Assessing the Impact of Online Education on Visually Impaired Students at the University of Limpopo: A Development Management Perspective through the Lens of Social Inclusion and Digital Learning

By

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DECLARATION

I, Modula Marcia Soana, declare that the mini dissertation titled **ASSESSING THE IMPACT OF ONLINE EDUCATION ON VISUALLY IMPAIRED STUDENTS AT THE UNIVERSITY OF LIMPOPO: A DEVELOPMENT MANAGEMENT PERSPECTIVE THROUGH THE LENS OF SOCIAL INCLUSION AND DIGITAL LEARNING,** hereby submitted to the University of Limpopo, for the degree of Masters of Development in Planning and Management has not previously been submitted by me for a degree at this or any other University; that is my work in design and execution and that all the materials contained herein has been acknowledged.

SURNAME AND INITIALS:	SIGNATURE:	DATE:
SOANA MM		**25/04/25**

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ABSTRACT

This study Assessed the Impact of Online Education on Visually Impaired Students at the University of Limpopo: A Development Management Perspective through the Lens of Social Inclusion and Digital Learning. The study seeks to understand and explore the effects of online teaching and learning experience of visually impaired students. The study also assessed the challenges that visually impaired students face during online teaching and learning. Opportunities to enable effective online teaching and learning for visually impaired students and recommendations measures that can be implemented to overcome online teaching and learning challenges for visually impaired students. This study employed a qualitative research approach, and interviews were used to collect data from the respondents. The respondents were fifteen visually impaired students and three Reakgona Disability Centre staff members. The aim of this research study is to investigate the effects of online learning on visual impaired students at the University of Limpopo, to investigate the accessibility of online learning for visually impaired students, to identify the barriers to effective online learning for visually impaired students, to identify opportunities to enable effective online learning for visually impaired students, and to recommend measures that can be implemented to overcome online learning challenges on visually impaired students. The main findings presented in this study are the demographics of the participants and key informants, online teaching and learning experiences of visually impaired students, assistive devices that are used by visually impaired students to access online classes, suitable study materials for visually impaired students, visually impaired students' academic performance, preferred class attendance method/mode for visually impaired students and the challenges faced by visually impaired students when attending online classes.

Key words: Online teaching and learning, visually impaired, disability, assistive device, accessibility, higher education.

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

DHET:	Department of Higher Education and Training
DoE:	Department of Education
DSU:	Disabled Students Unit
HEI:	Higher Education Institution
HESA:	Higher Education South Africa
ICT:	Information and Communication Technology
INDS:	Integrated National Disability Strategy
MOOC:	Massive Online Open Courses
NSFAS:	National Student Financial Aid Scheme
PWD:	People with Disabilities
RDC:	Reakgona Disability Centre
SA:	South Africa
SAHE:	Student Affairs in Higher Education
UJ:	University of Johannesburg
UK:	United Kingdom
UL:	University of Limpopo
UNISA:	University of South Africa
USA:	United States of America
WHO:	World Health Organisation
VIS:	Visually Impaired Student

Contents

CHAPTER 1

1.1. INTRODUCTION AND BACKGROUND

There is still a need of awareness and comprehension of individual learner characteristics in various institutions of higher learning in South Africa (Bilal, 2017). People with physical or mental disabilities, whether permanent or temporary, who lack equal rights in the areas of health, education, and employment opportunities are known as persons with disabilities (PWD) (World Health Organization, 2022). According to Ferrer-Estévez and Chalmeta (2021), any educational system's goal is to provide quality education for all students, such can be achieved if there are proper digital developments that cater for every student.

There are 17 Sustainable Development Goals (SDGs) of 2030 agenda for sustainable development that were adopted by the world leaders in September 2015 at United Nations Summit and officially came into force on 1 January 2026 as universal call to action to end poverty, protect the environment, and ensure peace and prosperity for all people (Henderson and Loreau, 2023). The SDGs are important because they provide a blueprint for a more equitable and sustainable world. This study is guided by the Sustainable Development Goal 4 (SDG 4) access to quality education, which ensure that inclusive and equitable quality education and promote lifelong learning opportunities for all (Walker, T.R., 2021). As a result, concerns of inclusion must be considered because they play a significant role in ensuring that no student falls behind.

According to the World Health Organization (2021), there are 43 million blind people worldwide and 295 million people with moderate to severe vision impairment. According to Manisah and Zaleha (2012), 1,115 visually impaired students graduated from higher education institutions in 2010. This figure shows that students with disabilities can compete with non-disabled students for knowledge up to the HEI level. Each year, the number of students with disabilities enrolled in higher education institutes (HEI) increases. Students with disabilities now have greater access to higher education around the world.

Despite being a minority in society, people with disabilities have rights that are just as important as those of other societal groups. Shpigelman, Mor, Sachs and Schreuer, 2022), contend that it is crucial to respect people with disabilities rights, particularly

when it comes to higher education. Students with disabilities encounter challenges such as financial changes, a lack of knowledge about disability, inaccessibility of information, reading and writing, educational approaches, online facilities, certain software not working on blackboard and a lack of resources.

Visually impaired students now have greater access to higher education around the world. The United Kingdom, for example, has well-developed inclusion policies that encourage students with disabilities to pursue higher education by providing assistance, services, processes, and structures (Shaw, 2024.). While there are efforts in Canada to make physical structures more accessible, people with disabilities are underserved and excluded (Newman, Madaus, Lalor, and Javitz, 2021). Although the United States has good policies, poor implementation makes incorporating children with disabilities into the curriculum difficult (Mosia and Phasha, 2017).

Everyone is expected to be involved in the African environment because of the Ubuntu principle (Beyene, Mekonnen, and Giannoumis, 2023), and all students anticipate having means of entry to higher education and have their voices heard. However, Students with disabilities encounter challenges such as financial changes, a lack of knowledge about disability, inaccessibility of information, reading and writing, educational approaches, and a lack of resources. In Zimbabwe (Chikonzo, Muziringa, and Munyoro, 2021), Namibia (Hugo, 2012), and Lesotho (Mosia and Phasha, 2017), students with disabilities have access to higher education, but they are barred from enrolling in courses due to a lack of suitable finance, as well as structural and behavioural barriers.

The unexpected Coronavirus 2019 (COVID-19) pandemic wreaked havoc on numerous parts of the economy as well as every feature of human life, not just in low- and middle-income countries but globally (Kwabena & Boateng, 2020). Countries' governments enacted the COVID-19 protocol and laws in response to COVID-19 and to control its spread. However, in reaction to COVID 19, visually impaired students were ordered to remain at home, which had a negative impact on their psychological and mental health when transitioning to e-learning at home without properly prepared equipment and materials (Ndlovu, 2022).

According to Carrim and Wangenge-Ouma (2012), the Council of Higher Education (2013), and evidence presented at the Second National Higher Education Summit

(2015), visually impaired students have more access to higher education in South Africa. According to Howell (2005), the government has made major changes to basic education (i.e., in schools) to provide access to different disabled of learners. This study attempts to investigate the effects of online learning on students living with vision impairment at South African institutes of higher learning. The study is primarily targeting visually impaired students at the University of Limpopo, one of South Africa's higher education institutions.

1.2. RESEARCH PROBLEM

Students with visual impairments confront many structural and attitudinal challenges when attending higher education, according to Athanasios et al. (2015). Mobility around the university campus is highlighted as a problem visually impaired student. Accessibility is complicated, and there is a shortage of critical infrastructure that could help visual impaired mobility, such as paving tiles and braille signs as most of visual impaired students use Disabled Students Unit (DSU) to access some academic equipment as computer (Athanasios et al., 2015). Disabled students encounter additional challenges such as financial changes, a lack of knowledge about disability, inaccessibility of information, reading and writing, educational approaches, and a lack of resources.

Financial difficulty, according to Majoni and Mashatise (2017), visually impaired students have the difficulty of not being able to afford the appropriate equipment to help them comply with academic tasks like as jaws screen reader software and also jaws screen reader software does not operate on blackboard which makes it difficult for visually impaired students to attend online class. Inaccessibility of information and study materials, visually impaired students reported having difficulty obtaining information, books, study materials, and cited materials due to a shortage of audio books, brailed books and referenced resources. (Amin, et, al., 2021).

Reading and writing challenge, visually impaired persons read and write slower than sighted people due to different types of their visual impairment as some are using braille, magnifying classes and audios. Braille requires students to use their hands to read and use the hands to write (Kapur, 2018). Lack of knowledge relating to disabilities, (Amin et. al., 2021), stated that visually impaired students face the challenge of stigma and negative perspective of society due to lack of in-depth

knowledge relating to disabilities, during online classes when a student explain that is visually impaired, people do not understand and they do not know what it is that its required by visually impaired students to attend online classes. The researcher's opinion is that all these challenges affect the visually impaired students negatively emotional and academically.

It is necessary to undertake research on this subject in this era because Higher Education Institutions are shifting to online, which is in line with the fourth and fifth industrial revolutions. Furthermore, it is important to conduct research on this problem because it affects the small group of marginalized community of students living with disabilities (visually impaired students) at the University of Limpopo. However, if the issue is not addressed, it will escalate the marginalization of visually impaired students who are already marginalized.

1.3. RATIONALE OR MOTIVATION OF THE STUDY

The rationale of the study is based on the idea that most visually impaired students in the University of Limpopo (UL) are encountering difficulties through their academic journey especially since academic activities moved to online or hybrid systems. The researcher is a visually impaired student at the University of Limpopo and has experienced the challenges. However, there are literature that support the argument, example literature by Zongozzi, (2020) and Ndlovu (2020). Letsaka, (2018), stated that the number of visually impaired students in institutions of higher learning are increasing, and management lacks sufficient knowledge and experience in catering to and supporting the students.

1.4. SIGNIFICANCE OF THE STUDY

The study's significance is that it explores the effects of online learning on visually impaired students at an institution of higher learning (UL). This will aid the institution's management and lecturers in being fully aware of and understanding the needs of visually impaired students regarding online learning at the university. As a result, it would be easier for management and lecturers to recognize and comprehend the type of support that should be provided to visually impaired, particularly during their academic journey in the university.

Students with disabilities are not frequently treated the same as general students, and this is true not only at the University of Limpopo, but practically Almost all South African

higher education institutions (Matshanisi, Kekana and Mogoboya, 2022). There is a dearth of legal frameworks or policies that address the concerns of students living with disabilities at higher education institutions, as well as mandated recommendations that all institutions must follow. As a result, the study will play a significant role in influencing higher education institutions to develop effective policies and procedures to help students living with disabilities throughout their tertiary education experience.

1.5. AIM OF THE STUDY

The aim of this research study is to Assess the Impact of Online Education on Visually Impaired Students at the University of Limpopo: A Development Management Perspective through the Lens of Social Inclusion and Digital Learning.

