Access to online Learning for male students with hearing and visual impairment at an institution of tertiary education.

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Abstract

Learners at institutions of higher learning are now exposed to rapid technology advancements and learning strategies following the Co-vid pandemic; students with visual and hearing impairment have suffered more due to technological shifts. The objective of this paper was to establish the challenges faced by male students with visual and hearing impairment. This research assesses the challenges faced by students with visual and hearing impairments in accessing online learning at institutions of tertiary education. It further examines the existing structures and support services at specific universities that are available for students with visual and hearing impairments in their social and online learning. The research employed a qualitative approach; which enabled researchers to get insights of the personal accounts of the perceived challenges experienced by the learners. Some of the findings of the paper are that students with visual and hearing impairments do not get to benefit equally from online learning as others due to poor inclusion strategies, methodologies, lack of necessary assistive devices, and poor administration on inclusion learning of students with disabilities. The male students revealed that their self-esteem was lowered due to comments by lecturer which fail to cater for their need disability needs This paper recommends the need for inclusive learning methodologies and strategies for students with visual and hearing impairment, invest in assist technologies and cultivate positive change of attitude towards learner with disability.

Keywords; Online-learning, visual impairment, hearing impairment, inclusivity

1. Introduction

The advent of online learning has revolutionized the educational landscape, providing greater flexibility and accessibility for the larger population however, students with disabilities, particularly those with hearing and visual impairments, online learning presents significant challenges (Fitschen et all, 2009). Online learning has led to their exclusion and minimal participation in formal online learning, particularly for those in institutions of higher learning (Bayne, 2015). The main resources for online learning involve a method of instruction which uses computers, laptops, smartphones, and the internet. Online learning encompasses an extensive variety of educational activities, which include technology-based learning using websites, learning portals, video conferencing, mobile applications, Google applications, and dozens of freely accessible online resources (Allen and Seaman, 2017. Some learners fail to see what is presented, and others do not hear the

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proceedings of the lecture. This places them at a disadvantage as they do not have the same equal opportunity to learn and receive empowering moments as others. Learning strategies used for students should be diverse, student-centered, and inclusive of all the needs of students with disabilities (Burgstahler,2015). This facilitates the realization of the rights to education and the achievement of Sustainable Development Goal 4 on inclusivity and the right to education.

The current is position is that whilst institutions of learning has embraced online technology, learner with visual and hearing impairment have been forgotten (Mutanga, 2017). There are no policies and training sessions targeted on how students with disability can embrace the new technology and the lecturers or facilitators may use strategies and teaching methods that include learner with hearing and visual impairment (Ohajunwa et al, 20176) This study aims to investigate the experiences and challenges faced by students with hearing and visual impairments in accessing online learning at an institution of tertiary education. By understanding these challenges, we can identify strategies to enhance inclusivity and ensure equal opportunities for all students. (10 pt) Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follows further instructions for authors.

2. Literature Review

Online learning became prominent in many countries prior to and following the COVID-19 pandemic. According to Ali (2020), tertiary education institutions worldwide are increasingly moving towards online learning or e-learning. The use of online learning in higher education has surged significantly, presenting learners with flexibility and access to high quality education regardless of their geographical location (Allen & Seaman, 2013). This type of learning has created challenges for visually impaired individuals as they face difficulties in accessing computer interfaces and for those with hearing impairment as sign language is merely forgotten as a language of communication (Agangiba & Agangiba, 2019).

Hearing impaired learners often face challenges in hearing during online learning, while visually impaired students face challenges in reading and accessing information online since they are accustomed to Braille text or voice-over text, and hearing-impaired students rely on sign language, which is often not available on e-learning platforms such as Google Meet, Zoom, and Moodle. Vision impairment means that a person's eyesight cannot be corrected to a "normal" level. It may be caused by a loss of visual acuity, where the eye does not see objects as clearly as usual, or by a loss of visual field, where the eye cannot see as wide an area as usual without moving the eyes or turning the head (World Health Organization, 2023). According to the World Health Organization (2023), hearing impairment occurs when a person cannot hear as well as someone with normal hearing defined as hearing thresholds of 25 decibels or better in both ears. Hearing loss may be mild, moderate, severe, or profound, affecting one or both ears and leading to difficulty in hearing conversational speech or loud sounds.

