

Students with Disabilities and Digital Accessibility in Higher Education under COVID-19

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Abstract: The COVID-19 pandemic has disrupted education system worldwide. The emergency remote teaching has affected higher education institutions and created challenges for multiple stakeholders including students, faculties, administrators, and policy makers. In this context, the challenges faced by students with disabilities (SWDs) worsened by COVID-19. This paper considers and reflects on existing research on experiences of students with disabilities under the COVID-19 pandemic and identifies challenges and opportunities for supporting students with disabilities and implementing digital accessibility in higher education in post-pandemic world.

Keywords: Students with disabilities, digital accessibility, COVID-19, higher education

1. Introduction

With the increased prevalence of the right to equal access to education in many countries, more and more students with disabilities (SWDs) are taking higher education. According to the 2018 European Student Survey (Hauschildt, Vögtle, & Gwosć, 2018), an average 18% of students in higher education reports having a disability or chronic disease. In the US, the number of students with disabilities in colleges was estimated to be 19% in 2015/2016 (Snyder, de Brey, & Dillow, 2019).

The COVID-19 pandemic has disrupted education system worldwide affecting over 94% of the world's student population (UN, 2020). The emergency remote teaching has created challenges for all stakeholders in higher education, particularly for students with disabilities. The technological barriers with remote teaching such as inaccessible teaching materials and platforms and the socio-economic challenges such as lack of access to necessary resources have negatively affected the learning experiences of students with disabilities. For example, lectures videos without captioning prevents deaf and hard-of-hearing students from access without sign language translation. Blind and visually impaired students rely on text or audio descriptions of informative images in lecture notes.

Previous research has shown that SWDs were at greater risk of prematurely withdrawing from university or dropping out compared to students without disabilities (Lombardi, Murray, & Kowitt, 2016). Although some of the challenges have already been identified pre-COVID and measures have been taken to facilitate the success of SWDs in many higher education institutions, the emergency remote teaching under COVID-19 has posed greater challenges on faculties and administration in higher education. This has also resulted in that the needs of SWDs were not prioritized or neglected and resources needed by SWDs were not sufficiently allocated. SWDs has therefore become a progressively vulnerable group whose educational needs were not addressed under the COVID-19 pandemic.

In this paper, we review existing research on experiences of SWDs and digital accessibility under COVID-19. We argue that the COVID-19 pandemic does not only create challenges for SWDs in higher education, but the disruption also stimulates research and innovation in supporting SWDs and implementing digital accessibility, which has implications for the post-pandemic world.

2. Previous Research on SWDs in Higher Education

A large number of research pre-COVID have focused on challenges of SWDs face in higher education (Fuller, Healey, Bradley, & Hall, 2004; Healey, Bradley, Fuller, & Hall, 2006; Madriaga et al., 2010) and revealed that SWDs invest more time and effort than their non-disabled peers do in coping with challenges (Berggren, Rowan, Bergbäck, & Blomberg, 2016; Goode, 2007).

Marquis and colleagues (Marquis, Fudge Schormans, et al., 2016; Marquis et al., 2012; Marquis, Jung, et al., 2016) present a three-phase qualitative study focusing on accessible education for SWDs in a Canadian University. The study interviewed students with and without disabilities, instructors, staff members and administrators and identified factors affecting educational accessibility in the university. These factors include knowledge, attitude, pedagogical choices, disciplinary features and institutional practices and characteristics. For example, instructors' lack of knowledge about disabilities, teaching and learning strategies employed by instructors such as group work, certain kinds of discussion, and lecturing without visual/textual support, and inaccessible course materials were reported as barriers by students with disabilities. More recently, Jeannis et al. (2019) conducted a national self-report survey on students with physical disabilities in science and engineering education and identified barriers including inappropriate accommodations and instructors' negative viewpoints. The empirical data also revealed a range of facilitators including accessible course materials and peer assistance.

There is also a large body of research on Universal Design for Learning (UDL), a framework with a set of principles for curriculum development that address barriers and give all students equal opportunities to learn. The key concepts underlying UDL are adopting multiple means of content delivery, diverse methods of expression and assessment, and different means of engagement (Rose & Meyer, 2002).

3. SWDs under the COVID-19 Pandemic

Under COVID-19, several researchers have conducted studies focusing on experiences of students with disabilities and digital accessibility in higher education. Through searching in Google Scholar with general keywords such as disability, COVID-19, higher education, and more specific keywords such as blind, visual impairment, deaf, hard-of-hearing, hearing impairment, learning disability, intellectual disability, and motor disability, we have identified and collected the relevant publications. The search was conducted between 20th and 26th April 2021. In this section, we present the analysis of the collected publications.

