of UDL. The first proposition is that ‘universal design in education is fundamentally different from universal design in the built environment’ (p. 36). Constructing learning through creating shared understandings scaffolded on prior student experiences is vastly different from constructing buildings in keeping with blueprints. The second proposition is that ‘UDL is fundamentally about proactively valuing diversity’ (p. 36). Curriculum and pedagogy are complex and must be carefully considered. There are no quick fixes when teaching to a group of diverse learners. While emerging technologies enable capacity for multiple means of representation, engagement and demonstration, inclusion of multimedia does not guarantee learning. Poorly designed technological insertion can be distraction rather than pedagogy. Edyburn’s third proposition is a defining characteristic of UDL. He wrote, ‘UDL is ultimately about design...Technology is simply the delivery system’ (p. 37). In other words, the educator must be proactive in identifying the problems that diverse students might experience in learning the lesson or lecture, and design the input, process and output such that the experience is accessible and equitable for all.

Edyburn’s (2010) fourth proposition is that UDL is more than just good teaching. It ‘seeks to use emerging insights gained from research in diverse fields such as brain imaging, learning sciences, instructional design, and technology’ (p. 38). The fifth proposition is that ‘universal design for learning does not occur naturally’ (p. 38). UDL must be intentional, researched and rigorous. The sixth is that ‘technology is essential for implementing UDL’ (p. 38), but not sufficient. The capacities of electronic media enable accessibility,



but technology must be carefully infused in the context of rigorous pedagogical principles and understanding of diversity. The seventh proposition is that UDL is not assistive technology (AT). The defining element of AT is that it is intended for persons with disabling conditions. UDL, on the other hand, is design for all, including students with and without disabling conditions. The eighth proposition is that UDL has been minimally researched, and educators are therefore under-informed as to evidence-based implementation. The ninth proposition is that ‘claims of UDL must be evaluated on the basis of enhanced student performance’ (p. 39). Hand-in-hand with the eighth proposition, Edyburn is calling for rigorous empirical research on UDL that establishes whether this educational design is making a difference to student learning. The tenth and final proposition is that ‘UDL is much more complex than we originally thought’ (p. 40). This proposition needs no further elaboration, beyond that articulated in the propositions that preceded it.

The concept of UDL becomes clear to many through the electronic curb-cut analogy. Curb-cuts are the portion of the sidewalk that are cut-away and/or sloping so that they rest flush with the road. They were designed for people in wheelchairs to enable access from the road to the sidewalk and vice versa. There are not a lot of people in wheelchairs regularly using each and every curb-cut. However, each curb-cut *is* regularly used. Curb-cuts outside shops are regularly used by shoppers pushing trollies. Other curb-cuts come in handy for parents pushing prams, inline skaters and cyclists. The curb-cut demonstrates the definitional proposition of UDL in that there are some designs that were implemented for persons with a specific disabling condition that have benefits for many diverse types of people.

## CONCLUSION

This chapter started out by asking whether online learning might be an effective education model for students with disabling conditions. In other words, if online learning has proven to open-up positive pedagogical dimensions for many university students, are these opportunities also available to those learners with disabling conditions? Tracing the outcomes of research reviews over time, it was revealed that online learning is becoming more equitable and accessible. Application of the principles of Universal Design for Learning (UDL) holds promise in that the resulting pedagogy has the capacity to transform the experience beyond meeting threshold standards to making an

outstanding contribution to engagement and learning. UDL also extends the benefits beyond a particular student sub-group to enhancing educational outcomes for all learners.

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