Research conducted by Oswald et al. (2018) showed that fewer than half of higher education institutions in the United States have established web accessibility policies or granted funding for services that benefit students with impairments. Nevertheless, as enrollment grew, it became more important than ever to adhere to these guidelines to successfully meet inclusiveness objectives. As such, there remains a challenge in successfully integrating technology into online pedagogy for special needs students. The majority of research conducted in Zimbabwe has focused on inclusive education at the basic and secondary education levels, leaving out tertiary education institutions. Given the limited infrastructure, a combination of online and blended learning has grown more popular in Zimbabwean educational institutions (Tichawangana, 2018). Accessibility for students who are visually impaired remains a barrier (Chipangura & Aldridge, 2017).

This study fills important research gaps by examining the online learning experiences of students with hearing and visual impairments.

Arrigo (2005) conducted a study on e-learning accessibility for blind students. Arrigo (2005) identifies that the advantages of online learning have been widely described in the literature for the mainstream, but there is very little information on how it benefits those with disabilities. Arrigo (2005) indicated that the digital era has often not become a reality for most people with disabilities, especially in the educational context. Students with visual impairments are systematically excluded from the online learning mode. Similar observations have been made by Amponsah and Bekele (2023), who reiterate that despite the recognition of online learning as a strategy towards inclusive, equitable, and lifelong learning, visually impaired learners have been neglected in this discourse. There is little documentation on how learners with visual impairments are managing or the challenges they face in learning in the advent of technology. Amponsah and Bekele's (2023) study further focuses on challenges and possible strategies for the inclusion of visually impaired students in online learning at two universities in Ghana.

In Zimbabwe, most researchers have previously focused on the challenges faced by visually impaired students in open and distance learning. Chikukwa and Chimbwanda (2013) explored the challenges of learners with disabilities in institutions of higher learning who pursue open distance learning. These challenges include a lack of qualified lecturers to teach them and inadequate equipment and services to meet their needs. However, this research did not address the online learning concept. Dube et al. (2023) assessed the perceived ease of use and usefulness of Google Classroom by learners with hearing impairment, visual impairment, and low concentration spans at an institution of higher learning in Zimbabwe. Dube et al.'s (2023) research is similar to this study in that it assesses the accessibility of specific online learning applications for students with both visual and learning impairments at an institution of higher learning. However, it differs in that the current study goes further to access the policy and administrative processes that operationalize the teaching of students with learning disabilities.

Inspite of the work by Dube (2023), there is still work to be done to ensure that students with disabilities have fair access to online curricula and resources, to navigate digital environments and coursework autonomously, and to effectively utilize or access online educational resources and reach their full potential, students with disabilities may need assistance. This research assists in establishing how well the educational institutions prepare lecturers to deliver appropriate methodologies to students with visual and hearing impairments in their learning.

3. Theoretical Foundations

The theoretical foundations of this study is anchored on two theoretical designs namely the Universal Design for Learning and the Social Model for disability. The two complements each other in that both frameworks reject deficit based explanations of educational underperformance which is centered on the learner and situate the problem of accessibility within the design of learning environments and the structures of educational institutions (Meyer, Rose, & Gordon, 2014. UDL provides a practical, design-oriented toolkit for implementing the philosophical commitments articulated by the Social Model, while the Social Model provides the critical theoretical grounding that prevents UDL from being operationalized in superficial or technocratic ways. Together these frameworks redirect analytical attention toward the design of learning environments and the social structures that produce and sustain inequalities rather than individual disabilities.