3.1 Studies Focusing on Challenges of SWDs under COVID-19

Except for Krishnan et al. (2020) which focused on students with hearing impairments, all the other studies in Table 1 covered challenges of students with diverse disabilities, both visible such as physical impairments and invisible such as mental disorder and learning disabilities. These studies have identified a number of challenges SWDs face under COVID-19.

Table 1. *Overview of the Studies on SWDs Challenges*

Study	Focused disability	Study method	Participants	Country
(Bartz, 2020)	General, mental disorders	Survey, interview	Students (n=45)	Germany
(Krishnan et al., 2020)	Hearing impairment	Interview	Student (n=10)	Malaysia

(Pichette, Brumwell, & Rizk, 2020)	General	Survey, interview	Students (survey n=623, 208 with a disability; interview 11 students)	Canada
(Scott & Aquino, 2021)	General	Survey	disability Professionals (n= 645)	USA
(Soria, Horgos, Chirikov, & Jones-White, 2020)	General	Survey	Students (n = 30 099, 1 788 with a disability)	USA
(Zhang et al., 2021)	General	Survey	Students (n=147, 28 with disabilities/health concerns)	USA

Apart from Scott and Aquino (2021) which collected challenges and barriers based on experiences of disability professionals who are responsible for accommodating SWDs in universities, all the other studies collected data directly from students with disabilities. The challenges and barriers can be grouped into three main categories:

- **Infrastructure** including lack of access to network/WiFi and assistive technology, lack of digital literacy, lack of access to equipment for online learning. For example, deaf and hard-of-hearing students experienced a lack of sign language interpreters. Students with visual impairments experienced a lack of competence in using screen readers.
- **Learning material and platform** including difficulty accessing learning material and using learning platforms, lack of access to course exams or assessment, and difficulty accessing technical support. For example, deaf and hard-of-hearing students experienced a lack of captioning for videos and live events. Students with visual impairments experienced a lack of descriptions for informative images in teaching notes, and difficulties in using learning management systems.
- **Communication** including difficulty communicating with support services, faculty/instructors and fellow students due to for example lack of privacy when SWDs live in family homes (Pichette et al., 2020).

In addition, Pichette et al. (2020), Soria et al. (2020) and Zhang et al. (2020) all reported SWDs having difficulties focusing and concentrating, experiencing distress, and other psychological challenges during COVID-19. In addition, Soria et al. (2020) also reported financial challenges, food and housing insecurity and safety challenges. Focusing on hearing impairments, Krishnan et al. (2020) identified challenges including accessing to hearing devices, difficulty in following and understanding lessons, and unfamiliarity with online services, as well as psychological distress.

3.2 Studies Focusing on Challenges of Faculty and Good Teaching Practice

Challenges in providing accessibility for SWDs faced by faculty under COVID-19 were highlighted by studies in Table 2. These challenges include understanding and satisfying the needs of SWDs, providing accessible curricula, pedagogical design, teaching materials, and assessment, lack of adequate support, guidance, and training for working with SWDs in online teaching. In some subjects such as surgery (Dickinson & Gronseth, 2020), human anatomy (Guimarães, Lima, Teixeira, Sanchez, & Mendonça, 2020; Mendonça, Souza, Arruda, Noll, & Guimarães, 2021; Pacheco, Noll, & Mendonça, 2020), chemistry (Lynn et al., 2020), and program programming (Li et al., 2021), the shift to online teaching posed challenges for faculty to accommodate students with hearing, visual impairments, and learning and intellectual disabilities, particularly when faculties themselves were also under stress in adapting to online teaching. The studies (Dickinson & Gronseth, 2020; Guimarães et al., 2020; Li et al., 2021; Lynn et al., 2020; Mendonça et al., 2021; Pacheco et al., 2020) present good practices in teaching the specific subjects to students with specific disabilities. Behling (2020) and Dickinson & Gronseth (2020) suggested adopting Universal Design for Learning (UDL) principles to provide inclusive education under COVID-19 to ensure access to online learning for all students. In addition to surveying and interviewing students, Pichette et al. (2020) in their study also interviewed four instructors, identified their challenges, and proposed recommendations for instructors, one of which is incorporating UDL principles in all courses.