1.5.1. RESEARCH OBJECTIVES

The following objectives have been drawn from the aim:

- To investigate the accessibility of online learning for visually impaired students.
- To identify the barriers to effective online learning for visually impaired students.
- To identify opportunities to enable effective online learning for visually impaired students.
- To recommend measures that can be implemented to overcome online learning challenges.

1.5.2. RESEARCH QUESTIONS

The following research questions will be used to carry out the proposed research required to achieve the above objectives:

- What is the accessibility of online learning on visually impaired students?
- What are the barriers to effective online learning for visually impaired students?
- What opportunities can be exploited to enable effective online learning for visually impaired students?
- What are recommendation measures that can be implemented to overcome online learning challenges?

1.6. DEFINITION OF TERMS

1.6.1. ONLINE LEARNING

It is an alternative mode of learning at university in which you study at home or wherever you like utilizing the internet rather than attending to classes (Greenhow, Graham, and Koehler, 2022).

1.6.2. DISABILITY

According to Bunbury (2019), a disability is any physical or mental condition that makes it more difficult for the person to perform certain activities and interact with their surroundings.

1.6.3. VISUALLY IMPAIRMENT

Visually impairment is a term that describes any form of visual loss, whether whole or partial (Hanjarwati and Suprihatiningrum, 2020).

1.7. LIMITATIONS OF THE STUDY

The study focused on visually impaired students registered with RDC at the University of Limpopo. The study was limited to interviews only since the qualitative research approach was used to gather more information from the respondents. The initial plan of the study was to have 23 sample, which was 15 visually impaired students, 3 RDC staff members and 5 CAE staff members. However, the researcher did not find the participants at CAE due to the reason that they do not work with students directly. This reduced the sample of the study to 18. The participants of the study did not allow the research to record them because the searcher is an employee of the university. The participate mentioned that they fear that the recording may be used against them in future.

1.8. OUTLINE OF RESEAPRCH REPORT

This mini dissertation consists of five chapters outlined below as follows:

Chapter 1 explains the background information and introduction of the study, along with the goals, objectives, and research questions. A description of the research problems, concept definitions, and techniques for carrying out the data collection plan in order to address the research questions are also included in this chapter. This chapter will conclude by outlining the importance of the study and its ethical implications.

Chapter 2 outlines a review of the literature on how online education affects University of Limpopo students who are blind or visually impaired. The status of inclusive education in South Africa, the availability of online education for students with visual impairments, the obstacles to successful online learning for these students, and the University of Limpopo's opportunities to facilitate successful online learning for these students will also be covered.

Chapter 3 explains the research approach that will be used to gather and examine data for the study. Thus, the introduction, research design, research methodology, population and sampling, data collection and analysis, ethical considerations, conclusion, and chapter summary will be the sections into which the chapter will be separated.

Chapter 4 outlines the presentation of the data, analysis and interpretation of the data.

Chapter 5 focuses on the study's findings, conclusions, and suggestions in order to provide an overview of the general direction of the investigation. The introduction, findings, conclusion, recommendations, and summary will be the five sections that make up this chapter.

CHAPTER 2

2. LITERATURE REVIEW

2.1. INTRODUCTION

A literature review is the important and detailed evaluation of books and articles related to a specific topic or research question (Aveyard, 2018). According to Ritterbusch and Teichmann (2023), a literature review is a critical appraisal of existing research to gain insight into how other scholars have approached the research problem. Sauer and Seuring (2023), agrees with Ritterbusch and Teichmann (2023) in that research involves searching for relevant literature, developing theoretical frameworks, and integrating findings with existing literature.

The motive of this section is to cover the theoretical and empirical perspectives of the effects of online learning on students living with disabilities and in particular, visually impairment students at a higher education institution. It presents the theoretical and empirical perspectives from sub-themes from international, national and local perspective, with the following sub-themes the accessibility of online learning on visually impaired students, the barriers of online learning on visually impaired students, the opportunities to enable effective online learning for visually impaired students and the recommendation measures that can be implemented to overcome online learning challenges.

2.2. THEORITICAL FRAMEWORK

2.2.1. The role of theoretical framework in the social inclusion of students with disabilities studies

Wadegoankar et al. (2015) defined inclusion as a broad concept that encompasses various theories about its role in education. According to Peter Rodney's (2003), social inclusion theory, inclusive education is based on the belief that children with disabilities have the same educational needs as their peers. They have one common goal which is social inclusion. Social inclusion (Scottish Human Services Trust) the values of 2005 are as follows: everyone is prepared, everyone can learn, everyone requires assistance, everyone can communicate, everyone can contribute, and we work better together. It claims that diversity is the most valuable renewable resource (Duffy and Beresford, 2020).

In order to guarantee that every student graduates as an informed, engaged, and responsible citizen, democratic association is crucial in inclusive education, according to radical democracy theory (Halprin D. 1999). Thus, this theory backs up the significance of inclusion in fostering the development of capable and accountable citizens in students with disabilities. Therefore, preparing students with disabilities for democratic inclusion requires specific measures. In his social inclusion theory, according to Peter Rodney (2003), blindness and personality are related, and blindness does not psychologically restrict mental processes. In contrast to mental and social development, it is emphasized that efforts to train the blind person's sense of hearing have limitations (Cardoso and Martínez, 2023).

Thus, preparing visually impaired students for inclusive settings by improving their social skills will aid in the development of their personalities. According to the concept of Compensatory Education Development, roper training for visually impaired students can result in improved social skills and a normal life. Compensatory Education promotes independence by teaching basic life skills required for daily living. Compensatory education helps disadvantaged students overcome cognitive and social deficits caused by their environment.

Social inclusion theory is the idea that all the members of the society should have access to the resources and opportunities they need to participate in society without barriers (Goodale, 2020). Furthermore, it encourages the bridging of groups, including those with specialized values if those values do not harm others. In addition, social inclusion theory assists people who are at the risk of poverty and social exclusion to participate in society, it also advocates for a person’s dignity, security and overall well-being. Social inclusion theory addresses the issues of inequality and exclusion across societies. It emphasizes social cohesion, equality and human rights (Leemann, Martelin, Koskinen, Härkänen and Isola, 2022).

Mike Rann, South Australia's Premier and Minister for Social Inclusion, established the Social Inclusion Initiative in 2002, which was a significant development. Consequently, the program has been at the forefront of Australian social inclusion policy and practice, emphasizing the provision of social and economic participation opportunities, especially for the state's most disadvantaged citizens. Indigenous communities are currently testing policies based on the social inclusion theory.

Additionally, a number of community organizations have adopted a social inclusion framework and implemented social inclusion programs, including Anglicare, the Brotherhood of St Laurence, the Family, and Mission Australia (Leemann et al., 2022).

Social inclusion theory relates to the study in a sense that it advocates for inclusive education where there is a creation of educational environments that are welcoming to all students regardless of their abilities, characteristics or background (Mpu and Adu, 2021). The goal is to provide every student with opportunity to receive quality in a supportive setting. This theory is used improve attitudes which results in students without disabilities tend to have positive attitude towards their peers with disabilities. Students living with disabilities in an inclusive setting perform better academically than in a segregated setting (Cele, 2021).

2.3. THE STATE OF INCLUSIVE EDUCATION IN SOUTH AFRICA

Van Rooyen (2002: 43) stresses that there are different written documents that are developed to facilitate the state of inclusive education in SA. This study fully agrees with the above-mentioned statement, for an institution to be inclusive it must have an infrastructure that will accommodate all different categories of people including those who are visually impaired. This means that the elevators which are used should have a speech and its numbers in braille so that even those who are visually impaired can be able to use them when trying to access computer-labs (Morele, 2019). They must know when the elevator has reached the floor that they are going to. There are some guidelines to encourage inclusive education.

Following World War II, most European countries provided special education for children and young people with impairments. In some countries, individuals with intellectual disabilities were excluded from educational settings due to their perceived inability to learn. In Austria, children with intellectual disabilities were often branded as "unable to attend school" and refused formal education (Buchner & Proyer, 2020). Since the 1960s, special education systems opened for this population, and special schools for students with intellectual disability were founded. Due to the formerly prevalent exclusion, this needs to be considered as an important step in the history of education for persons with intellectual disability (Buchner, Shevlin, Donovan, Gercke, Goll, Šiška, Janyšková, Smogorzewska, Szumski, Vlachou and Demo, 2021).

The general focus on school inclusion can be traced back to The Salamanca Statement and Framework for Action on Special Needs Education that was crafted in 1994 (UNESCO 1994). The Salamanca document features normative principles for inclusion that recognise institutions that include every student, highlight diversity as an asset, support learning, and respond to individual needs (UNESCO 1994, 2020). Beyond Salamanca, interest in inclusive education has risen in member states and organisations that signed the statement, politics, and research and educational organisations.

For decades, educational development has increasingly shifted towards the direction of inclusive education. Throughout Europe (Schwab 2021) and in other parts of the world, growing numbers of students who have been labelled as having a disability or a diagnosis of special educational needs (SEN) are attending mainstream schools instead of being educated in special schools or classes. Inclusion in education is a globally shared principle, and its aim is to guarantee, secure, and promote the equality and equity of all people by removing barriers to learning and social participation. It is not an outcome but an ongoing principled process that requires commitment and dedication, and this is carried out through aligning various inclusive policies, cultural elements, and institutional, discursive, social, and pedagogical practices (Byrne, 2022). Regardless of globally shared endeavours, the trajectories of inclusion in education, including both advances and barriers, have understandably taken varying historically, culturally, structurally, and politically engrained forms among nations.

Magongwa (2010) states that the guideline on inclusive education is on White Paper of 1995 on education and training in South Africa, the South African School Act 84 of 1996; the White Paper on an Integrated National Disability Strategy (INDS) of 1997 and the National Commission on Special Education needs. The training concluded that White Paper says that there is a need for inclusive education in all environments, especially for those learners who are living with disabilities. However, there is still exclusion in the sense that up to now, teachers are not well-trained to teach learners with special needs (Morele, 2019).

Universities in South Africa have reacted to national initiatives to advance inclusive education. Bell (2013) asserts that the social model of disability and a human rights framework have both influenced South Africa's inclusive disability policies. The

individual model of disability, which held that a person's impairment was the cause of their disability and that it should be addressed at that level, is different from the social model (Shakespeare 1996; Oliver 1996). The social model places a strong emphasis on removing obstacles that society has erected, like segregated schools.