The Universal design for learning is a theory which was based on accessibility of person to person of different abilities (CAST, 2018). This has been expanded to principles of educational; practice which advocates for proactive design the curricula to accommodate full learner variability. This theory is in line with principle of multiple means of representation as no single mode of delivery can cater for it individual differences and how delivery of teaching is done (CAST, 2018). In facilitating on line education for males with visual and hearing impairment. It is trite to develop curricula and choose strategies that fully accommodate the learner's disability, through varying the means and types of representation to accommodate their different needs. The Social Model of disability is based on the notion that challenges experience by learners are not intrinsic or individualist but are a product of the social, institutional, and environmental barriers that fail to cater for the needs of person with impairment (Oliver, 1996). Sax (2008) and Strayhorn (2010) highlight that when online learning platforms are designed without consideration for diverse learning styles, technological access inequalities, and culturally specific barriers, they effectively disable students who might otherwise succeed in more accommodating environments. This is precisely the issue in question with male students with hearing and visual impairments.

Applied together in the present study, these frameworks generate a set of guiding analytical questions: Are online learning environments in the institutions of higher learning under study inclusive? Are they any structural and cultural barriers identified by the Social Model that deter students with disability from online learning and what institutional interventions are most likely to produce meaningful improvements in accessibility for male students?

4. Methodology

A qualitative research approach was used for its ability to provide deep insights on the personal experience and its flexibility in probing further to gain a deep understanding and insights of the participants' experiences and perspectives. In-depth semi-structured interviews were conducted with students with hearing and visual impairments enrolled in different tertiary education programs. The interviews explored their experiences with online learning, challenges encountered, and support needs. A purposive sampling technique was used to recruit participants who met the inclusion criteria of having a hearing or visual impairment and being enrolled in a tertiary education institution. Purposive sampling allows the researchers to elect the participants based on specific features of characteristics they are reaching on. In this case the criteria were hearing and seeing impairment. This method was followed by Snowball sampling to identify additional participants through referrals from initial participant. The total number of students identified with disabilities enrolled at the institution was 15; and the number of

students interviewed was 9 (nine). The rest were on work related learning. The number of interviews that was accessed was 9 (nine) males, giving a gendered flare to the nature of results on the data collection. Whilst data was collected from one gender, the challenges envisioned are objective in their existence and only subjective to extent of the nature of disability experienced by the interviewees. 3(three) male lecturers were also interviewed who happened to the instructors of the participants of our study making the total sample 12 (twelve) male participants. Ethical clearance was granted from the institution which the data were gathered. Thematic data analysis was used to identify key themes and patterns within the participants' responses. The analysis focused on understanding the challenges faced by students, the effectiveness of existing support services, and potential strategies for improving inclusivity.

5. Results and Discussion

5.1 Challenges experienced by learners

Some of the challenges faced by students with hearing and visual impairments in accessing online learning include a lack of accessible course materials, inadequate technological, social and academic support, limited accessibility of online platforms, and discriminatory attitudes. However, it is trite to note that the severity of the technical challenges faced by students with visual and hearing impairments in accessing online learning varies depending on the nature and type of impairments. Blind students cannot see completely, while partially blind students have some sight and can use it with assistance from other technologies. The students with visual impairments can be classified into two main categories: those who are blind and those who are partially blind. At an institution of tertiary education, challenges include inaccessibility of online lectures and difficulty acquiring information presented through pictures or diagrams.

Blind students indicated that they experience challenges in accessing lectures online, particularly when it comes to enabling certain features on the laptop gadgets they are using. Failure to make the necessary technological adjustments due to sight challenges results in losing out on what is being presented. One student stated,

"I rely on a personal assistant to attend online lectures. If I cannot find someone to assist in navigating the necessary adjustments to make the lecture audible, then I merely sit in the lecture to be counted as present."

Another interviewee indicated that,

"I just sit in my corner in most of the lectures and cannot follow anything, the lecturer demonstrates figures and graphs visually and says "tese takarisa, tirikuona ka kuti Ma values away anofamba so," (all of us can see, we can see, how the values are moving).

The shared experiences by these two interviewees reflect, not just a physical challenge to access the lecture room, but failure by lecturers to be inclusive and sensitive to the needs of the different leaners. The interviewees further indicated that there is a general lack of sensitivity by lecturers in their lecturing methods technicians and assessment, which leaves, those with visual impairment in a difficult position. This resonates with the UDL to the extent that there is failure by course designers to present content through diverse media, including text, audio, video, and interactive simulations, so as to ensure that students who may struggle with any one modality are not systematically excluded (Ginder, Kelly-Reid, and Mann (2019). Learners in this case are excluded from learning because of incapacity to perceive and comprehend information because it information is not put in the format that they understand. This is the basis of the social model of disability that

exclusion from participation to learn is because of the structural and institutional issues and not an incapacities of the learners (Oliver, 1996).