Table 2. *Overview of the Studies on Faculty Challenges and Good Teaching Practice*

Study	Focused disability	Subject	Country
(Behling, 2020)	General	General	USA
(Dickinson & Gronseth, 2020)	General	Surgery	USA
(Guimarães et al., 2020)	Hearing impairments	Human anatomy	Brazil
(Li et al., 2021)	Learning Disabilities	Pair programming	USA
(Lynn et al., 2020)	Hearing impairments	Chemistry	USA
(Mendonça et al., 2021)	Low vision and blind	Human anatomy	Brazil
(Pacheco et al., 2020)	Intellectual disability	Human Anatomy	Brazil

3.3 *Studies Focusing on Challenges of Support Services and Good Practice*

Table 3 shows an overview of the studies on challenges of support services and good practice. The studies by Pichette et al. (2020) and Scott & Aquino (2021) both highlighted the challenges faced by disability service staff in accommodating SWDs in remote learning environments under COVID-19. Scott and Aquino (2021) reported that a large number of students in need of accommodation, lack of access to equipment/devices, difficulties in communicating with students, faculty and other departments and offices, lack of institutional support and funding have affected their services to SWDs. The study further identified institutional strategies for supporting SWDs under COVID-19, including involvement in policy development, participation in campus structure and committees, provision of training and instructions, and collaboration with other departments.

Table 3. *Overview of the Studies on Challenges of Support Services and Good Practice*

Study	Study method	Participant	Country
(Lazar, 2020)	Interview	Directors of digital accessibility (n=18)	USA
(Meleo-Erwin et al., 2021)	Web content analysis	University websites (n=127)	USA
(Pichette et al., 2020)	Survey, interview	Disability services staff (survey n=72, 208; interview 12 staff)	Canada
(Scott & Aquino, 2021)	Survey	Disability Professionals (n= 645)	USA

Meleo-Erwin et al. (2021) focused on disability/accessibility pages on university websites and investigated whether these pages provide links to instructional resources for students, faculty members, counselling center and possibility to make an appointment with the counselling center. The results indicated that there was a lack of key information on copying with the challenges wrought by COVID-19 on the disability/accessibility page. The study further suggested that visible and accessible links to remote instruction resources and counselling services be places in the disability/accessibility pages of all higher education institutions.

Lazar (2020) conducted interviews with directors of digital accessibility in US universities to understand their strategies and challenges concerning digital accessibility under the COVID-19 pandemic. The findings showed that universities bypassed accessibility requirements in their emergency procurement and purchased inaccessible digital technologies under swift shift to remote teaching. Some of the inaccessible technologies will be used even after COVID-19 and therefore will have long-term consequence for SWDs. Furthermore, captioning of videos and live events was found to be a challenge due to lack of funding. Some universities use automatic captioning for example in Zoom despite of low quality and only provide live captioning upon request. The lack of resources and qualified personals created barriers for students with hearing impairments. PDF accessibility was also found to be an issue since many faculty and administrations were reported to scan paper documents and forms to image files and send them via email or upload them to an online platform to share with students. This could be caused by lack of awareness of the challenges faced by SWDs and/or lack of digital accessibility competence among faculty and administration. It could also be that faculty and administration do not have enough time to work out accessible solutions. Based on the analysis of the interviews, Lazar (2020)

made recommendations to address identified challenges related to procurement, document accessibility, accessibility training, and captioning. Lazar (2020) further suggested that universities need to make plans to prepare for “surge” in demand of accessibility-related services caused by emergency situations such as COVID-19.

4. Discussion and Conclusion

Students with disabilities and digital accessibility suffer during the COVID-19 pandemic. This has been evidenced by several published studies as well as newspaper articles. Although some of the challenges SWDs face are well-documented problems in pre-COVID time, the emergency remote teaching has exacerbated the problems, and caused/is causing more severe consequences for SWDs. Such consequences will not only affect SWDs during, but also long after the COVID-19 pandemic. The digital tools procured during COVID-19 bypassing accessibility requirements are one of the examples of such consequences (Lazar, 2020).

Despite of a growing body of research addressing the challenges of SWDs in higher education and proposing strategies for inclusive education, there is still a gap between what SWDs need and what universities including faculties, administrative staff and leadership do to meet the needs. This gap is further widened by the emergency transferring to digital teaching due to COVID-19.

It is positive to see that some of the universities represented in the literature have increased awareness and are continuously improving their practices in supporting SWDs and implementing digital accessibility under COVID-19. However, the limited literature related to SWDs under COVID-19 has also demonstrated that SWDs and digital accessibility have not received enough attention in higher education. Furthermore, most of the studies were conducted in high-income countries. Further research should focus on low- and middle-income countries. In addition, research should also investigate the experiences of SWDs and experiences of faculty and support services in accommodating SWDs in different disciplines. Such research may provide a better understanding of the challenges faced by SWDs in higher education and good practice in addressing the challenges.

Through literature analysis, this paper has shown that a clear policy at the university level which reflected in the procurement of digital technologies, supporting services and resources allocation is necessary for better accommodate SWDs. Furthermore, capacity building, including providing incentives and training of both faculty and administrative staff to increase awareness of SWDs and digital accessibility and know-how in creating accessible teaching is important to implement digital accessibility in universities, which will further contribute to an equitable learning experience for SWDs.

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