Inclusive policies are driving the inclusion of students with disabilities in South African higher education institutions. The first effort to address the problem of inequality in higher education was the Department of Education's (DoE) 1997 publication, Education White Paper 3: Transformation of the Higher Education System (DoE, the Department of Education, 1997). The paper aims to rectify historical injustices through equal access and non-discrimination. Education White Paper 3 states that students with disabilities should be supported by the entire higher education system, not just by institutions (DoE 1997; FOTIM 2011).

The National Plan for Higher Education, published in 2001 by the Department of Higher Education and Training (DHET), offers few recommendations for reforming educational institutions and the system. Education White Paper 3 (Department of Higher Education and Training, 2001) is supplemented by this plan. The Department of Education published Education White Paper 6: Special Needs Education in 2001. Although it only alluded to an inclusive higher education system, it covered inclusive education in primary school. To increase the access, participation, and throughput of disabled students, Education White Paper 6 suggests regional university collaboration (DoE 2001).

Regional collaboration enables institutions to admit and support students with certain disabilities while excluding others. The Education White Paper on Post-School Education (2013) promotes inclusive higher education by assisting students with disabilities (DHET 2013). DHET (2013) recognizes gaps in inclusive policies that lead to discrimination and challenges for students with disabilities in terms of access, curriculum, funding, and support. Currently, the Higher Education Act No.1 of 1997 (South Africa) is the only law that addresses inclusive practices in higher education. The act requires universities to address previous inequalities in admissions policies and ensure that no student is discriminated against.

Larger educational disparities in South Africa are the cause of inequalities in higher education for students with disabilities (Howell 2001). Physical, social, and

psychological barriers continue to make it difficult for students with disabilities to access higher education (Bell 2013; Lourens 2015). Students with disabilities in South African higher education institutions have restricted access to curricula, assessment opportunities, social activities, the built environment, and financial resources, according to government reports and research.

Nzimande (2016) states that the Policy Framework aims to promote social inclusion in post-school education and training, specifically for students and staff with disabilities. In terms of creating disability units, implementing policies, and offering infrastructure support for employees and students with disabilities, most universities have made notable strides. This policy framework mandates that all infrastructure programs address disability issues and is in line with the Ministerial Statements on Disability Funding.

Higher Education South Africa (HESA) (2014) monitors and evaluates compliance with the National Disability Guidelines, ensuring that the NSFAS Bursary Scheme for Students with Disabilities is implemented. HESA advocates for a national dialogue to address funding gaps and support institutions in creating inclusive environments for students and staff with disabilities across all campuses. Transportation and infrastructure adjustments for students with disabilities should be prioritized based on available funding, such as NSFAS funds or the DHET infrastructure project.

The Department of Higher Education and Training (DHET) envisions a post-school system that is differentiated and fully inclusive, providing South Africans with relevant education and training to achieve economic and social goals and contribute to an inclusive society. The Department of Higher Education and Training's Policy Framework for Social Inclusion in Higher Education Institutions is consistent with the Strategic Disability Policy Framework, which focuses on social inclusion, empowerment, infrastructure, and financial assistance for disabled students.

The right of individuals with disabilities to full participation in society and equal opportunities is recognized by the Department of Higher Education and Training (DHET). Disability is one important area where progress has been sluggish, according to South Africa's national transformation agenda. Department of Higher Education and Training, 2018). The following assumptions form the basis of the policy framework: The state can play a significant role in transforming society by working with people

with disabilities; empowering people with disabilities is essential to creating an inclusive and equitable society; and many people with disabilities have been and still are subject to limitations and forms of discrimination because of traditional and customary practices in all cultures (Department of Higher Education and Training, 2018).

2.4. ACCESS TO HIGHER EDUCATION FOR PEOPLE LIVING WITH DISABILITIES

Approximately 10% of college students currently identify as disabled. It is important to note that the overall number of students with disabilities is growing at a rate of roughly 10% annually, with this number varying from 7% in some nations to over 15% in others (Peruzzo, 2022). It is important to consider the context of this increase in inclusion because, until the 1980s, neither university reports nor academic research on the number of students with disabilities focused on improving the sector (Heffernan, 2021; Leach, 2013).

According to research, students with disabilities do not complete courses as quickly or receive the same grades as their classmates (Rowan, 2019). However, disabled students also graduate from college with fewer job opportunities, are less likely to start full-time jobs, and have lower working incomes because of their education (Heffernan, 2022; Rowan, 2019). We know that higher education leads to a working life of more secure employment and higher salaries, which results in increased financial, housing, health, and family security—factors to which disabled people have an equal claim (Bell, 2016; Keddie, 2012). This is why research highlights the significance of higher education for disabled people (and, in fact, most members of marginalized groups).

Disability is often disregarded, even considering the rising number of students with disabilities in classrooms and the growing body of research on student success (Kimball and Thoma 2019). It is not surprising that this research trend has important ramifications for comprehending the difficulties and experiences of disabled students in higher education as well as for determining efficient support methods.

In South Africa (SA), people with disabilities were prohibited from going to school during the apartheid era. Over 80% of individuals with disabilities were enrolled in school. The full inclusion of students with disabilities was hindered by historical imbalances caused by apartheid and the idea that disability was a personal issue (McKinney and Swartz, 2022). The main goal of equity policies since 1994 has been

to increase the number of Black students enrolled in higher education. Despite increased access to higher education for Black and female students, students with disabilities receive little at all.

According to Mahlangu (2020), this leads to the continued exclusion of students with disabilities from higher education. According to Mahlangu (2020), there are still obstacles in the way of students with disabilities participating more fully in higher education, even though the post-1994 educational system has the potential to help. Some studies explore the experiences of students with disabilities, going beyond policy analysis. Following the release of White Paper 6 and the National Plan for Higher Education, Salmi and D'Addio (2021) examined the difficulties Student Affairs in Higher Education (SAHE) faced in expanding access and participation for students with disabilities. They contend that one of the causes of persistent inclusion issues is the connection between the educational experiences of students with disabilities and the disparities they face in higher education.

McKinney and Swartz (2022) further contend that student diversity and other issues in higher education need to receive more attention to address the difficulties of expanding the access and participation of students with disabilities in SAHE. The difficulties in helping students with disabilities in SAHE were also examined by Walton and Engelbrecht (2024). Most of the issues he brings up are the same ones Mahlangu (2020) has noted, such as a lack of funding, a dearth of information on students with disabilities, and a sluggish rate of change in higher education.

2.5. ACCESS TO ONLINE TEACHING AND LEARNING FOR PEOPLE LIVING WITH DISABILITIES

The education system has been significantly impacted by the COVID-19 global pandemic, particularly for students who receive special education services and have disabilities. The World Health Organization states that children with disabilities should "continue playing, reading, learning, and connecting with friends" because they may be disproportionately impacted by the pandemic because of disruptions in the services they depend on (World Health Organization, 2020). Students with disabilities found it especially challenging to get an education during the pandemic. According to Gross and Opalka (2020), just 50% of school districts in the United States use attendance or one-on-one check-ins to track student learning engagement.

According to Hasan and Khan 2020, globally access to online teaching and learning for students living with disabilities has been an issue, as they are facing a challenge of not being accommodated during the online classes. However, according to (Gross and Opalka, 2020) online teaching and learning is effective and accessible for students living with disability, especially students with physical disabilities because they can attend classes online without facing the issues of inaccessibility of the learning environment specifically the buildings. The effectiveness and accessibility of online teaching and learning depend on the category of the student's disability as disabilities varies from one another (Department of Education, Individuals with Disabilities Education Act. 2020).

Another difficulty for VIS is getting access to Web-based infrastructure. According to Mukhopadhyay and Moswela (2020), many home page interface designs and content organization at 51 US colleges did not satisfy accessibility requirements for online learning for students with disabilities. According to Leporini and Paterno (2021), accessibility is concerned with making websites accessible to a larger user base, but it neglects to strike a balance between usability and accessibility.

According to Ngubane and Zongozzi (2021), In South Africa (SA) most universities adopted online learning in 2020 during Covid 19 pandemic as a responsive strategy for covid 19. Such a rapid transition did not give higher education institutions enough time to consider the diverse special needs of students with disabilities, particularly visually impaired students (Constantopedos, Millet, and DeBarbeyrac, 2020). Online learning has enabled students to access education like never before, particularly during times of crisis and pandemic. However, it is viewed as an additional burden that prevents students with disabilities from receiving high-quality online education on the same terms as their peers (Khribi and Al-Sinani, 2021).

Zongozzi (2020) stated that students with disabilities were not consulted during the implementation or development of online teaching and learning platform that's the reason why the platforms are not accessible form them. As a result, many learning platforms were designed for non-visual learners who do not require assistive technology or the ability to use smart devices. As a result, the interface of the smart devices' touch screen must compensate for this irregularity. According to Ntombela (2020), students with disabilities have been excluded from the implementation of

online teaching and learning due to the inaccessibility of platforms and internet connections.

Most of students living with disabilities requires special technological assistive device to ensure that their academic activities are done according to the rules, and those technological assistive devices are very expensive, and one need to be trained to be able to use them as they were using different assistive devices before the face of online teaching and learning (Dube, 2020).

2.6. THE ACCESSIBILITY OF ONLINE LEARNING ON VISUALLY IMPAIRED STUDENTS

According to Maciver, (2019) online learning is effective because it benefits timid individuals who are unable to communicate in offline sessions, negatively impacting their academic achievement. E-learning is beneficial because it may improve the learning experience while also expanding the reach of every lecturer and tutor. It is providing innovative and creative ways of encouraging and engaging pupils and learners of all levels, e-learning helps to reduce obstacles to achievement, enabling and inspiring everyone to reach their educational potential. E-learning is advantageous, according to Gow, Mostert, and Dreyer (2020), since it encourages learning by providing differentiated instruction, particularly for people who need help with literacy, numeracy, and ICT. E-learning offers several tools that allow teachers and students to be inventive, creative, and resourceful in a variety of learning areas.

Even during the pandemic, which posed significant challenges, visually impaired students (VIS) in Ghana were not accommodated in online learning, according to McKenzie (2021). The incompatibility of digital learning resources and the delays in the delivery of tangible materials like computers, screen readers, and other assistive devices are two significant disadvantages that McKenzie (2021) highlights as VIS's challenges in online learning. Not only are digital resources delayed in developing nations, but they might not even be accessible to the VIS.

According to Adarkwa (2020), Ghana and other Sub-Saharan African countries have been unable to implement digital learning due to a lack of technological infrastructure and other obstacles. These findings have far-reaching implications for VIS, who face greater challenges than their sighted counterparts. Massive Online Open Courses (MOOCs) have emerged as the most popular online learning platform, and they are

widely regarded as accessible to all. Unfortunately, Bohnsack and Puhl (2014) dispute this assertion, claiming that openness and accessibility do not have the same meaning. Researchers have corroborated this assertion (Amponsah 2021; Ferati et al., 2016; Singleton and Clark, 2013). This reality depicts how VIS were excluded from online education during the Covid-19 pandemic and afterwards due to a lack of technological assistive devices.

