

PalArch's Journal of Archaeology of Egypt / Egyptology

THE AVAILABILITY AND EFFECTIVENESS OF ASSISTIVE DEVICES FOR BLIND STUDENTS' ACADEMIC SUCCESS IN COVID-19 PANDEMIC

Heritage Moleke

University of Limpopo Department of Research Administration and Development

E.mail: Heritage.moleke@ul.ac.za / heritage.moleke@gmail.com

Heritage Moleke. The Availability And Effectiveness Of Assistive Devices For Blind Students' Academic Success In Covid-19 Pandemic-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(17), 730-738. ISSN 1567-214x

Key Words: Assistive Devices, Inclusive Online Education, Mathew Effect Perspective

ABSTRACT

Covid-19 pandemic stunned not only health arena but also the educational system in which educational stakeholders as well as practitioners were obligated to strategise for new procedures to fulfil educational objectives. In this regard, face to face teaching and learning transited to online, asynchronous education, which is challenging and even more challenging to students with special needs. These students really on assistive devices for academic success of which it becomes difficult for them to succeed academically without these devices. Several scholars in the literature contended that there is still a gap with regard to educational resources for students with special needs. For this reason, this study tends to examine the availability and effectiveness of assistive devices for educational success of blind students in the days of covid-19 pandemic. By examining these special devices, this study will contribute towards the existing knowledge gap about the needs of students with special needs which will further assist the institutions of higher education as well as the educational stakeholders to innovate their services for academic success of the students with special needs. The study adopted a qualitative descriptive design. Data was collected through interviews and analysed by using Qualitative Content Analysis (QCA). The findings were presented and analysed based on the study objectives and the recommendations were made.

INTRODUCTION

Covid-19 pandemic brought the necessity for invention in all most all domains with no exception to educational arena. This brought educational challenges as the invention of remote learning was required (Parker & Alfaro 2021). For this reason, students with special needs became prime victims since their learning success depend mainly on the availability and effectiveness of the assistive

devices. These students require Assistive Devices (AD) that can aid them to succeed in learning. The ADs serve as basic needs for the students' educational success. The students' need for ADs vary according to their disabilities differences. For instance, physically impaired students need mobility aid such as wheelchairs, special chairs in classroom as well as crushers while blind students' prerequisites are noise reducing headset, voice recorders, braille materials, laptops, and computers with jaws (Moleke, Montle & Mogoboya 2020). This is in line with the Department of Education (2001), which outlines that equality has to be maintained to all people including Persons with Disabilities. Also, they should be offered equal treatment within communities and be provided with services which should facilitate educational success. Although the system advocates for inclusion and success in education for all, however authors such as Mantsha (2016); Moleke, Montle and Mogoboya (2020) assert that the needs of students with disabilities are partially met, thus there is a call for adequate support services such as the provision of up-to-date assistive devices. This study focuses on the availability and effectiveness of ADs for blind students' academic success in this era of online education and covid-19 pandemic to fulfil the following objectives:

- To determine the availability of assistive devices secured by blind students.
- To examine the effectiveness of these devices with regard to online education.
- To suggest possible innovative devices if needs be.

Theoretical Framework

This study underpins the Matthew effect theory which describes the phenomenon that in humanities the rich get richer and the poor get poorer. The theory symbolises the inequality in humankind whereby the one who has enough is receiving more than the one who lacks (Perc 2014). The initial focus of Matthew effect theory was on theorising reading differences between poor and skilled readers. The theory holds the believe that those who have abundance will accumulate more while those who have little will have scarcity (Stanovich 1986). Presently, this theory escalated and become relevant to other educational affairs other than reading differences. In the context of this study, this theory is associated with the disabled students who require extra assistance to succeed academically. For instance, disabled students unlike the non-disabled require assistive devices to access and accomplish their academic assessments and if the devices are scarcely accessed therefore, they become the poor academically as compared to their non-disabled fellows. Moreover, this theory is closely related to the concept of preferential attached to the educational expectancy between non-disabled and disabled students, in which lower academic expectancy is associated with disabled students while non-disabled are associated with higher academic expectancy. Anticipations such as this promote inequalities and impede the process of meeting the needs of disabled students for academic success.

The Matthew effect theory will therefore serve as a guiding principle for in the process of investigating the availability and accessibility of the assistive devices

for educational success of students with disabilities. That is, the findings of this study will therefore identify the state at which the students with disabilities stand with regard to the Matthew effect theory as the historically marginalised group, which is a group that can be regarded as the poor that get poorer due to educational needs constraints.