Another interviewee noted that challenges for those who are partially blind arise when lecturers use pictures and charts. The applications we use, such as TalkBack and NVDA, cannot decode these pictures. The application mutes, and we do not learn from such lectures. The physical inaccessibility of decoding machines—such as Braille embossers, optical character recognition (OCR) devices, and refreshable Braille displays—has been similarly documented.

Students with hearing impairments face challenges in online learning due to the unavailability of detailed alternative teaching materials. For example, lectures in our institutions do not provide sign language alternatives or detailed explanations of the material being taught. Consequently, students fail to understand certain concepts or miss critical aspects of the lecture.

Our lecturer sometimes employs Google class chat boxes, and visual reality stations; I am not capable to learn during that time and am unable to receive feedback to some of the work that I would have attempted, which prevents me from having the same learning experience as others. Many online learning platforms were not designed with accessibility in mind, making it difficult for students like me to navigate and participate fully. This findings is similar,to finding by Burgstahler and Cory (2008) that faculty members in universities across the United States routinely produced inaccessible digital content, largely because they lacked training in accessible design. The same was also found by Mutanga (2017) in south Africa who reported that students with visual impairments at South African universities frequently encountered PDF lecture notes that were entirely unreadable by assistive software, forcing them to rely on peer assistance that was both inconsistent and stigmatising. Fichten et al. (2009) further documented that the inaccessibility of e-learning materials was among the most commonly cited barriers by students with disabilities in Canadian institutions of higher learning, a finding replicated across multiple national contexts.

The challenge of limited access to technology is linked with some of the teaching strategies that are adopted by the lectures which in evidently deprive participants a chance to take part in classroom activities. The learners demonstrated that there is no equality in learning, students with no disability are exposed to all the principles with a fair chance for them to explore all ununderstood concepts, yet those with learning disabilities, sometimes we have to wait for their assist to teach them when they are at their residences.

One of the interviewees had this to say;

"I do not have a personal assistant in my lecturer. My personal assistant studies law and I am in the humanities faculty; it is very difficult for me as I have to constantly beg for attention seeking help on what I have missed out in the lectures. You lose confidence, even socially it becomes difficult to date"

Another interview, explained challenges to online as directly linked with inadequate technological, social and academic support. This leaner stated that;

"I do not have any software on my phone and rely on the library which has this software, but look at our hostel there is no level ground to the library, and its difficult for people to take you everywhere out of the hostel to place of conveniences."

A significant challenge for students with visual impairments was the discrepancy in time allocation for online tests. There were no provisions or adjustments made for learners with disabilities. The time was set, and the

applications used took considerable time to read the text to learners, negatively impacting their test performance. These findings are consistent with a substantial body of literature. Seale (2014) documented that higher education institutions frequently adopt a reactive rather than proactive approach to accessibility, creating materials that meet minimum compliance thresholds rather than genuine usability standards.

The second objective was centered on the existing supporting structure and how well the system prepares lecturers to deliver appropriate methodologies to students with visual and hearing impairments in their learning.

5.1. Existing Structures and Support Mechanisms

Students indicated that the only existing physical support mechanism was their resource center, where they could access certain devices and Braille text for their studies. They mentioned having an embossing machine that is helpful in converting certain text in Word documents to Braille. However, all students indicated that more could be done to create and facilitate a conducive learning environment, particularly regarding lecture delivery. Most students noted that there was no visible support for students with disabilities in transitioning to online learning. This finding directly relates with the theoretical frameworks chosen by this study. Students in this study consistently reported that they either lacked access to assistive technologies necessary for their participation in online learning or that, where such technologies existed, they had received no meaningful training on how to use them. Specific technologies cited included screen readers such as JAWS and NVDA, speech-to-text software such as Dragon NaturallySpeaking, text-to-speech tools, magnification software, and alternative input devices. Beyond access and training, students reported that institutional technical support staff were frequently unfamiliar with assistive technologies and unable to troubleshoot problems. Physical decoding machines including Braille embossers and electronic magnifiers were either absent from campuses or concentrated in single, often inaccessible locations, making routine access impractical.