Another difficulty for VIS is getting access to Web-based infrastructure. According to Mukhopadhyay and Moswela (2020), many home page interface designs and content organization at 51 US colleges did not satisfy accessibility requirements for VIS to take online courses. Since specialized VIS software does not function on those designs, (Okyir, 2018) also audited the Web resources of more than 300 institutions in Canada and the UK and found design flaws that hindered both accessibility and usability for VIS. VIS are still having trouble with poorly designed computer interfaces in the classroom, claim Agangiba and Agangiba (2019). To address this problem, Leporini and Paterno (2021) make it clear that accessibility is concerned with making websites accessible to a wider range of users. However, they fail to mention the significance of finding a balance between usability and accessibility to lessen the difficulties that VIS encounter when learning online.

Tanzania adopted OULMS (Open University of Tanzania Learning Management System), which improved the accessibility of learning materials such as assignments, notes, and quizzes. However, the applications are inaccessible to VIS due to a lack of understanding of assistive technology, which allows students to read the content. This is because most people who use the m-learning platform are sighted, and visually impaired people lag. According to several studies, information and communication technology (ICT) is not only helping visually impaired students obtain information, but it also presents challenges for them when utilizing the available learning platforms (Singhal et al., 2019). contrasting students who are visually impaired with those who are not. For students who are not visually impaired, using the m-learning platform services is four times easier than for those who are completely blind or have low vision (Tom et al., 2018).

Due to this, most learning platforms were created for non-visual learners who don't need assistive technology or smart device skills. The touch screen interface of smart

devices must therefore adjust for this irregularity. The accessibility interface design will be crucial if the user of smart devices is blind or visually impaired (Palalas, 2013). Technologies and several proposed policies have been created to enable students to access and utilize mobile learning services. Moreover, braille input, screen readers, touch screens, eye tracking, and speech synthesizers are a few of the devices and programs that support VIS.

According to Ngubane and Zongozzi (2021), In South Africa (SA) most universities adopted online learning in 2020 during COVID-19 pandemic as a responsive strategy for COVID-19. VIS in SA has reported to be facing issues of inaccessibility and exclusion from fully accessing learning and teaching programmes (Mutanga, 2018). In light of these prevailing inequitable practices, alienation, and inequalities, it is unavoidable to conclude that the Covid-19's involuntary transition to full online learning has exacerbated the situation, especially since higher education institutions were forced to quickly adapt their teaching and assessment to online mode (Zongozzi, 2020).

Such a rapid transition did not give higher education institutions enough time to consider the diverse special needs of students with disabilities, particularly visually impaired students (Constantopedos, Millet, and DeBarbeyrac, 2020). Online learning has enabled students to access education like never before, particularly during times of crisis and pandemic. However, it is viewed as an additional burden that prevents visually impaired students from receiving high-quality online education on the same terms as their peers (Khribi and Al-Sinani, 2021).

According to Dowdy (2021), the unavailability of innovative assistive technology solutions and accessible online instructional materials and services continues to be the biggest challenge, without a doubt. In fact, the community has made this apparent ever since blended and hybrid learning models became popular and many educational institutions quickly shifted to online instruction. Most students with visual impairments have expressed dissatisfaction with unresolved accessibility issues that impede their ability to access online learning, (ObjectiveEd, 2021). These issues include materials that are incompatible with screen readers, accessible course materials that are published later than expected, the use of learning management systems, textbook access, lack of accessible assistive technology, including embossed diagrams and

Braille; online STEM education, particularly in relation to graphs and equations; synchronous lectures via video conferencing platforms; online testing platforms for tests and exams; etc. (McKenzie, 2021).

2.7. THE BARRIERS TO EFFECTIVE ONLINE LEARNING ON VISUALLY IMPAIRED STUDENTS

In order to protect students and families at home during the Covid-19 pandemic, educational institutions are switching to online instruction. Online teaching and learning methods are replacing in-person ones (Meleo-Erwin, 2021). The teaching-learning process is continued using online tools like Zoom, Meet, and Google Classroom. The use of technology has significantly increased in our society since the start of this pandemic. (Malik Wang and Anwar, 2021). Mahfuz, Sakib, and Husain (2021) discovered that the absence of appropriate accommodations in mainstream classes causes online learning for visually challenged students to suffer.

Prior to the COVID-19 pandemic, most Ugandan schools used face-to-face instruction. However, the pandemic has led to a shift towards virtual learning for both students and teachers, with many new users (Amaniampong and Nyavor, 2021). Makiwa and Phasha (2012) found that students with visual impairments rely heavily on Information and Communication Technology (ICT) to access educational materials at all levels. However, there is a lack of documentation on how people with visual impairments learn using these technologies, indicating a lack of understanding or interest in their effectiveness. Perceptions that students with visual impairments are unable to pursue specific subjects or careers can lead to self-blame for their impairments.

Low internet connectivity can hinder access to online learning resources. Anastasakis et al. (2021) found that while many students in developed countries have embraced online learning, those with visual impairments in low- and middle-income countries face challenges due to limited access to internet connectivity and study tools. According to Amaniampong and Nyavor (2021), inadequate ICT infrastructure has slowed the implementation of online learning in many institutions, particularly during the COVID-19 pandemic. The authors suggest that institutions may be hesitant to fully implement online learning programs due to costs, while students with visual impairments may lack access to necessary resources and instructional materials that can improve outcomes.

Ravichandran et al. (2022) identifies a lack of electricity in certain areas of the country as a barrier to online/e-learning accessibility for students with disabilities, including those with visual impairments. This is exacerbated by limited or non-existent networks, especially in rural areas where many students, including those with visual impairments, reside. Visually impaired students who use assistive technology, such as screen reading or magnification software, may have difficulty using online educational resources (Baguma and Wolters, 2021).

Anastasakis et al. (2021) reported accessibility issues with websites and learning management systems. Learning barriers include limited access to digital audio and video, strict time limits for online exams, PowerPoint or data projection during lectures, PDF course materials, and the adoption of new technologies. During COVID-19, students with disabilities, including the visually impaired, faced significant barriers to accessing online education.

In South Africa, institutions of higher learning have adopted to online learning or hybrid learning since 2020 during the COVID-19 outbreak as the responsive strategic measure to ensure that educational sector continue to operate while students, teachers and facilitators are safe at home, (Zongozzi, 2020). Higher education institutions were not given enough time to consider the different special needs of the diverse groups of students living with disabilities, especially visually impaired students, due to the quick switch from in-person to online instruction (Constantopedos, Millet and DeBarbeyrac, 2020).

VIS in SA has reported to be facing issues when accessing learning and teaching programmes online such accessibility issues, connectivity and load shedding issues, poor readiness of the institution of higher learning, lack of learning study materials, lack of financial support and untrained facilitators (Mutanga, 2018).

The ability of visually impaired students to move between locations is referred to as accessibility (Amin et al., 2021), However in this study accessibility is ability to access all the online academic platform without any barriers for visually impaired students. According to Zongozzi (2020) access to online learning environment for VIS as most of the software that are used by VIS does not operate on the online systems, such click in that is used by University of South Africa (UNISA) to write test, exams and to submit assignment. Most of VIS does not have required skills to operate computers

and laptops as they are used to use large print and braille study materials from their high schools (Tshifhiwa, 2019). VIS does not have ability to access online learning as they do not have necessary required technology assistive devices to assist them academically.

They encounter difficulties in the classroom when attending lectures, finishing assignments from instructors, and taking final tests or quizzes. Lecture activities and tutorial classes take up a student's schedule. According to Amin et al. (2021), lectures are typically held in lecture halls that can hold up to 200 students. Since he emphasizes that college students with blindness and visual impairments are expected to be self-reliant in seeking out and participating in both academic and social activities, Chikukwa (2014) supports Amin et al. (2021) regarding accessibility. In contrast, secondary school educators and administrators were responsible for facilitating their access to both academic and social activities, whereas college students with these disabilities are expected to be proactive.

According to John, Darragh, Jason, Seán, and Dónal (2021), there is a huge network connectivity issue in South Africa, which is a disadvantage for people living in rural areas. One of the primary consequences of a poor internet connection is that students are unable to access online educational materials, limiting their capacity to complete projects and assignments, interact with lecturers in class, and attend online classes. Poor internet connection affects online classes, resulting in sluggish listening experiences, dropped connections, and a compromised learning environment.

Visually challenged pupils rely on their hearing throughout class, and slow audios cause them to miss out on important information. Most software, like as Jaws and screen reader software, does not run on university online platforms, so VIS require an assistance to connect for lectures, and if the network kicks them out, they will be unable to know what is going on, particularly blind students.

Due to the COVID-19 outbreak, the government implemented online and multimodal teaching methods to ensure academic continuity. To maintain academic activity, many colleges have implemented remote or online learning options (Zongozzi, 2020). The issue was that many higher education institutions were unprepared to adapt to changing settings. Only a few South African universities were prepared for this level of transformation. Universities with adequate infrastructure, such as the University of

South Africa (UNISA) and the University of Johannesburg (UJ), have successfully implemented online instruction. The rapid adjustment mostly affected historically disadvantaged universities like the University of Limpopo and the University of Venda, as well as other colleges around the country.

According to Ngubane and Zongozzi (2021), this challenge did not only affect the institutions only but it also affected the students especially students living disabilities. Visually impact students had to just to attend and do academic activities online without training and preparation made to assist them to adjust. Most of visually impaired students did not have adequate skills to operate computer, as they were only using computers to write assignment only (Nunoo, 2020). Most of the students were only knew how to type and they were typing very slow as they did not use computers frequently. Visually impaired students use large print and braille documents, and they started using those from early years of schooling. Those students were using braille machine to write test and examinations so the shift to online affected them badly as they did not manage to complete those tasks within the allocated time (Amponsah, and Bekele, 2023).

For visually impaired students enrolled in higher education courses, there aren't many textbooks available. This is because students with visual impairments depend on special reading modes. Examples include big print and braille. Students find it challenging to study because of having to convert their textbooks before reading them (Onsinyo, 2018). People who are blind or visually impaired use braille, which is a tiny format of dots, to read and write (Hertzberg and Stough, 2007). It requires manual touch. Large prints use larger characters to suit visually impaired stundents, particularly those with short-sightedness (Lintangsari and Emaliana, 2020).

Preparing learning materials takes longer, leading to poor performance among visually impaired students in their classes. Brailling from printed text is a challenging task. Transcribers spend time to prepare study materials. Brailling is a challenging learning process due to the materials and tasks involved. For example, in class, students may be assigned a writing assignment. According to Amatos (2002), VI pupils may not be able to write due to the time required to prepare resources. Slow creation of materials is a barrier for VI students, causing a backlog of duties.

