

## “Technology earns us respect from your able-world”: Disabled students’ perceived outcome of digital technology use in higher education

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### ABSTRACT

*Disability has yet to be demystified in many aspects. It is ridden with social stigma and lack of understanding. Nevertheless, perspectives surrounding disability can change greatly, and this would help ensure equitable human rights for all. Other changes wrought by recent technological transformation have not only made our life easier but also broadened the inequality and opportunity gap to some extent. Considering such matters affecting access and equity in education, and with the qualitative methodology at the core so as to capture and analyse detailed data in depth and with sufficient trustworthiness, this paper aims to explore the consequences of digital technology utilization of students with disability in Higher Education (HE) in Bangladesh. The findings depicted how technology uses helped students with disability to empower themselves and to become mostly self-dependent.*

**Key Words:** Higher Education, Disabled Students, Digital Technology

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**Received** 08/09/2021 **Reviewed** 06/01/2021 **Accepted** 22/10/2022

**Suggested Citation** Haider, M.S. (2023). “Technology earns us respect from your able-world”:

Disabled students’ perceived outcome of digital technology use in higher education. *Teacher’s World: Journal of Education and Research*, 48 (2), 102-111.

**Doi:** <https://doi.org/10.3329/twjer.v48i2.67554>

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## **Background**

Disabled students of millennial HE are nourished in the influx of new technologies. Though there are some variations to the extent of individual motivation, expertise and amount of usage (Wald, Draffan, & Seale, 2009), disabled students are also becoming a robust cohort of the 'digital native' generation. Since HEIs have adopted different digital technologies to accomplish the academic and administrative functions, disabled student community needs to become a part of net generation for their equal existence in this technology prone environment. Commonly most of them are supposed to use university intranet to access the learning materials, communication media like mobile call and short text, email, and exclusively the internet. Unlikely to their non-disabled peers, additional to these generic technologies they use some assistive technologies to compensate their specific need irrespective of their type and severity of disabilities to get highest benefit from digital technologies. It is evident from Hasselbring and Glaser (2000, p. 102) that, technologies do not only "facilitate a broader range of educational activities to meet a variety of needs for students with mild learning disorders, but adaptive technology now exists than can enable even those students with severe disabilities to become active learners in the classroom alongside their peers who do not have disabilities". However Seale (2013) argued that access to computer and internet does not necessarily mean they have scope to get benefitted from online resources and activities. From this point of view a different contextual expansion is needed where the outcome of digital accessibility and use would be conceptualize by holistic pedagogical and institutional factors than solely a technical phenomenon (Draffan & Raingerb, 2013; J. K. Seale, 2013).

## **Purpose**

This paper specifically concerns with disabled students' own perceptions of their digital technology use. Has it been effective and helpful? Do they see themselves as being advantaged or disadvantaged? In particular, the paper aims to answer the following specific research question extracted from a PhD research project:

How do students with disabilities perceive the outcomes/consequences of their digital technology use at university? In what ways do students feel (dis)advantaged and (dis)empowered by their use of technology?

## **Methodology**

Data and findings presented in this research have been generated from the author's PhD study which had engaged qualitative case study method for pursuing his research during 2014 to 2018. In that research ten disabled students of the University of Dhaka were selected purposefully on the basis of their various representing characteristics such as gender, age, the academic year and subject of study, disability type, and the nature of technology use. Ten cases were chosen according to the researcher's own judgements in regard to selecting a variety of

persons who were willing to be involved, and who indicated their use of technology.

The methods for data collection for the Case Study research of this thesis consisted of semi-structured interviews of 10 students with disabilities, one Focus Group Discussion with six of these students and follow-up interviews of the same disabled students 16 months later in Bangladesh.

Though thematic analysis is a poorly demarcated and rarely acknowledged, yet widely used qualitative analytic method (Boyatzis, 1998; Roulston, 2001 in Braun & Clarke, 2006), this study adopted thematic analysis for data analysis. This study, along with utilizing the methodological flexibilities, followed a systematic process in data analysis, which worked towards synthesizing results to answer the research questions. Pseudonyms of the participants were used in presenting the data to conceal their identity.

## **Findings**

From the participants of this study some important contributions of technology were reported in general living, as well as in the learning of students with disabilities. Although there were some new users of technology among the case study students, some of the participants had been using computers and smart phones since school/college life, mainly for communication purposes. Very few students reported the use of these technologies for study prior to their higher education. However, since the diversity of study options has increased at university level, the need for using technology, and the technology options, have also significantly increased.

