Improving Access to Accommodations: Reducing Political and Institutional Barriers for Canadian Postsecondary Students with Visual Impairments

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Abstract: Challenges to obtaining quality academic accommodations for students with visual impairments in postsecondary education hinder accessibility and the success of such students. The limitations of current policies and practices intended to address the needs of students in Canada are examined and potential solutions are discussed. Further systemic changes are needed to improve the quality and timeliness of accommodations.

Postsecondary education can be challenging, especially for the 3,500 students with visual impairments in Canada who must overcome numerous unique hurdles (Statistics Canada, 2009, 2012). Research indicates that some students with visual impairments (those with blindness or low vision that cannot be remedied with corrective lenses) struggle to integrate into postsecondary environments due to the academic and social barriers related to their impairments (D'Andrea, 2012; Reed & Curtis, 2012). To overcome these barriers, students with visual impairments are typically offered academic accommodations such as assistive technology, additional time for ex-

ams and course work, government funding for assistive technology, and materials in accessible formats. Accommodations are only effective, however, if they are of high quality and are readily available. Due to high costs, time-consuming administrative processes, and misinformation, gaining access to these supports can be a challenge in itself, to the point of being detrimental to the success of students (Byrne, 2014; D'Andrea, 2012; Reed & Curtis, 2012). Many postsecondary institutions offer accommodations; nevertheless, students with visual impairments frequently take longer to complete their programs and do not have the same opportunities as their sighted peers because accommodations are difficult to obtain and are of inconsistent quality (Reed & Curtis, 2012).

Students with exceptionalities

Within a decade, the number of students with exceptionalities (that is, those with

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physical or mental health issues or other disabilities that affect conventional ways of learning) attending postsecondary institutions has doubled in the United States, the United Kingdom, and Australia (Horn & Berktold, 1999; National Center for Educational Statistics, 2011; Petrie, Power, & Swallow, 2009; Ryan, 2011). In Canada, of the 3.8 million adults with disabilities, over 100,000 have visual impairments, and more than 80% of the disabled population use assistive devices (Statistics Canada, 2013). Historically, over 16% of students with exceptionalities enrolled in Canadian institutions abandon their education due to their disabilities (Human Resources and Skills Development Canada, 2009), but it is unclear what factors lead to that abandonment.

PERCEPTIONS OF EXISTING ACCOMMODATIONS

Many students with visual impairments require more time to complete their educational programs, and retention of such students is an ongoing concern (Getzel, 2008). Often, new postsecondary students experience a period of adjustment as they adapt to new environments, but students with disabilities must also become acquainted with the processes to arrange for accommodations. Moreover, postsecondary students are expected to advocate for themselves for any accommodations they require, which can be an unfamiliar and intimidating process (Getzel, 2008; Scott, McGuire, & Shaw, 2003).

It may be argued that adjusting to a new environment is a normal expectation of any student and, since institutions are required to provide reasonable accommodations (Government of Canada, 2014), students with visual impairments have the same opportunities to succeed as do their sighted peers. There is merit to this argument; the legally mandated duty to accommodate is important, but it remains insufficient. Accommodation strategies must comprehensively address the pragmatic needs of students and move beyond simply meeting policy and legal requirements.

ADMISSIONS

Program recruitment and admission can be the first roadblocks students with visual impairments face in postsecondary education. Many recruiters are unaware of the accommodations that are available to students with visual impairments, and recruitment materials are often unavailable in accessible formats (Reed & Curtis, 2012). Moreover, in Canada only 48% of respondents from a nationwide survey indicated that their institutions offered special admission processes for people with visual impairments, and even fewer (44%) offered transition programs that can inform students with visual impairments about the processes to obtain accommodations (Reed & Curtis, 2012). In addition, students with disabilities can benefit from programs to help develop self-determination and self-management skills (Getzel, 2008). Self-determination skills provide people with disabilities the tools they need to embrace and understand disabilities, to know how disabilities affect learning, to know what supports may be needed, and to overcome barriers (Agran, Hong, & Blankenship, 2007). Prior to postsecondary schooling, some students with visual impairments have many of their day-to-day activities and accommodations decided by others

(such as parents, teachers, or school administrators), which limits their opportunities to develop and exercise self-determination skills (Robinson & Lieberman, 2004). Students also need self-management skills such as time management, organization, and strong study habits to succeed in postsecondary education. Examples of programs to help students develop these skills could include student support groups, training and orientation programs, or peer mentors to coach (Getzel, 2008).