It is difficult to meet the learning needs of both abled and disabled students in a mixed-ability class. In a diverse learning environment, lecturers may face difficulties meeting the needs of students in a variety of settings that affect their learning (Intakhab, 2011). In an educational setting, this difficulty is exacerbated by lecturers who are unable to meet the needs of visually impaired students. For example, a lecturer may show a reading text on the projector without reading it. This ensures that abled pupils' requirements are satisfied. However, visually impaired students' needs are not satisfied as the instructor does not read the texts. Therefore, equal attention was not provided.

Furthermore, untrained lecturers struggle to employ materials that meet the diverse needs of their students. In class, many materials are used. For example, materials with images (S'lungile, Ntinda, and Hlanze, 2015). Untrained professors may employ graphic materials without considering the needs of visually impaired students who may struggle to understand them. Additionally, lecturers may struggle to explain and depict pictorials. Students will face difficulties in their education if teaching strategies are not applied correctly and teachers are not equipped to work with visually impaired students. Some classroom environments and educational institutions do not properly implement the teaching methods. Teachers lack sufficient training in Braille materials, sign language, making hearing aids, tactile maps and diagrams, and other topics. They encounter difficulties when teaching inclusively. Visually impaired students face difficulties in their educational journeys due to the inadequate training of teachers (Kapur, 2018).

Financial issue is one of the challenges that are often faced by students with disabilities. However, there are some benefits that disabled students can obtain to reduce the burden and address these financial issues (Amin et al, 2021). Financial constraints can limit their ability to enrol in educational programs or access necessary resources and assistive technologies. It may lead to poor infrastructure and lack of trained lecturers or support staff to assist them. Students who are visually impaired and come from deprived, marginalized, and socioeconomically backward backgrounds are often unable to provide resources and materials for themselves because they lack a reliable source of income.

These communities' parents are usually uneducated and lack the knowledge and skills necessary to help their visually impaired children learn and receive an education. Students cannot enhance their learning and academic concepts if assistive devices, technology, and other resources are not made available to them (Kapur, 2018).

2.8. OPPORTUNITIES TO ENABLE EFFECTIVE ONLINE LEARNING FOR VISUALLY IMPAIRED STUDENTS

Both assistive technology and mobile apps have the potential to significantly improve the college and university experience for students with visual challenges, making them essential to both students and universities (Martiniello, Eisenbarth, Lehane, Johnson, and Wittich, 2022). These technologies are also being upgraded and expanded, which means that professors, administrators, and students must try to stay current on upgrades and new methods of delivering accessibility. It is also critical for students to determine which types of technologies best serve their specific type and level of impairment (Martiniello et, al., 2022). Assistive technology can benefit students with disabilities but may also exclude other students. Assistive technologies play a crucial role in fostering inclusive environments and preventing injustices.

Trafford, Van Der Westhuizen, McDonald, Linegar, and Swartz, (2021), suggest that South African universities and colleges should have Disabled Students Units that have adequate assistive devices so that students living with disabilities can also have access to those devices to access quality education. According to Kaur (2018), the university or college must work extra hard and assign more staff to prepare a copy of the course material in Braille and audio as soon as it is revised. If any college teacher or student requests it, additional copies can be made available to them.

The available of assistive device will give visually impaired students opportunity to access online classes effective and be able to receive quality education like other non-disabled students, (Moleke, 2021). An audio-visual room should be built so that disabled students can sit comfortably, study, and enjoy and use their free time, but it is not present in some universities' disability units. Orientation programs or workshops should be held at the university level to teach visually impaired or special students how to use computers and install and use software that will help them with their studies and leisure (Farhan and Razmak, 2022).

All members of the teaching and learning community should have offline access to the online study materials so they can study at home, as they are currently only accessible on campus or the intranet. Lecturers and other staff members should receive training to acquire technical and other skills necessary for instructing and assisting students with visual impairments (Moleke, 2021). To meet the academic needs of students with visual impairments, college or university staff, students, instructors, and parents should be adequately trained. Resolution techniques that can assist visually impaired students in enhancing their academic performance are described by Selepe and Molelemane (2022). Braille, magnifying glasses, human readers, audio cassettes, and scanning and reading software are all used to help people who struggle with reading. An instructor or peer narrator can help students learn when they have trouble reading the information on the whiteboard.

For visually impaired students to comprehend by paying close attention to the teachers, they are typically required to sit close to the whiteboard. The laptop computer is used with screen reading software when the students are unable to take notes in class. A human scribe is available to help if they are unable to write the exam, and a magnifying glass is also used (Selepe and Molelemane, 2022). When visually impaired students are motivated and engaged in their studies, have sufficient knowledge about how to use devices and technology, and pay attention when the teacher is speaking in class, these resolution techniques work well for them.

2.9. CONCLUSION

Information from numerous academics who have cleared the path for teaching and learning visually impaired students in higher education institutions was included in this chapter. The difficulties that visually impaired students currently face in an inclusive online learning environment where their needs are given priority were also covered. Because of this, not much research has been done on the difficulties faced by visually impaired students in higher education. Nevertheless, no research has been done to look into how online learning affects students who are blind or visually impaired. It is therefore expected that this chapter will serve as a springboard for the creation of later research chapters in this study. Additionally, it will proactively address a gap that has not been explored by other scholars (Ngonyani, 2020).

2.10. SUMMARY OF THE CHAPTER

The literature on how online learning affects students with visual impairments was compiled in this chapter. The function of theoretical frameworks in the social inclusion of students with disabilities is examined in The State of Inclusive Education in South Africa. It continued by talking about the South African context and international access to higher education for students with disabilities. Students with disabilities have access to online instruction and learning. In a similar vein, this chapter included literature on the accessibility of online education for students with visual impairments, obstacles to successful online education for these students, and ways to facilitate successful online education for these students in South Africa and around the world.

CHAPTER 3

3. RESEARCH METHEDOLOGY

3.1 INTRODUCTION

The research methodology used to gather pertinent data is described in this chapter. According to Hazari (2024), research is carried out to uncover and investigate undiscovered information regarding a range of research topics. Data is gathered by researchers to accurately interpret and obtain detailed information about a problem. The research design, methodology, study population, study site, sampling strategies, and data collection techniques are also covered in this chapter. It also discusses ethical issues, quality standards, and data analysis. The chapter's summary is given at the conclusion.

3.2. RESEARCH DESIGN AND METHODOLOGY

The terms "research design" and "research methodology" relate to the study strategy that the researcher has recommended to gather, examine, and explain data for a specific study (Rawal, 2018: 33). It is possible to utilise a qualitative or quantitative research method. When the research combines qualitative and quantitative methods, it is known as a mixed method research approach. This study has employed a qualitative research approach.

3.2.1. Research design

According to Chali, Eshete and Debela, (2022), research design is a framework that directs the conduct of research based on people's presumptions and beliefs about the nature of knowledge and the universe. The research design has an impact on the researcher's choice of how to respond to the study question. Research design, in the words of Kassu (2019), is a metaphysical construct that offers an organisational framework for the philosophical presumptions that shape researchers' attitudes and actions. A research design, according to Osuagwu (2020), is a plan that suggests to a researcher where, when, and how to gather and evaluate data.

The study employed exploratory research design to determine the effects of online learning on visually impaired students. Haile, (2023) defines exploratory research as a method of determining whether something is true. Because it enabled the researcher to discover new information regarding the effects of online learning on visually

impaired students, the exploratory research design is suitable for this study. An exploratory research design was used to investigate unexplored research areas (Casula, Rangarajan and Shields, 2021).

3.2.2. Research approach

The study will employ a qualitative research approach, a method for determining and understanding the importance that individuals or groups of individuals place on a social group (Mohajan, and Mohajan, 2023). According to Hazari (2024), a research approach is a strategy and process that includes everything from general hypotheses to specific techniques for gathering, analyzing, and interpreting data. The qualitative research method, according to Casula, et. al (2021), is a method for examining, explaining, and uncovering beliefs. According to Islam, and Aldaihani, (2022), qualitative research is a technique for investigating and comprehending the meaning that various individuals assign to a human issue. In order to address research questions, qualitative research concentrates on problems that are fundamental to human nature (Mwita, 2022).

It accomplished this by providing answers to research questions about what and why. Similarly, Mwita, (2022) believes that the "majority of exploratory research was conducted to investigate a topic in order to develop insights and ideas about its underlying nature". According to Haile (2023), exploratory research aims to determine the validity of a claim.

3.2.3. Description of study area

The study was conducted at the University of Limpopo. The university was established in 1959 as a part of the apartheid regime's policy of dividing higher education institutions based on ethnicity. Situated in the foothills of Hwiti (Wolkberg mountain range) in Polokwane Municipality, Capricorn District, Mankweng Township; Limpopo Province, South Africa. About 40 kilometres to the east of Polokwane is where you'll find the university (ApplicationSA, 2022).

Source: Google Maps

Figure 1: The University of Limpopo Map

The University of Limpopo is a previously disadvantaged higher education institution located in the Mankweng Township. Limpopo University enrols over 18000 students each year. The majority of the university's students are undergraduates who rely on the National Student Financial Aid Scheme (NSFAS) because they come from previously disadvantaged backgrounds. Most of postgraduate students fund their studies themselves. The researcher chose the University of Limpopo as a study area because it's a previously disadvantaged university that is local in a township. The University of Limpopo has a growing number of admissions for visually impaired student every year and it has a centre that caters for the needs of students living with disabilities.

3.2.4. Population of the study

Vasileiou, Barnett, Thorpe and Young (2018) assert that the population is an entire of all the objects and people that corroborate or belong to a group of identification in research. In this study, the population will be 120 visually impaired students who are

registered with the University of Limpopo, under Reakgona Disability Centre (RDC) at the university of Limpopo and 8 key informants. This population will be useful for this study as they will give their experience regarding online learning.

3.2.5. Sampling, Sampling method and sampling size

3.2.5.1. Sampling

Sampling is the characteristics of the population from which the sample was chosen will be reflected in the sample. Sampling is the process of selecting units (people, for example) from a population of interest so that the research will return fair findings to the population that is selected (Makwana, Engineer, Dabhi and Chudasama, 2023). Sampling is the process of finding people or places to study, to gain access to study, and establish a rapport so that the respondents provide relevant data (Hazari, 2024). The sample of the study was 15 visually impaired students who are in their 3rd year, 4th year and postgraduates. The 8 key informants were, 3 RDC staff members and 5 CAE staff members. Which makes the total number of participants to be 23. The key informants are part of the sample because they are people that work with visually impaired students on daily basis. The researcher sampled till saturation was reached at 15.