There was also a physical challenge with the students going to the resource centre to utilise some of these machines that enable their online learning. With many of them stating that the physical terrain is inaccessible if they move with and ait because of a trench that was left unattended by the university which is very close to their hostel and other way to other facilities such a dining halls. A similar finding was also discussed by Ohajunwa et al. (2016) who found that at many African universities, assistive technologies were housed in specialised resource rooms that were themselves physically inaccessible to wheelchair users, meaning that students who required both mobility aids and information decoding technologies faced compounding barriers. This represents a structural failure that no individual student can overcome through personal effort alone.

Administrative aspects related to online learning were issues of how the lectures of facilitated chooses their teaching strategies. The students availed that they were administrative changes not only associated with the physical barriers of seeing but with the teaching strategies that were used by learners. One of the interviews stated that: I have a lecture who used images for most of his things to make demonstration. In doing so, I failed to get and understand what was being explained. The sad this is the lecture did not even provide supplementary notes of the said unit, in most cases you pass with luck and not real mastery of the modules.

Linked to the administration of the course; one of the lecturers stated

"aaah it is not our problem really, we are not made aware when allocated a module that there is a student with this type of disability, even if we know, we do not know how to handle some of these things".

This statement demonstrates challenges in the administration of course, and lack of knowledge on facilitator on how to engage with the students and lack of awareness on how to help the students. To further demonstrate ignorance of issues of diversity one of the interviewee admitted that;

" iii I felt so sorry when I discovered that I had a missing script, only to discover that I had a blind student and the script was not there because it had to be translated to braille; imagine how much the student missed out, if I had known maybe I could have provided the student better support."

The lectures alluded that awareness of lecture on the nature of disability raises consciousness when lectures decide on the teaching strategies and learning material that they would recommend for the students. The interviewee made reference to the fact that as facilitators we are not knowledge also of materials or how to ease the platforms so that they are sensitive to the disabilities that the students have. This gap is recognized by Ravichandran et al. (2022) who emphasis the necessity of training learners and facilitators in the use of assistive technologies to enhance their learning experiences

Similar sentiments were also shared that, there are challenges of adequacy of necessary technologies that the students often lacked some of the efficient o assistive technologies, such as screen readers and speech-to-text software, and also did not receive adequate training on how to use them effectively. The finding of inadequate technological support is extensively corroborated in the literature. Al-Azawei, Serenelli, and Lundqvist (2016) found that while institutions increasingly recognised the importance of assistive technology in online education, systematic deficiencies in procurement, training, and technical support remained pervasive. Fichten et al. (2009) reported that students in their multi-institutional study frequently described a pattern in which assistive technology was available in theory but not in practice—either because equipment was outdated, licensing was insufficient for the student population, or staff lacked the expertise to support its use. This gap between policy intention and practical reality is a recurring theme in the accessibility literature.

One of the interviews trained that the issues of technology has made them to witness hostility from some of the lecturers. One of the interviewees indicated that in a lecture which ha visual aids, he wore a hat to try and reduce the amount of lights, the lecture shouted at the student and said;

"Iwe we hat yepanner, bivsa chihat chako unodakuone kwa nani?" this can be directly translated to say, (remove your hat whom do you want to take notice of you).

Such attitudes impact the learner, the interviewee indicated that, "since that day, people call me panner. I felt really hurt and it affected my self-esteem and did not feel comfortable in class, so I just sit and close my eyes when the light is too much and I do not get to learn for that day."