Since the purposes of using technology varied from student to student, the outcomes of this use of digital technology might have been expected to also vary. However, the participants – all with disability – reported almost similar consequences/outcomes of their use of digital technologies to what students without disabilities would experience. However, the participants also reported several ‘unique’ outcomes of using digital technologies that they claimed their non-disabled peers would never experience. The following sections analyse the findings regarding the participants’ experience of the outcomes of using digital technologies.

## **Independence**

The participants had mentioned freedom from dependency as the most significant outcome of using diversified digital technologies. Before they learnt using screen reader software on the digital devices, students with visual impairment could not read any kind of printed material. At the same time, it was not possible for them to write conventionally, as they could not see. They stated that when they had started owning smart phones and personal computers from various sources, they began to learn the usage of varieties of helpful apps and software. From that time, they started to realize the positive outcomes of these digital technologies. Several of them also reported that, before using technologies by themselves, they had been informed by their seniors and classmates of the possibility of overcoming numerous barriers of visual impairment with the help of digital technologies. As Shahdat detailed:

*I had a senior room-mate, who had been seen to use talking software on the computer for his study. One day I asked him about the advantages he had been receiving by using the technology as well as whether I could also learn how to use the devices and software. From him I first knew that with an OCR he scanned most of his hardcopy reading material and listened to the scanned copies with screen reader software in his laptop. With this, he did not need to depend on any sighted friend or relatives anymore in order to get any kind of printed material read by them. This bit of information had stirred me extremely. Until then, I used to go through the old-fashioned way, that is, I used to write in the Braille system and listen to the printed material by requesting someone to read it out, and I would record it on cassettes. Therefore, I had to rely on someone else's kindness, compassion and time. Now I realized that, computers and specialized software could liberate me from this dependency on others.*

The rest of the participants with visual impairment also shared their experiences of how the diverse digital technologies had made them self-dependent. For example:

*Ahmed: Often we have to write applications for our studies or other official purposes. Before learning how to operate Microsoft Word, I was required to request my sighted friends to type my dictation. Now I do not need it. I can write myself with screen reader software. I also can do my assignments by my own. Thus, technology and its different features helped me to become self-dependent in many ways.*

*Humayun: Before I started using digital technology, I used to record class lectures on a tape recorder. The cassettes were very expensive for me, so I recorded the lectures on a cassette and wrote it through Braille slate to preserve it. Later I would erase the lecture from that cassette and would use it to record another one. I had faced lots of difficulties in doing this. But now, I can record through a Smartphone as much as I wish. All I have to do is store it on a hard disc to listen to later. I must say, these technologies made me self-sufficient in many ways.*

It is remarkable from these comments that dependency on others prior to learning how to use digital technologies caused these students to experience a feeling of inferiority. It was certainly not their intention that they would need to seek other people's help for performing particular work. According to the participants, their incapability to read or write without help from other people had literally presented them as 'incompetent'. Some of the case study students perceived that the help they had received from others mostly derived from feelings of "pity", or as a demonstration of "mercy" for their "incompetence". The students with disability certainly did not like this attitude toward them, since they did not want to feel like a "passive receiver". The use of technology had provided them salvation from this "disgraceful" identity. Shahdat's comment is pertinent here in explaining how digital technology affected their lives:

*I would not say that these technologies have completely released us from our*

*disabilities; however, we are now capable of minimizing several functional obstacles of disability by using these devices and software. Due to this minimization of barriers, in most cases, we are not dependent on non-disabled persons anymore. It is a colossal attainment from the technology.*

Tamanna shared one of her experiences where she could not submit a course assignment for lack of the expected assistance from her classmate without disability. She had requested one of her classmates to print her assignment after composing it on a computer, but her classmate did not help her even after several requests. At that time, Tamanna was not familiar with computers. Later she had become competent in composing her own assignments using the screen reader in laptop. As a result, she could significantly reduce her dependency on other students. She believed this transformation had been possible because of digital technologies. Tamanna perceived that her identity in the eyes of her friends had merely been as a dependent who always kept asking for assistance. According to her, technology had gifted her with a new 'self-sufficient' identity.

The freedom that had been induced by digital technology had not been only the freedom of not having to depend on other people. It was also the freedom to be able to use a screen reader, an OCR, as well as other software and applications, which released them from their dependency on Braille. It was considerably complicated as well as time-consuming to learn the Braille system for the students with visual impairment, particularly for those who were 'late blind' (who had lost their vision at an older age). However, numerous participants who had started learning Braille from an early age also stated that it took them long periods of time to read Braille (by touching the Braille with their fingers and writing on paper using the Braille slate). In addition, it was very difficult for them to find mistakes in their writing. Besides this, Braille text books were not readily available at the university. Although they could write in Braille, they still had to depend on other sighted students in order to get the printed books to be read out, and for assistance as scribes in their examinations. In other words, with the Braille system, students with visual impairments could not become self-dependent. It was primarily the screen reader software that had helped them to overcome their dependency on Braille.