3.2.5.2. Sampling method

Non-probability sampling techniques, which are easy, quick, and affordable ways to choose units from a population using a subjective process, was used in this study (Lehdonvirta, Oksanen, Räsänen, and Blank, 2021). In the study, non-probability sampling was utilised in conjunction with purposeful sampling, which is recognised for being subjective and selective. Another name for the purposive sampling method is judgment sampling. The respondents are specifically selected according to their positions and attributes (Hossan, Dato'Mansor, and Jaharuddin, 2023). There are no underlying theories needed for this non-random sampling technique. Consequently, a researcher can ascertain what data is needed.

Purposive sampling is associated with research designs that focus on collecting qualitative data, exploring, and interpreting experiences and perceptions, according to Nyimbili and Nyimbili (2024). Because it selected a sample with relevant characteristics, purposive sampling was appropriate for this study and ensured high-

quality research findings (Nyimbili and Nyimbili, 2024). The eight key informants were selected using purposive sampling.

Probability sampling is the process of selecting a sample from a population by applying the randomization principle, which is also referred to as chance or random selection (Pace, 2021). Probability sampling is usually more costly, time-consuming, and complex than non-probability sampling. However, since units from the population are selected at random and the selection probability of each unit can be calculated, precise estimates and statistical conclusions about the population can be made (Lehdonvirta, Oksanen, Räsänen, and Blank 2021). Under probability sampling, simple random sampling was used to 15 visually impaired students. Thus, the impact of online learning on visually impaired University of Limpopo students will be the main focus of this study.

3.2.6. Data collection

Mazhar et al, (2021), emphasised that the researcher collects data by using various techniques. Islam, and Aldaihani, (2022), states that data collection is a process of acquiring data using different instruments, thereafter, analyses and interprets. This study collected "truthful data from the respondents" through semi- structured interviews. Semi-structured interviews are a particular kind of conversation that takes place between the interviewees and the researcher, according to Nyimbili and Nyimbili (2024). The interviewer, who doubles as the researcher in this kind of interaction forms a list of questions to put to the respondents. The researcher selected interviews because she believes they will help her understand the narrative of the respondents' actual experiences (Nyimbili and Nyimbili, 2024). The researcher was able to compile comprehensive data regarding the impact of online learning on visually impaired students with the help of interviews. The interviews guide used involved demographic questions to give the reader an understanding of how the demographic information was elicited.

3.2.7. Data Analysis

Hazari (2024), divides data analysis into five categories: semiotic, narrative, content, thematic, and discourse analysis. The researcher used thematic analysis in this investigation. Data analysis, according to Braun and Clarke (2023), is the process of giving the collected data meaning and structure. "The mechanism for reducing and

organising data to produce findings that require interpretation by the researcher" is how Squires, (2023) define data analysis. In this investigation, the researcher will use thematic analysis. It is a "method for identifying, analysing, and reporting patterns (themes) within data that will be perceived as the foundational method for qualitative analysis" (Flick, 2014).

Thematic analysis is appropriate for this study because it organizes and comprehensively explains the data. Braun and Clarke's guide to the six stages of conducting thematic analysis was identified by Gupta, Shaheen, and Reddy (2017). These are the steps:

3.2.7.1. Becoming familiar with the data

This suggests that after collecting data, the researcher must write up the insights gained from the conducted interviews. This helped the researcher to identify possible themes and codes that were related to the objectives of the study which were concerned with the effects of online learning on visually impaired students.

3.2.7.2. Generating initial codes stage

A list of items was created from a data set with infinite patterns at this stage of thematic analysis. Additionally, the organised method collected the pertinent data points that were targeted to the research questions. The researcher had to reduce the collected data in a manageable manner.

3.2.7.3. Searching for themes

After all the data has been coded and arranged, this phase of thematic data analysis starts. Additionally, the list of different codes recognised data from the entire research dataset (Squires, 2023). Stated differently, the researcher classified and arranged potentially pertinent and helpful coded data extracts.

3.2.7.4. Reviewing themes

This stage begins immediately following the development of a set of themes and the identification of areas that require improvement (Gupta et al, 2017). This indicates that the researcher examined the coded data information for each theme to ascertain whether the data distinctly forms a pattern.

3.2.7.5. Defining and naming themes

In this theme, the investigator determined which features of the data each theme highlighted and what matters to them including the rationale.

3.2.7.6. Producing the report

When the researcher has identified all the themes and was prepared to start writing the analysis, conclusions, and report, the final phase starts. The purpose of theme analysis writing, according to some, is to offer a succinct, understandable, coherent, non-repetitive, and visually appealing explanation of the data through a variety of themes (Squires, 2023). This indicates that the data collected from the respondents was clearly described by the researcher.

Following data collection, the researcher entered the responses into a Microsoft Word document and examined them to find themes that could be presented and examined further. The researcher asked the respondents questions that led to the presentation of the themes. An exploratory design was used to interpret all of the data. We examined respondent data. The researcher came to their findings.

3.3. ETHICAL CONSIDERATION

Ethics are sets of moral rules or norms that influence moral decisions in conduct and interactions with people. Primary data from visually impaired pupils was used in this research. The original data was not changed; therefore, the data was analysed in its original context by the researcher. According to Newman (2016: P140), before becoming a subject of study, an individual must be informed of the research's goals, procedures, anticipated benefits, and any risks.

Writing about these expected ethical conundrums is essential when developing a study argument. Apart from safeguarding against wrongdoing and inappropriate conduct that might reflect negatively on their establishments, researchers also need to safeguard their research subjects, foster trust with them, uphold the integrity of their work, and address emerging issues and challenges. Integrity and harm are two ethical considerations. Consent, psychological abuse, stress or loss of self-esteem, and privacy are all factors to consider. Copyright and intellectual property rights, as well as anonymity and secrecy. As a result, participation will be entirely voluntary.

3.3.1. Trustworthiness

The reader's ability to determine whether the researcher was honest in how the research was conducted and reasonable in the conclusions reached is referred to as trustworthiness (Cloutier and Ravasi, 2021).

3.3.2. Credibility

According to Islam, and Aldaihani, (2022), credibility is primarily utilised to judge whether the research is real and trustworthy. The researcher employed peer review to verify legitimacy. Furthermore, inputs from the supervisor were used to validate the findings' credibility. Credibility was ensured by the researcher by citing all authors and sources that were used in the research. Once more, the researcher presented truthful data from the respondents along with proof of findings. By retaining all of the interview transcripts from the respondents, the researcher made sure that the data is reliable. To ensure that all information that is transcribed is accurate and pertinent, the researcher retain the data recordings for a period of two months.

3.3.3. Transferability

The ability to apply theoretical knowledge from qualitative research investigations to other similar contexts is known as transferability (Korstjens & Moser, 2018). The researcher employed purposive sampling in conjunction with a comprehensive description of the research participants to optimise the transferability of the findings. The information from the sample was presented by the researcher in its unadulterated state. This implies that the same findings would be obtained if a study like this one was conducted. Transferability refers to the degree to which the results of qualitative research can be transferred to other contexts with other researchers, it is the interpretive equivalent of generalisability (Nyimbili and Nyimbili, 2024). The researcher gave details about the respondents who took part in this study to guarantee transferability. For instance, the researcher stated how many people responded. Once more, the procedure for gathering data is explained. Likewise, the study's location is mentioned.

3.3.4. Dependability

Ensures that the study's findings are reliable and repeatable. The reliability of the study is confirmed by the high quality with which it is done, analysed, reported, and presented. The findings of this investigation are presented in an unbiased manner. Neutrality is accomplished by involving peers in the examination of research findings and conclusions (Anney, 2022). The researcher assured dependability by presenting the findings objectively and without bias.

3.3.5. Confirmability

The accuracy of the research findings is addressed by confirmability. It demonstrates how well the findings are derived from the data rather than from the researchers' bias. The researcher audio-recorded the interviews to check their veracity. Transcriptions of the recorded data are subsequently be created so that the findings may be inspected or confirmed (Korstjens and Moser, 2018). By presenting the respondents' information gradually, the researcher made sure that everyone was complying.

3.3.6. Confidentiality and anonymity

The respondents were given the option by the researcher to withhold information that they felt uncomfortable sharing. When they wanted to, respondents could leave the research study at any time. The study does not reveal the respondents' true names to maintain their anonymity, and the data collected is solely utilized for research purposes.

3.3.7. Respect and dignity

The researcher treated all the respondents with respect and dignity. Statues and positions of respondents are respected. Respondents were not compelled to divulge any information with which they were uncomfortable.

3.3.8. Protection from harm

According to Braun and Clarke, 2023 (2023), it is an ethical requirement for the researcher to shield the subjects from any physical or psychological discomfort that might arise during the study, if it stays within a reasonable bound. During the study, the researcher oversaw keeping the participants safe from harm of any kind.

3.3.9. Informed consent

“Gaining consent can be a practical necessity if access to relevant data is to be achieved” (Squires, 2023). To make an informed decision about their participation, respondents were briefed on all aspects of the study, including its procedures, risks, and benefits (Braun and Clarke, 2023), The benefits, risks, and procedures associated with the study were explained to all respondents by the researcher. The respondent was not coerced into participating in this study by the researcher. Participation was therefore entirely voluntary.

3.3.10. Voluntary participation

The respondents were informed by the researcher that participation is completely voluntary and that there are no consequences if they decide to stop. The goal of the study and the intended use of the data were also explained to them.

3.3.11. Permission

The researcher applied for ethical clearance and permission from Turfloop Research and Ethical Committee (TREC). The study also pursued gatekeepers' permission from the registrar of the university.

3.4. CONCLUSION

In general, a lot of researchers never stop coming up with new ideas about various subjects, so selecting a research methodology that will yield high-quality research is essential. Because of this, various studies have various goals and objectives, necessitating the use of the best research design to produce high-quality final products. To provide the best possible data collection, it is crucial to be aware of and comprehend various research methodology techniques (Flick, 2014).

3.5. SUMMARY OF THE CHAPTER

The qualitative research approach, the explanatory research design, and the research design and methodology were covered in this chapter. The study's population was also covered. The study's location, data collection methods, and data analysis tools. Once more, ethical considerations were covered.

CHAPTER 4

4. PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1. INTRODUCTION

This chapter presents the empirical findings, analysis and interpretation of data that were collected using interviews. Data were collected from fifteen (15) visually impaired students and three (3) RDC staff members at the University of Limpopo. The aim of this research study is to investigate the effects of online learning on visual impaired students at the University of Limpopo.

SECTION A: Visually Impaired Students Participants

4.2. DEMOGRAPHICS OF STUDENTS PARTICIPANTS

This theme reflects on the student's participants' demographics which are gender, age, faculty, the level of study, category of visually impairment and when they were diagnosed to assist the researcher to make sense of and understand the context of the finding from the interviews with these participants. The data from respondents are as follows:

4.2.1. Gender

The chart below represents the gender distribution of the students' participants.