TIMELINESS AND COST

Timely access to support is perhaps one of the most persistent difficulties for students with visual impairments. Accommodations and assistive technology can be unavailable or prohibitively expensive. Reading requirements can be extensive and include specialized materials (for example, textbooks with graphics and equations) that are seldom available in alternative formats and are costly to convert (for instance, transcription into braille) (D'Andrea, 2012). In some cases, students can coordinate with their institutions' disability resource office to request digital versions from publishers or to have print versions scanned into digital formats (Reed & Curtis, 2012). Either case can be lengthy and complex, and can cause students to fall behind in course readings.

AVAILABILITY OF ALTERNATIVE FORMATS

Publishers have been hesitant about widespread distribution of electronic versions of textbooks due to copyright violation concerns (Ogilvie & Eggleton, 2011). In Canada and the United States, legislation (Bill C-11 and the 1976 Copyright Act, respectively) allows people with perceptual disabilities to convert materials into alternative formats without violating copyright, but it does not require publishers to provide digital source files (Government of Canada, 2012; Richert, Brunson, Bridges, & Reid, 2015). Additionally, in the United States many e-books are incompatible with assistive technology due to digital protection measures. Authorization to circumvent those protections is currently subject to a triennial review by the Library of Congress (Richert et al., 2015). Although helpful, this legislation still places a burden on students to arrange for conversion to accessible formats. Typically, conversion involves scanning print and using optical character recognition software to make the content compatible with assistive technology such as screen reading software (Reed & Curtis, 2012). Ultimately, the efficacy of this conversion depends on the quality of the source material and the scanning method. Documents that have been previously photocopied; are handwritten; or have multiple columns, tables, figures, or equations greatly weaken the ability to convert files with optical character recognition software (Fichten, Asuncion, & Barile, 2009). These issues make manual conversion a solution that should only be used as a last resort (for instance, with out-of-print materials).

To reduce strains on resources and redundant conversions, several digital repositories for accessible materials have been created, but only approximately five percent of print materials are available in alternative formats (Canadian National Institute for the Blind, n.d.). A better solution could be to implement legislation that requires publishers to

provide accessible digital source files to students with disabilities, as exists in some American states (Guyer & Uzeta, 2009). Until such legislation exists, institutions can consider employing an order of preference when selecting course materials: materials in accessible formats that are readily available to the public or upon request, materials that have been previously converted to accessible formats, or materials that will be converted to accessible formats prior to the start of the course. These solutions could reduce the burden on students and disability support providers, who often facilitate document conversions. Giving preference to accessible materials could also give students who are visually impaired access to course materials at the same time as their sighted peers.

INSTRUCTION

A significant component of the success of students is instruction. Policies and legislation are of limited value without meaningful propagation through day-to-day instructional practices. Students with visual impairments can benefit when instructors have increased awareness and understanding of their needs and actively incorporate accessibility into their courses (Getzel, 2008). There are two leading perspectives on students with disabilities: the medical model and the social model (Kumar & Wideman, 2013). The former assumes students must adapt to suit learning environments. Conversely, the social model views all learners as part of a continuum with a variety of needs, and supports the belief that the learning environment should be modified to meet those needs (Carney et al., 2007). Many instructors are willing to accommodate the needs of students (Dallas, Sprong, & Upton,

2014), but there are inconsistencies in awareness of approaches, legal rights, and responsibilities of students and instructors (Carney et al., 2007). These issues are particularly important when considering the power dynamic between instructors and students, in which students may be apprehensive about disclosing their exceptionalities to instructors for fear of negative consequences (Byrne, 2014). Possible solutions could include disability awareness training for instructors, training for students and instructors on their respective rights and responsibilities, and guidelines for instructional best practices.

SOCIAL BARRIERS

Accommodations such as screen reading or magnification software can be tremendously helpful for accessing course materials, yet they are seldom discussed in terms of overcoming social barriers faced by students with visual impairments, who often feel their social experiences differ from their sighted peers due to uncertain or negative perceptions about their impairments (Mullins & Preyde, 2013; Myers & Bastian, 2010). This social divide is further compounded if instructors and support providers perceive accommodations as a privilege rather than a right, which can cause students to feel unwelcome (Byrne, 2014). Research into improving social interactions using accommodations would be beneficial, as would programs that improve impairment awareness (Myers & Bastian, 2010).