LITERATURE REVIEW

Assistive devices and covid-19

Educational assistive devices remain alarming needs for the academic success of students with disabilities even before covid-19 pandemic. As stipulated before, the focus of this study is on the availability and effectiveness of blind students' assistive devices. That is, it is worth mentioning that these students need more assistance as compared to other students. Thus, it is crucial to investigate their educational needs in Covid-19 pandemic wherein independency is required from individuals in a sense of observing covid-19 protocols. As recent findings by Moleke, Montle and Mogoboya (2020) indicate that students with special needs should be provided up-to-date assistive devices for meaningful learning purposes.

By looking at the usual assistive devices for the blind students, braille for writing and reading purposes, voice recorders to record lessons, noise reducing headphones, computers for alternative and augmentative communication such as screen readers, magnifiers, and texts in audio format (Department of Education 1997). These are the basic assistive devices for blind students; however, some may not be applicable if not required to be updated in these days of covid-19 pandemic for these students to succeed academically. For instance, the study of Moleke, Montle and Mogoboya (2020) state that blind students who were interviewed emphasised that their primary assistive device is braille for writing and studying purpose and the computer with jaws, however these devices might not be fundamental in covid-19 pandemic where online education is an obligation. The students during this time rely more on electronic material, in that, aiding devices such as braille are not fundamental due to remote learning. According to Parker and Alfaro (2021) remote learning is a major source of learning in the current state of which is found to be overwhelming especially to students with disabilities. The operation of online goes beyond their abilities and somehow hinder their learning success. Thus, it is essential to investigate the assistive devices that are available and their effectiveness for innovation purposes.

According to Chiwandire and Vincent (2019) blind students like any other disabled students experiences challenges in institutions of higher learning. The challenges include deferment of conversion and transcription of study materials for assessments submission purposes. The authors further highlighted that these challenges overwhelm the students and lead them to consider giving up their studies. Also, Nkosi (2017) argued that the students with disabilities mainly lose interest in studying because their educational needs remain partially met. In other words, they become demotivated along the journey of learning due to limited special educational resources.

Inclusive online education

Inclusive education will always be advocated with no exception of online education and covid-19 pandemic. According to the Department of Education (2001) inclusive education argues for equality and fairness in terms of treatment and provision of services to maintain fruitful education for all. In the context of covid-19, equality and fairness should be maintained on both disabled and non-disabled students in terms of accessibility and provision of educational resources despite pandemic crisis. In essence, the academic practitioners should not forget to accommodate all students and acknowledge their differences concurrently.

The policy on inclusive education expects the educational practitioners to operate according to the four virtues namely, skills, knowledge, attitudes, and values (SKAV). The policy argues that when the facilitator is skilled about the students' individual differences, it will be easier for him/her to mediate, scaffold, and understand them better (Gous & Mfazwe 1998). For this reason, it is advisable for academic practitioners to be familiar with such policies to maintain inclusion and equal success in education for all students. Additionally, it is understandable that many institutions of higher learning were not much familiar with online education, however at the same time no one should be left out in the name of covid-19 calamities.

Currently, the implementation of inclusive online education is quite challenging in the days of covid-19 as teaching and learning take place remotely. This remote learning requires internet connectivity apps such as zoom, google meet, etc. This method challenges the notion of inclusive education as these app temper with the software such as jaws and Non-Visual Desktop Access used by blind students for learning purposes. Thus, it requires a lot of efforts to foster inclusivity during remote learning (Parker & Alfaro 2021).

Additionally, the notion of 'one-size fits all' does not work in the era of covid-19 pandemic. Students particularly in inadequately provided communities such as the disabled face numerous educational challenges because of covid-19 since up-to-date technological devices are required to partake in hybrid learning. In essence, the students who do not have up-to-date software if not effective assistive devices are automatically excluded to remote learning which result in separation instead of inclusivity (National Student Clearinghouse 2021).

METHODOLOGY

The study adopted a qualitative descriptive design, which aims to provide in-depth information about the study to offer relevant depiction of traits with the intentions of discovering new meaning as well as describing the nature of the situation (Dulock 1993). This paper intends to unpack the nature of the assistive devices offered to blind students for educational success in covid-19 pandemic. The paper further selected five purposively sampled students from the selected institution of higher learning in South African context for interviews purposes. Purposive sampling technique found to be relevant to this study as it aims to understand in-depth knowledge of the studied phenomenon (Kumar 2014).