Chart: 4.1. Gender Distribution of the student's participants

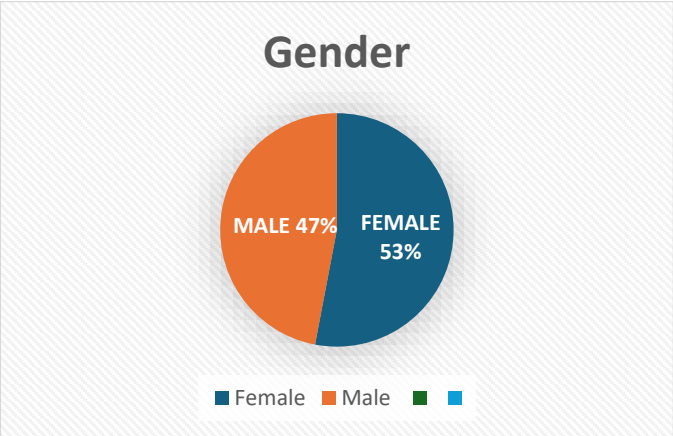

Figure 2: Gender Distribution of the student's participants

Based on the data on the chart above 53% of the student's participants were female students. While 47% of the student's participants were male students. This data shows that there is a fair balance in gender representation in the study and its findings. This

was very important because the two genders do not experience the challenges the same way given that women and girls are mostly disadvantaged in society by virtue of being female.

4.2.2. Age Distribution of Students Participants

The table below represent the age distribution of student's participants.

Table: 4.1. Age distribution of student's participants

Age group	**number of respondents**	**Percentage (%)**
18-22 years	4	26.67%
23-27 years	9	60%
28-32 years	2	13.33%

Based on the data on the table (4.1.) above 26.67% of the students were aged between the age of 18-22 years and 60% of the students were aged between the ages of 23-27 years. While 13.33% of the students were aged between the age of 28-32 years. The data shows that they are different age groups of visually impaired students. This was very important because depending on age and how long the person has lived with a visual impairment, it would change their individual experiences and their interaction with society and their physical environment.

4.2.3. Students Participants Registered Faculty

The table below represent the faculty distribution of student's participants.

Table: 4.2. Faculty Distribution of Students Participants

Faculty	**number of respondents**	**Percentage (%)**
Management and Law	5	33.33%
Humanities	10	66.67%

Based on the data on the table (4.2.) above 33% of the students are registered under Faculty of Management and Law. While 66.67% of the students are registered under the Faculty of Humanities. Out of the 15 students participants there were no students from the Faculty of Health Sciences and the Faculty of Science and Agriculture, this creates a limitation in the generalizability of the findings. Based on the data from RDC

there are very few visually impaired students under these two faculties that are not represented and therefore that should not affect the findings of the study. The Faculty of Humanities is the one that has many visually impaired students in the university and hence the 67% coincidental representation in the study.

4.2.4. Level of study of student's participants

The table below represent the level of study of the student's participants:

Table: 4.3. Level of the respondents

Level of study	**Number of respondents**	**Percentage distribution (%)**
1st level	3	20%
2nd level	3	20%
3rd level	1	6.67%
4th level	2	13.33%
Honours	3	20%
Masters and Doctoral	3	20%

Based on the data in table (4.3.) above, it shows that 20% of the students are doing their 1st level in their studies and 20% of the students that were doing 2nd level in their studies. There were 6.67% of students that were doing their 3rd level. Further, the table showed that honours students that formed part of the study amounted to 20%. While the other 20% was formed by master's and doctoral students. This category was important for the study as it shows that the respondents were doing different levels of studies and the researcher got views from different levels of study as the complexities and experiences would vary according to level of study and even years in the university. As a result, the researcher believed that these subjects could offer reliable and pertinent data because it covers all the levels of study in the university.

4.2.5. Visually impairment category of student's participants

The table below represent the visually impairment category of the students' participants.

Table: 4.4. Level of the respondents

Visually impairment	**Number of respondents**	**Percentage (%)**
Total blind	5	33.33%
Low vision	3	20%
Partially sighted	7	46.67%

The findings on the table (4.4) above shows that there were 33.33% of the students were totally blind and 46.67% of the students were partially sighted. While the other 20% of the students fall under the category of low vision. This was very important to establish because these categories of visual impairment do not experience things the same way and would need different support and resources per level of impairment. According to Carpenter (2021), visual impairment can include low vision, partial sight, and total blindness.

Carpenter (2021) defines total blindness as means of having no vision at all, while partial blindness means having some remaining vision or limited visual abilities. Low vision is a condition where a person's vision is significantly impaired, even with corrective lenses, it can affect daily activities and make it difficult to perform tasks like reading, driving, or recognizing faces. Partially sighted means having partial vision either in one or both eyes, however, they are not completely blind, but they can see little (Zafar, Asif, Ahmad, Ghazal, Faiz, Ahmad, and Khan, 2022). Differences especially in visually impairments can affect how a person see and access information online using technological devices.

According to Mboshi (2019), the term "visually impaired" refers to a broad range of vision loss, from partial sight to complete blindness. According to Teoh, Solebo, Rahi, Abbott, Abdullah, Adams, Allen, Anderson, Ansell, Anwar and Ash (2021), visually impairment has categories which is total blind, low vision and partially sighted. However, those people classified under the same categories, their visions still differ from one other, and they need different assistive devices to assist them with their academic activities, work activities and other day to day operation of life.

4.2.6. Number of years since the student was diagnosed.

The table below shows number of years since the student was diagnosed with a visual impairment.

Table: 4.5. number of years since the student was diagnosed.

When were the student diagnosed?	number of respondents	Percentage (%)
From birth	10	66.67%
2000-2010	3	20%
2011-2020	2	13.33%

Based on the data on the table (4.5) above 66.67% for the students were diagnosed with a visual impairment from birth, respectively. While 20% of the students were diagnosed with visual impairment between year 2000 and 2010. While the remaining 13.33% of the students were diagnosed with a visual impairment between the year 2011 and 2020. According to McConnell, Saunders and Little (2021), visual impairment can be caused by many aspects such as accident, eye injuries, hereditary disorders, eye infections, cataracts, and amblyopia. The above-mentioned causes are the common causes of visual impairment. According to World Health Organisation (2021), Although vision loss can occur at any age, most of the blindness and vision impairment cases are diagnosed between the ages of 50 and 6 months.

When collecting data, the researchers included a demographic information section to ensure that they have extensive and thorough information about the effects of online learning on visually impaired students. This part was additionally motivated by the following reasons: Visual impairments vary from person to person, and online learning will have varied effects on pupils depending on their impairments. Some students were born sight impaired, while others were diagnosed during their childhood, and some were diagnosed a few years ago, therefore their experiences may differ.

4.3. ONLINE TEACHING AND LEARNING EXPERIENCES OF VISUALLY IMPAIRED STUDENTS

This theme aimed to outline online teaching and learning experience of visually impaired students. How many of their modules are taught online and how it is to learn online compared to a face-to-face method of teaching and learning.

It was remarked that visually impaired students are also subjected to online learning and teaching in the university like all students. Participants reported that they all their modules are taught online, and they write some online assessments and activities. Some students reported that all their modules are taught online, however, they assessments are written in person and venue based. Students are doing different courses and different level of study, which means the number of their modules are different. Some students are doing, 4, 5, 6, 8, 9, 10 and 11 modules.

"I attend all my 9 modules online and it is difficult because these modules are many and I have to face challenges in every class that I attend". (Participant 2).

There are some of the students who are doing postgraduate, and they are only doing research as their module. Students mentioned that they also having meetings with their supervisors' online using blackboard and google meet. They also mentioned that it is not easy to use those platforms.

"I am doing research only as my module and I sometimes have meetings with my supervisor online using google meet. It is not easy and conducive for me." (Participant 3).

Most of the students mentioned that the process of online teaching and learning came as a strategy to ensure that the educational sectors are not left behind during the covid-19 breakdown. However, during the implementation process, visually impaired students were not considered because the process really disadvantages them really bad.

"I understand that online teaching and learning was introduced as a strategy to ensure that educational sectors are not left behind during the covid-19 breakout.

However, I feel like visually impaired students not considered throughout the processes of introducing the online learning." (Participant 15).

The students stated that online teaching and learning relies heavily on technology sand technical issues disrupt their learning processes. The technical issues that they stated are poor internet connectivity, software glitches and computers and laptops malfunctioning. There is also lack of interaction and it makes it difficult for them to communicate with their classmate, and it makes it even more difficult for them to create a sense of community, which is a crucial factor in their ability to perform excellent.

"Online learning and teaching rely on technology and the technical issues disrupt my learning such as software glitches and poor internet connection. It is also lack interaction especially in modules were we are mixed like 2 courses doing one modules, the lectures always closes the mics to minimise distractions. That led to no interaction during class. (Participant 8).

According to Ngubane and Zingozzi (2021), online teaching and learning is the practice of teaching and learning through virtual platforms such live classes, video conference, webinars and other online tools. This data shows that visually impaired students are facing difficulties when attending online. This shows that online teaching and learning is not conducive for most of visually impaired students. According to Miyauchi (2020), most of visually impaired students have a bad experience on online teaching and learning. It was remarked that social inclusion theory is not applied in terms of creating education environment that are welcoming to all students regardless of their abilities, characteristics or background, as stated by Mpu and Adu (2021).

Mpu and Adu (2021), Stated that social inclusion theory relates to the study in a sense that it advocates for inclusive education where there is a creation of educational environments that are welcoming to all students regardless of their abilities, characteristics or background. According to Mahlangu (2020), this leads to the continued exclusion of students with disabilities from higher education. According to Mahlangu (2020), there are still obstacles in the way of students with disabilities participating more fully in higher education, even though the post-1994 educational system has the potential to help.

4.4. ASSISTIVE DEVICES USED BY VISUALLY IMPAIRED STUDENTS TO ACCESS ONLINE CLASSES

This section aimed to identify different assistive devices used by visually impaired students to access online learning. Participants were asked if they have access to online study materials and assistive devices, which device do they have, how did they get the device and which device do they prefer, or which devices work best for attending online classes in relation to their level of visual impairment.

Visually impaired students need technological assistive device to navigate their academic activities and their academic journey. Based on the data collected from the participants through interview, the students mentioned that they do have access to assistive devices such as laptop, magnifying glasses, braille no touch, sensor reader, smart phones, screen reader and desktop. The mentioned assistive device they acquired them through National Student Financial Aid Scheme (NSFAS), private bursaries and self-funding. NSFAS has a certain amount for assistive devices for students living with disabilities, this include all disabilities for example students who are physical disabled they get motorised or automatic wheelchairs. Desktops are there at the RDC computer lab, where every student that is registered with RDC can come and use them at any time of their choice.