ADDRESSING THE LIMITATIONS OF ACCOMMODATIONS
Universal design for learning
Although helpful, accommodations have limitations and require students to be

reactive and find ways to conform to various learning environments (Kumar & Wideman, 2013). Even with accommodations, requiring students to learn through a limited array of prearranged methods and resources can be detrimental to learning, as these options may not adequately meet the needs of individual learners (Meyer, Rose, & Gordon, 2014). Conversely, applying the principles of universal design for learning can reduce or remove barriers to learning. Universal design for learning is a design framework that aims to create learning environments and curricula that are accessible to the widest possible variety of students (Rose, Hasselbring, Stahl, & Zabala, 2005). The principles of universal design for learning include providing students with multiple means of expressing learning, engaging with learning, and representing learning (Meyer et al., 2014). Examples can include, for example, allowing students to choose between digital and print course materials or allowing them to write essays or create videos to demonstrate what they have learned. In conjunction, these principles address the unique learning needs of each student by offering flexibility in learning methods and resources (Meyer et al., 2014). Consequently, students with disabilities may require fewer accommodations and may be less prone to the complexities that are associated with accommodations such as time, cost, and quality. Furthermore, universal design for learning can also be beneficial for students without disabilities (Rose & Dalton, 2009), especially for those who are not otherwise eligible for accommodations. Universal design for learning can also be useful for courses that are designed far in advance without knowledge of which students will be enrolled or which instructors will deliver the course. Even in predesigned courses, instructors can deliver instruction in accessible ways—for example, by providing digital copies of presentation slides, avoiding handwritten notes, and including descriptors when using graphics (Zebehazy & Wilton, 2014). Applying universal design for learning can address and circumvent numerous challenges faced by students with disabilities while simultaneously improving learning for all students.

Assistive technology

Assistive technology includes any device or system that serves to improve or maintain the functional capabilities of students (Rose et al., 2005). Ranging from low-tech magnifying glasses to high-tech tablets, assistive technology is used by over 80% of people with disabilities (Statistics Canada, 2013). In addition, it can positively affect the motivation and social development of students with disabilities by allowing them to more easily participate in class activities (Wong & Cohen, 2011). When interacting with technology, educators can find themselves disadvantaged because they must often implement technology that was developed by vendors that have a limited understanding of instructional design principles (Edyburn, 2009). In these cases, because scholarly rigor was not applied throughout the technology development and implementation process, educators are forced to rely on trial-and-error approaches to work around any shortcomings (Edyburn, 2009). In turn, reports indicate that nearly 30% of people with visual impairments in Canada did not have their needs fully met with assistive technology (Human Resources

and Skills Development Canada, 2009), suggesting that further research is needed to improve the efficacy of assistive technology.

There can also be challenges with availability, training, and support for assistive technology. Often, students must use their own specialized assistive technology devices with course websites and learning management systems, and there can be issues with compatibility. For example, a course website may include graphics without captions and scans of handwritten lecture notes that cannot be accessed by screen-reading software, thus making the website less accessible. In addition, assistive technology provided by institutions may be of limited value: it is frequently out of date, unavailable, located in fixed resource rooms, and institutions may not provide access to technical support and training for such technology (Fichten et al., 2009).

Some of the most popular assistive technology used by students with total blindness includes screen reading software, scanners, and optical character recognition software, while students with low vision favor screen magnification and proofreading software (Fichten et al., 2009). More recently, tablet and mobile devices such as iPads and iPhones have become popular due to their built-in accessibility features and portability (Irvine et al., 2014). These devices include screen readers, magnification capabilities using built-in cameras, color inversion, large print, contrast adjustment, compatibility with refreshable braille displays, voice commands, dictation, zoom capabilities, and access to an extensive array of downloadable third-party applications (Crossland, Silva, & Macedo, 2014; Hong,

2012). In addition, students with visual impairments tend to find these devices to be more socially acceptable due to their mainstream popularity as compared to traditional devices such as magnifiers, microscopes, or monocular lenses (Irvine et al., 2014).

Braille, a more traditional assistive technology, is still in use and is even preferred by some students, but it is seldom available for postsecondary materials (D'Andrea, 2012). Although some students find braille beneficial for learning syntax and grammar, embossed braille books are bulky and can be prohibitively expensive to produce (D'Andrea, 2012). Similarly, tactile representations of graphics are informative and useful in a range of contexts, but high costs and lengthy production times typically make these resources unattainable (Petrie et al., 2009). These types of complications are not always explicitly considered in legislation and policies, which can create barriers for students.

Implementing universal design for learning and assistive technology

Although complementary, assistive technology and universal design for learning are distinct concepts, "much like two sides of the same coin" (Rose et al., 2005, p. 507). Assistive technology addresses the requirements of individual students by using devices that cater to specific needs, such as reading using a refreshable braille display that converts digital text into braille. Conversely, universal design for learning is a design framework for improving curricula and learning environments (Meyer et al., 2014), which often incorporates assistive technology as part of an overall strategy but not necessarily as the focus.