The study collected data through interviews, which is a useful method of data collection in qualitative research which aid the researcher to attain characteristics that cannot be observable within a short period as well as attaining historical information from the participants (Creswell & Creswell 2018). In essence, this method of data collection will help the researchers to obtain in-depth knowledge about the availability and effectiveness of the assistive devices for the blind students. Qualitative Content Analysis (QCA) was selected as a method of analysis in this study. It is the primary method of analysing qualitative data, more especially in analysing interviews content. This method of analysis intends to identify the main themes that emerge from the responses (Kumar 2014). This will help the researcher to fulfil the objectives of the study.

RESULTS AND DISCUSSION

The data collected from the interview recording were transcribed and will be presented and discussed under the following subheadings:

The availability of assistive devices secured by blind students

The interviewees, which are the students living with blindness were asked to name the assistive devices that they currently use for academic purposes. They mentioned similar devices namely, a laptop, recorder, jaws software, Non-Visual Desktop Access (NVDA) screen reader as well as braille machine. These are the devices that help them in the process of online learning as they indicated that a laptop is a primary assistive device to them only when certain software such as jaws and NDVA software are instilled. The software are screen readers developed for computer users whose are partially and totally sighted to help them to read the screen with a text-to-speech output or through a refreshable braille display. This is in line with McNicholl, Casey, Desmond, and Gallagher's (2019) findings, which assert that students with disabilities should be provided with academic special resources for successful academic engagement purposes.

The students were also requested to indicate whether they have received any additional assistive devices since covid-19 pandemic emerged. All of the interviewees, students, signify that they did not receive any additional devices since the pandemic began. They further indicate that they only received data bundles for connectivity of which they do not regard it as an assistive device for special needs. The figure below presents the students' responses.

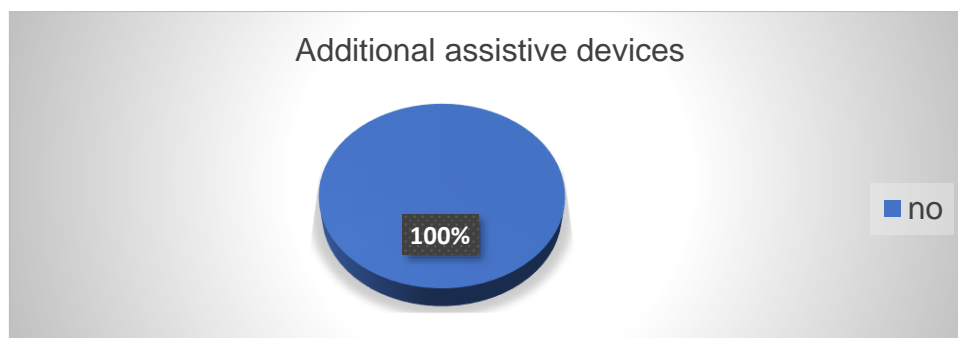


Figure 1: Additional assistive devices

The students were further asked to indicate any seminar or class which they have attended to equip them with skills that suits online education. Out of five students, 3 indicated that they did not attend any seminar while the remaining 2 stated that they have attended and it was beneficial though they have experiences technical challenges. The challenges will be discussed fully under the theme of effectiveness of assistive devices. The following figure illustrate their responses:

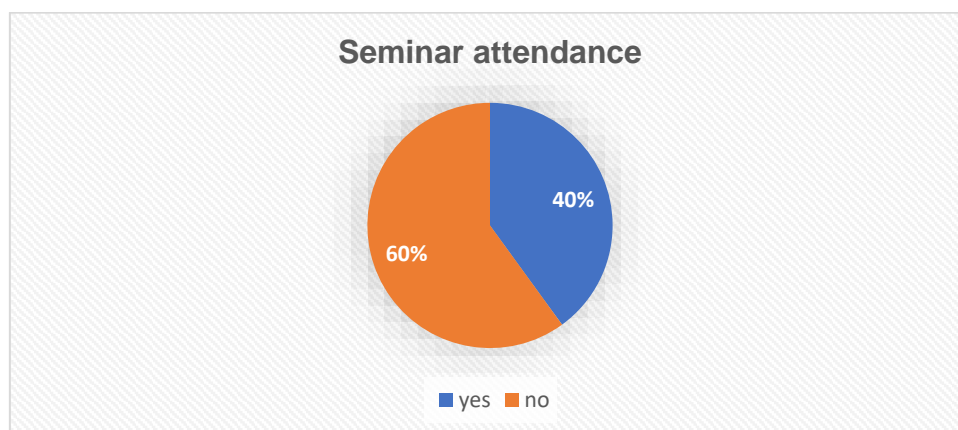


Figure 2: Seminar attendance

Figure 2 above display that 60% of the interviewed students mentioned that they have not yet attended any seminar which can assist them in terms of equipping them with digital skills that suits online education. Nonetheless, the students acknowledge the importance of digital skills development seminars as they can be helpful for their academic success in this era of covid-19 pandemic. As one of them indicated that “as a blind student I depend on technology and it is difficult to progress without it.”