The authors focus on how students can improve access to online learning, emphasizing the need for target group-oriented learning methodologies and course administration to meet the needs of students with visual impairments. At the same time, the authors highlight the necessity of training learners in the use of assistive technologies to enhance their learning experiences. Regarding policy inadequacy, Riddell and Weedon (2014) documented that inclusive education policies in higher education are frequently developed without meaningful consultation with students with disabilities, resulting in frameworks that are aspirational in language but operationally hollow. Lack of policy enforcement mechanisms, inadequate resource allocation, and the absence of accountability structures were identified as the principal reasons for persistent gaps between stated policy and lived experience

Detailing these finding with the question posed on the theoretical framework, what structural and cultural barriers as identified by the Social Model impede male students' equitable access to and engagement with online learning, it is clear that barriers that exist are a product of exclusion by the institution itself by failing to put administrate mechanism to cater for the varying abilities that individual possess, failing, to educate the lecturers and failing to provides financial means for that students with disabilities go not face exclusion in their learning process.

5.3 Recommendations

5.2. Based on the findings of the study, the following recommendations are made to enhance the inclusivity of online learning for students with hearing and visual impairments. It is trite to conscientise the lectures and facilitators of the diverse needs of the learners and train them accordingly on how to handle differences and variability in visual and hearing. Institutions of higher learning should formalize and priorities actions after admission of person with disabilities, giving constant support and check of issues to be addressed. For example, in departments it is trite for the Deans of faculties and chairperson to raise aware in meetings of the nature of impairment have as enrolled on their enrollment forms. Institutions of tertiary education are expected to be responsible for and respond to the diverse learning needs of students in their institutions (Moriña, 2017). Regarding trainer education, all academic staff should be required to complete mandatory training in inclusive pedagogy and accessible course design as a condition of their employment and of any academic promotion review. This training should be developed in consultation with students with disabilities and updated regularly to reflect evolving technologies and pedagogical best practices (Florian & Linklater, 2010; Seale, 2014). To fulfill the needs of students, it is necessary to have academic services that include planning, appropriate organizational schemes, expert resources, technological support, and efforts in implementing teaching, learning, and evaluation (Kouroupetroglou et al., 2011).

5.3. The challenge with technology has to be addressed not just for both facilitators and learners, facilitators but software developer and technology technicians. Technicians need to be disability aware when they develop software. Facilitators need to learn method and strategies that can suit the learner's capability including choosing material that are in formats which the learners can use. Students also need help in how they navigate and this knowledge should be given to not only them but their personal aides.

5.4. Institutions should deliberate invest finances to improve inclusivity and should ensure that all course materials are specific support services such as note-taking or tutoring, to assist students with disabilities in accessing online learning available in accessible formats, such as Braille, large print, or digital audio.

5.5. Change of attitudes towards positive attitudes should be fostered in institutions of higher learning. According to Dolamage (2017) institutions must move beyond awareness-raising initiatives toward structural policy interventions that embed accountability for inclusive practice. Disability equality and inclusive pedagogy training must be mandatory and ongoing for all academic and professional staff, with clear consequences for non-compliance. Institutions should establish anonymous reporting mechanisms through which students can report discriminatory conduct without fear of academic reprisal. Peer attitudes should be addressed through inclusive education campaigns embedded in orientation programmes and supported by student-led disability advocacy organisations Oliver & Barnes, 2012).

6. Conclusion

6.1. There is no evidence to reflect principle of universal design in the institution under study and there is urgent need to put measures to address the barriers that impede inclusion of students with hearing and visual impairment. The challenges faced by students with hearing and visual impairments in accessing online learning emanate inability to utilizes the online learning platforms as a result of inaccessibility of learning sources on formats that can be read by the different software's they use, negative attitudes by the facilitators and inaccessibility of assistive technology in some cases. All these challenges call for urgent need by universities institutions to conscientize lectures, teach and train them on more inclusive learning strategies, providing necessary support services for the students through it training and assisting in provision of useful devises, by implementing the recommended strategies, institutions of tertiary education can create more inclusive and equitable learning environments for all students. This is the underlying prince of the Universal design for learner that educators should vary the forms and means of representation they use in teaching in order to cater different ways learner perceive and comprehends information (CAST, 2018) and Some of limitations of the study is that it is based on one institutions and had only males under investigation as the only data set. Areas of further research include existence of polices on inclusivity in institutions of higher

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