The effective development and implementation of assistive technology needs to consider the context of use, since simply satisfying a list of accessibility guidelines from a technical standpoint may fall short of addressing the authentic needs of students (Horton & Sloan, 2014). Similarly, considering the context of user experience can also apply to the processes involved in securing academic accommodations. Most postsecondary institutions subscribe to the medical model of disability, which places the onus on students to overcome learning barriers (Kumar & Wideman, 2013). Typically, overcoming such barriers involves registering with a disability support office, providing eligibility documentation and disclosure to instructors, and requesting and waiting for accommodations (Kumar & Wideman, 2013). Students may also need to organize accommodations for multiple courses and repeat the process each semester.

Applying universal design for learning involves proactively integrating a range of diverse student needs into instructional practices and design (Scott et al., 2003), which can be beneficial for students, instructors, and institutions. For example, by being provided lecture notes in an accessible format, students could avoid manual conversion and could use the assistive technology of their choice to access the materials. In addition, the time and costs associated with material conversion could be mitigated. As Rose et al. (2005) note, the application of universal design for learning and assistive technology needs to be strategic. For example, embossed braille versions of course materials can be prohibitively expensive and might be usable by only a few students. Alternatively, digital versions of course materials that are compatible with assistive technology such as refreshable braille displays could be accessible for students with and without visual impairments.

Making postsecondary programs accessible

The accessibility of certain postsecondary programs can affect program selection for students with visual impairments. For example, science programs that involve using laboratory instruments may prevent visually impaired students from participating or may pose safety concerns. Unfortunately, many institutions are ill prepared to accommodate students with visual impairments in their science programs due to the significant degree of hands-on learning involved (Cole & Slavin, 2013). For example, a student taking only one or two courses with laboratory components may be able to cope by relying on a lab partner to carry out experiments and collect data, but for a student who is majoring in a science program (for example, physics, chemistry, or biology) with numerous laboratory components, relying on a lab partner can become impractical. Instead, institutions can coordinate with these students to develop viable long-term solutions for their entire program of study. Such was the case for one student with low vision who used a specialized portable video camera and a liquid-crystal display (LCD) monitor to magnify objects during laboratory sessions (Cole & Slavin, 2013). This accommodation allowed the student to participate in multiple courses and laboratory activities with greater independence.

In another example, visually impaired students enrolled in a physiotherapy program identified instructor behaviors and

attitudes as significant in making their program accessible (Frank, McLinden, & Douglas, 2014). In physiotherapy, where there are a number of classes involving hands-on learning, students with visual impairments can benefit when instructors take the time to discuss the students' needs and coordinate adaptations or accommodations (Frank et al., 2014). Moreover, small efforts made by instructors, such as combining verbal instructions with demonstrations or avoiding vague pronouns (such as *this, that,* or *there*) when lecturing, can make courses more accessible (Frank et al., 2014).

Recommendations

Based on the current literature, the following recommendations are offered to improve the experiences of postsecondary students with visual impairments:

- Offer students transition, self-determination, self-advocacy, and self-management programs to ensure they are aware of the processes and procedures to obtain accommodations.
- Offer accessible recruitment materials and train recruiters on available accommodations.
- Pass legislation that requires publishers to provide students with exceptionalities access to digital source files that are compatible with assistive technology, to mitigate the cost and complexities associated with manual conversion.
- Amend institutional policies to require sufficient lead time to allow print materials to be converted into accessible formats prior to the start of a course, to mitigate students' falling behind in course readings.
- Produce institutional policies that re-

quire course designers to give preference to content available in accessible formats.
- Offer disability awareness training for instructors and course designers.
- Write legislative or institutional policies that require the use of universal design for learning principles to benefit all students, not just those with disabilities, which could reduce the need for ad hoc course modifications.
- Consider the context of use and user experience to improve assistive technology development and the processes needed to obtain accommodations.
- Ensure that assistive technology provided by the institution is up to date and working, and that training and technical supports are available.

Conclusion

In the current postsecondary environment, it is evident that students with visual impairments continue to face challenges that affect their opportunities to be academically successful. Systemic hurdles as well as deficiencies in quality and timeliness of accommodations make it difficult for such students to obtain the support they require. These issues can create barriers for students and can distract them from learning. Changes to government legislation, institutional policy, and instructional practices can alleviate some of these issues and improve postsecondary accessibility for all students, with or without impairments. As efforts are made to address these issues, it is important to consider accommodations that are both thoughtful and comprehensive to meet the authentic needs of students.

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