In contrast, 40% of the interviewed students stated that they tried to attend one of the seminars for digital skills and academic development of which they experienced technical challenges during the attendance. The first student indicated that she managed to attend the first workshop which was via google meet and the only challenge was when the presenters use pictorial symbols to elaborate more. This is because the software which the student is using is non-visual and cannot read the symbols and pictures, thus, this hindered her to fully acquire the presented information. The other student avers that he also tried to attend one of the academic seminars of which he was unable to due to the

platform that they were using which was not accessible through his screen reader software. He continued that "I ended up relying on my friend's laptop of which I used recorder to record the lesson... though I have managed to attend but it was my wish to do it by myself." This quote can be interpreted that the students with disabilities appreciate to be assisted but also value independence. This is similar to the findings of Moleke, Montle and Mogoboya (2020), which sustain that independence unlock the inner potential of students with special needs as it showcases their capabilities.

The effectiveness of assistive devices and online education

The students were further requested to rate the effectiveness of the assistive devices in relation to online education. Their response was that the devices are effective but limited at some stages. For example, jaws and NVDA are effective in terms of reading, writing, and accessing internet however they are limited when it comes to pictorial illustrations and symbols. In other words, things such as diagrams, pictures, and videos are not accessible through jaws and NVDA screen readers. Such challenges leave these students with no choice but to record whatever is been said about the pictorial illustrations or symbols and try to make sense out of the recording.

One of the interviewed students further indicates that jaws does not recognises educational online platforms such as blackboard of which it difficult because it is a primary educational platform in several institutions of higher learning. However, platforms such as Microsoft, zoom, and google meet they are recognised by jaws and NVDA and jaws software and they are rated moderate because still they do not recognise pictures and symbols. Also, they are also challenging with regards to operations and navigating. For instance, videos have to be recorded and sent to them after class. As Mosia and Phasha (2017) asserts that the insufficiencies of students' educational assistive devices compromise their learning success. The insufficiencies of these technologies hindered the academic success of the students as well as their motivation to learn.

Students' online educational challenges

The students indicate that as the current devices have some limitations with regard to accessing the softcopy information if not screen reading, the issue of not recognising pictures and symbols; thus, they recommend that disability awareness should be compulsory for every lecturer to attend so that they can be fully aware of the special resources which are used by these students and strategise to meet the educational needs of all students. This is in line with Moleke, Montle, and Mogoboya (2020), who argue that The remaining challenge is lack of awareness about the needs of students with disabilities among members of community at institutions of higher learning which results in negligence and cause misconceptions which results in exclusion of which opposes the idea that is preserved in the inclusive education policies.

Another challenge mentioned by the students is that the audio-recorders sometimes are not reliable as some records are found missing during preparations. They further indicated that the recorders capture everything of

which is a challenge because at some point you may find that the lecturer cracked a joke and after seconds he/she continues with a lesson while other students still on that joke and laughing. Instances such as this deny us the opportunity to grasp the lesson information at some point. One of the students emphasised that, “it was better with face to face lessons as it was easy for me to stop the lecturer and ask him/her to reiterate, but now with online learning it is difficult for me to locate the keys used which are used for raising hands or unmute the mic as the screen readers are limited to online education”. This accords with Mosia and Phasha’s (2017) findings, which indicate the challenges students with special needs experiences with regard to lesson recording. For instance, the recorders as some point omit the important information from the lecture which disadvantages these students in terms of understanding the content which affect their performance in most cases.

Moreover, the students also indicate that braille is the best resource to produce study material as the content is readable; however, it becomes difficult to access it during hard lockdowns because it is fragile and cannot be couriered and most of them including the staff members of special needs support they will be home study or working remotely during this time. It thus clear that there is a need for innovation on the area of education resources of students with disabilities to maintain equality and inclusive education.

CONCLUSION

This paper aimed to assess the availability and effectiveness of the assistive devices used for blind students’ academic success in covid-19 pandemic. The findings show that the assistive devices’ effectiveness is moderate with limitations that hinder the students’ academic success. Thus, it would benefit students if lecturers made teaching resources, such as notes, accessible to students and to be mindful of students’ use of technology which requires them to project their voices appropriately to make it easier for the students to capture the lessons. This has to be a temporary solution, while in the mist of that the government, institutional stakeholders and special needs experts should strategise on developing the technologies if not assistive devices used by students with disabilities, specifically blind students to maintain for equal treatment and fair provision of services for prosperous education for all.

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