### **Access to the internet and Google**

Humayun supported Ahmed in stating that the internet transformed persons with visual impairment from being in a state of ignorance to entering a state of resourcefulness, by providing access to information. He clarified this by saying that sighted friends could easily access study related information on the internet, and students like himself had been dependent on these students for obtaining internet-based materials. Later, when the students with visual impairments had been introduced to the internet with the support of screen readers and other digital technologies, their dependency on sighted peers was minimized. In this way, access to information played a significant role in eliminating dependency.

Selim also highlighted how the internet had provided him with instant information and knowledge to support his study. Previously he had to find relevant study material in heavy books in the library – all difficult to handle, of course, with his paralysed hand. But with internet access he could search for his study materials in Google. Utpal, in the same manner, was able to find information using the internet from his mobile device. To him, the availability of information had become the reason for the expansion of his knowledge - now he felt like “hold the world in the palm of my hands”. Furthermore, Ahmed felt that the internet had not only been a tool for empowering him with its great mass of information, but that it had also connected him to the entire world. He reported that he had now become so dependent on the digital world, that if he lost access to online facilities for even a single day, then he would lose his sense of being connected to the world.

The internet acts like a gateway to the world of information for students with disability. According to many, their attachment to the internet provided them independence and created scope for access to information. From the data it was observed that students with disability benefitted from the internet in two ways – through the provision of a diverse range of resources and information for their studies, and also by meeting other needs.

Among the resources the internet provided, the most popular one was Google. The participants all stated that they searched Google first. They used it to source information for class presentations, and the student with visual impairment even found resources on Google that were already in a screen reader-friendly format. Thus, they no longer needed to go to the trouble of scanning hard copies of different materials in order to make them compatible with screen readers.

### **Freedom from isolation – networking**

Shahdat explained another outcome of this virtual world. According to him, various social media as well as online groups assisted him to overcome the isolation stemming from his disability. Essentially, this isolation takes place as people with disabilities, of their own accord, keep themselves separated from people without disabilities. People with disabilities have the understanding that because of their disabilities they have to expect and face neglect, disrespect and harassment from non-disabled persons. Due to this perception, many of them detach themselves from other people or make friendships exclusively with people with similar disabilities (Livingstone & Helsper, 2007, cited in Soderstorm, 2009). Shahdat reasoned that because of his visual impairment he could not go to places on his own like other people could. Moreover, he did not like to obtain assistance from other people while travelling in groups. His dependency on other people had placed him in a dilemma when visiting unknown places. As a consequence, he often avoided travelling. For this reason, as with most people with disabilities, a feeling of isolation had grown within him, but the internet helped him to outgrow this isolation:

*Since I learned to use computers and smart phones, I have found a world where I*

*could enjoy my life as I wish. I have made virtual friendships with a lot of people on the internet and they never treated me differently for my disability. I really have become able to overcome my isolation with the help of technology.*

## **Recognition of their abilities**

Another remarkable contribution of digital technology is that it has enabled the competency of students with disability to be established amongst non-disabled classmates, students, teachers and staff at the university. As detailed in the literature reviewed in this thesis, it has been ingrained in society that persons with disability have always been dependent on others, as well as being incapable of performing tasks in the same manner as a non-disabled person can. However, technology has contributed to changing this perspective. The students have stated that although they have always been capable of performing numerous other tasks with the same expertise as their non-disabled classmates; nevertheless, they had never been accepted as ‘normal’ learners. However, when they began to reveal their competencies in using technology, others around them started to see them as important.

Selim speaks about this, stating that when he began sharing his knowledge of digital technology and the internet in front of his classmates and teachers, everyone’s outlook towards him changed positively. He perceived that he was now receiving a level of respect from them, which he had not been receiving earlier:

*Technologies had a role in establishing my dignity among my classmates. When my classmates started noticing that I had access to various computer software – and that I have networks with many online groups – they began to compliment me. They themselves have started to come to me with various technological problems. I know they are giving me this honour because I have proved that my technological knowledge is better than many others’.*

A new accumulation of information as well as an expansion of knowledge that followed from using the internet has been a benefit for students both with and without a disability. It was evident from the participants that they now often receive recognition and dignity from their non-disabled peers and teachers due to their ability to collect information and knowledge from the internet. However, it is expected that every student should receive equal dignity regardless of their ability. Nevertheless, the participants with disability were grateful that they had been receiving the expected recognition for their ability to collect information and knowledge from the internet. Ahmed said, for example, that:

*In the class when I share knowledge which I obtained through the internet, my teacher and classmates start to look at me with respect. Some things that have also happened are that the teacher selected me as the leader of a study group because of my willingness for sharing this type of information and advanced knowledge. Then I realized that, as I can access knowledge and information, therefore I have acknowledgement.*

In addition to the recognition of being seen as an 'able' person for using digital technology, students with a disability were now seeing themselves more as equals – for they were now performing various tasks to the same standard as their non-disabled peers. Some of them had opined that the pre-existing gap that had been present between them and their non-disabled peers was diminishing – all because of their increasing adeptness with technology.

### **Self-confidence and dignity**

As the participants had been considering themselves 'self-dependent' with the help of different digital technologies, another important change had materialized among them. They had begun regarding themselves as more dignified and with more self-respect than before. They sensed the existence of respect from non-disabled people as they became less dependent on others and were better able to undertake tasks on their own. Utpal stated:

*One unique impact to highlight is the change of perception of others about our capabilities. That is to say, those who assumed that we are not competent because we have physical disabilities, nowadays have changed their outlook a little as they see we can use the internet and other technological devices. It is fair to say that technology helped us in a bigger way to change the perception of others about us. It didn't just help us to get our functional job done.*

The self-confidence that was already growing in the students had introduced a significant number of positive changes. According to Humayun, they no longer saw themselves as inferior, but instead as capable of accomplishing most of their study related activities by themselves. Who to ask for help, would the help be available in time or not, the disgrace of being refused help – these concerns were no longer so significant in their lives. They had now acquired the confidence that they did not need to experience the 'undignified uncertainty' of depending on others anymore.

### **Discussion and Conclusion**

While discussing the outcomes of digital technologies, the outcomes highlighted by the participants were primarily positive. This echoes similar findings from Cranmer (2017) who noted younger disabled students expressing satisfaction over technology uses as it boost their confidence and performances, but with "occasional frustrations and glitches" (p. 6). Indeed, the students with disabilities in the present study repeatedly explained how using digital technology made it possible for them to be like students without disabilities. A compulsion for acquiring this 'equivalency' was clearly evident amongst them. It can be said that, for them, digital technology played the role of being a 'tool' in acquiring this equivalency with their peers without disabilities. Moreover, the participants' focus was on how technology, as a 'tool', had helped them to overcome and outgrow social, environmental and attitudinal barriers, and assisted them in acquiring equal standing with non-disabled students. Keyes et al.



(2015) illustrated that the ‘interdependent caring relationships’ pave the way to empowerment, while self-determinacy leads to independence. In this context, however, the lack of established institutionalized infrastructure and processes build the perception among the students that without their self-initiated social-capital based support, they would simply remain helpless. In a way, they could not afford to question the usefulness of their new tool – for that would be like questioning everything that had given them newfound freedom. So, it was natural that the participants were only filled with praise for the technologies they were using.

The participants claimed to have found self-confidence and independence from technology. However, there were issues. Previously we saw that these students (particularly those with visual impairment) still needed assistance from others if errors or faults occurred in either their equipment or the software (such as when their device ‘crashes’, or software does not seem to be functioning properly). Also, in selecting equipment these students typically received help from others, particularly their parents. In fact, they might have attained self-dependency in using the technology, but in the all-important decisions that have to be made (e.g., devices or software to be used, the modality of the technological support system, etc.) the help of non-disabled persons was used.

Apart from this, the participants reckoned that they had acquired expertise that was approximately equal to that of their non-disabled peers, although there was no easy way of verifying this claim. The participants strongly highlighted the role of online networking as a benefit of their new skills. They became capable of amplifying the extent of their knowledge, skills, and communication by connecting to various online groups. An advantage of this sort of online connection is that it tends to build up networks free of the stigmas derived from their disabilities (Soderstorm, 2009). Most of the online forums created the scope for students with disability to express/expose their skills and competencies without disclosing their disability-related identity. From the data collected, it was found that the significant fact has been unveiled that these online networks also affected the offline relationships of students with disabilities. For instance, the scope for an offline friendship or communication is created when a sighted student voluntarily supports a student with visual impairment as a scribe in the exams, after responding to a help post on Facebook. At the same time, opportunities are created to become online ‘friends’ with someone from the other end of the world who has a similar disability. Prior to this online networking, these students with disabilities used to hesitate to appear in front of others and hide themselves away. As a consequence, they used to have a very limited social network. But now their online ties have created opportunities for them to connect to a larger network, and to enrich their social capital, both online and offline.

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