Participant 4 “stated she have access to both study materials and assistive device. I have a laptop which it was self-funded because I do not have funding. Although I prefer a desktop because it has a big screen, I opted for a laptop because of a limited space in my room and whenever I feel like my eye are strained from using the laptop, I will go to RDC and use the desktop.”

Students that are do not have bursaries, they use they own money to ensure that they acquire necessary assistive devices for their studies. The students use they little money that they have to assistive devices to ensure that can also be able to receive education. Assistive devices that are used by visually impaired students are expensive, hence in most cases the bursaries also cover the expenses of the devices.

There are certain students that have acquired assistive devices through NSFAS and private bursaries, however, those assistive devices they are not the one that they prefer as they need different assistive devices according to their visual impairment. This result in students not performing well in their academic assessments and activities.

"I have access to both study materials and assistive device. I have a laptop that i acquired through NSFAS, however I prefer Apex or braille no touch because it has braille keyboard and still type on a word document and it's easy and fast to use." (Participant 7).

Some students stated that the reason they got assistive devices that they are suitable for them is because during the procurement processes or procedures no one from RDC and financial aid office has consulted with them and ask which assistive device they need, or which one is suitable for them. They further mentioned that during the beginning of the year when they were filling the NSFAS assistive device annexure form at G block, they were not asked anything about preferred assistive devices.

"*I have access to study materials and assistive device. I have a laptop that I acquired through NSFAS; however, I prefer braille no touch as it has braille keyboard because I'm from high school and I was using it. Braille no touch is easy and conducive to use especially if you were using braille machine (Perkins Brailler)." (Participant 9)*

"RDC and financial aid offices have never consulted with me during the procurement processes and procedures which I feel if they could have consulted me, I was going to be having an assistive device that is conducive." (Participant 12).

Assistive technology plays a vital role in meeting the information needs of visually impaired individuals. Assistance technology is defined as a tool intended to normalize or improve the functionality of any disabled person (Viner, Singh & Shaughnessy, 2020). Assistive technology was introduced to allow visually impaired students to participate in both their education and their daily lives. Naipal and Rampersad (2018), confirms that visual impairment makes reading and writing more difficult. Thus, visually impaired students require assistive technology to complete their educational activities

in the classroom and improve their daily lives (Senjam, 2019; Hu et al., 2019). According to Viner et al. (2020), visually impaired students require both low- and high-tech assistive technology to achieve and maintain a normal life.

Social inclusion theory is the idea that all the members of the society should have access to the resources and opportunities they need to participate in society without barriers (Goodale, 2020). The study supports the above argument because visually impaired students also need resources which are assistive devices that assist them to participate in their studies and in society without any barriers.

4.5. SUITABLE STUDY MATERIALS FOR VISUALLY IMPAIRED STUDENTS

This theme aimed to identify different types of study materials that are used by visually impaired students to study and gather information for their academic activities and assessment such as braille documents and large print documents. It also outlined the processes that they use or follow to acquire the necessary and suitable study materials.

Visually impaired students use different types of study materials that are suitable for them according to their needs and category of visual impairment. Based on the data gathered from the participants through interviews, the students mentioned that they do have access to their suitable study materials that assist them to do or perform their academic activities and assessment. The study materials that are used by visually impaired students are braille documents, large print document and soft copy documents.

The study material that students need; they get from material production office which is situated at RDC. The material production office prepares study materials for study such as braille and large print. The office prepares braille documents by taking a book or students notes, then convert them into braille documents. Braille documents also has types such as standard braille and construction braille. As for large print document documents they take students notes then enlarge them to certain font size that the students prefer. As for soft copies most students get them from blackboard where lecturers post notes and slides, blind students' uses

“I have access to study materials that I prefer, which is large print documents and soft copies. The large print documents I request them material production office at RDC to enlarge documents for me, using font size 16 as it accommodates my eyesight very well”. (Participants 4).

“I have access to study materials that I refer, which is soft copy documents as I’m and I cannot use braille documents. Jaws screen reader assist with reading the documents for me.” (Participant 10)

It was stated that most of totally blind students get soft copy documents from their lecturers through email, as they are struggling to get notes through blackboard. Other said they request the RDC librarian to assist them by downloading the soft copy documents on their blackboard.

“Participant 3 expressed that he has access to study materials that I prefer, which is braille documents and soft copy documents. Soft copy documents I receive them from my lecturer via email and sometimes I ask the RDC librarian to assist by downloading the document from my blackboard. Braille documents, I request the braille practitioner to prepare certain documents that I need in braille and collect them from material production office after they prepared them.”

Visually impaired students that are doing postgraduate and are busy with research mentioned that they are using articles for their research studies. They get the articles from google scholar. Totally blind students mentioned said their supervisors assist with downloading articles for them and the RDC librarian also assist with downloading articles for them. After they got the articles, they take them to material production office to convert some into braille and other ones from PDF into word so that jaws screen reader can be able to read the documents. This process takes require more time and it led to students ending up taking time to complete their degrees.

‘I use braille and soft copy documents. Currently I’m doing research and I need article to do my research. My supervisor and RDC librarian assist with download articles for me, I take the article to material production office so that they assist with

converting them into braille and word documents and after that I'm able to read them". (Participant 3).

The date gathered reflect that most of Visually impaired students rely on notes from lecturers for their studies because of lack of books that accommodates. The students find it hard to get more information beside the one they get in classroom because of lack of study materials. Naipal and Rampersad (2018) confirmed that visual impairment adds to challenges of reading and writing. Thus, visually impaired students need specific learning materials and study materials to undertake their educational activities and assessment within the learning environment and enhance their daily lives (Senjam, 2019; Hu et al., 2019). According to Selepe and Molelemane (2020), many fields of study do not have books available in Braille or audio format. If they are available, they are out-of-date materials that will be useless this semester. Even if the student or teacher requests the books in Braille or audio format, it can take one or more months, by then the end of the semester comes. Sometimes no description is provided for images or pictures, mathematical equations/problems, etc. Therefore, scanning is ineffective for individuals with disabilities.

4.6. VISUALLY IMPAIRED STUDENTS' ACADEMIC PERFORMANCE

This theme aimed to summarise the academic performance of visually impaired students since university teaching and learning moved from face to face to online learning during the COVID-19 outbreak. It also outlines how suitable assistive devices and study materials assist them to perform in their studies.

Academic performance of students depends on their hard work, determination, time devoted to independent study and class preparation, as well as time spent on extracurricular activities, hobbies, the school environment, and other jobs. Finding equilibrium between these components for overall development and achievement in the personal and academic spheres (Musa, 2020). Alhadabi and Karpinski (2020) stated that academic performance of visually impaired students has additional factors that depends on, such as teacher attitudes towards inclusion which can influence their preparedness and effectiveness in teaching visually impaired students. Reading and literacy skills which are impacted by visual impairment. Access to assistive device and

suitable study materials is crucial for their academic success. Curriculum adaption is needed to suit students with visual impairments.

Based on the data that the researcher gathered from the participants through interviews, students expressed that having suitable assistive device and study materials assist them to do their academic activities and assessment in time, the assistive device and study materials also assist them to perform better (average) because they no longer perform the way they used to perform before online teaching and learning.

"Participant 15 had the following sentiment, having access to study materials and assistive device assist me to perform average because for the challenges that came along with attending online. My performance has been dropping since the introduction of online learning."

"Having access to assistive device and suitable study materials assist me to perform better (average) but not in a way that I know myself, this is resulting from not having an assistive device that I prefer and having to adopted from high school face to face classes to university online classes." (Participant 7).

Other students reported that having suitable study materials and assistive device assist them to be able to do their academic activities and assessment in time, the assistive device and study materials assist them to perform well in their assessment and it makes them to be competitive in class.

"Having suitable assistive device and study materials assist me to do my academic activities on time and perform to the best of my abilities." (Participant 14).

Some students stated that they are not performing well (average and below) in their studies because they do not have assistive devices that are suitable for their disabilities (level of visual impairment). They have suitable study materials; however, it takes time to prepare them, by the time the study materials are ready we are left with limited time to prepare for our assessments which results in poor or average performance.

“I do not have an assistive device that is suitable for my disability. I have access to suitable study material however it takes to time to prepare. By the time they are done preparing them, there is limited time left for me to prepare for my assessment. This led me to perform poor or average and it disadvantages me because I do not think I will qualify to further my studies due to low marks.” (Participant 11)

The issue of not having suitable study materials and assistive device it’s a disadvantage on visually impaired students as it affects their performance badly and may lead to few students furthering their studies to do postgraduate. Numerous factors have been found in various studies to influence students' academic performance; these include academic self-efficacy, motivation, intellectual capacity, and attitudes and abilities (Musa, 2020). The level of academic performance, zeal for learning persistence, and choice and commitment to learning tasks have all been found to be significantly influenced by academic self-efficacy. Additionally, one of the key characteristics that has a major influence on students' academic performance in higher education institutions is academic self-efficacy (Njega, Njoka, and Ndung'u, 2019). Students who are trained to have high academic self-efficacy are better able to apply elaborative learning strategies and think critically.

Different researcher stated that it takes 4 to 5 years to complete a 3-year undergraduate degree (Gao et al., 2011; Klassen, et al., 2009; Prat-Sala & Redford, 2010; Zimmerman, 2000; Mousoulides and Philippou, 2005; Shkullaku, 2013; Stajkovic & Luthans, 1998). Abid, Muhammad, aqib and Farhat, (2019), support the argument say that it is true that it takes 4 to 5 years to complete a 3-year undergraduate degree. There is no research information about how long it takes visually impaired students to complete a 3-year undergraduate degree. However, based on the information collect from respondents it shows that visually impaired students face a lot of challenges on their studies which may results in them taking long er period to complete their degrees.

4.7. PREFERRED CLASS ATTENDANCE METHOD/MODE FOR VISUALLY IMPAIRED STUDENTS

This theme aimed to outline the class attendance methods that are preferred by visually impaired students and why do they prefer that method.

Students prefer different learning environment and learning platform based on how they are conducive for them. Same as visually impaired students they have their own class attendance method that they prefer based on their different needs and conduciveness of the method and the environment. Most universities in SA moved to online learning in 2020 during the COVID-19 pandemic outbreak and subsequent lockdown as a responsive strategy for COVID-19 (Ngubane and Zingozzi, 2021).

It was remarked that most visually impaired students prefer face to face (venue based) class attendant method because they get to participate with everyone (classmate and lecturer) with any technological factors that and network issues. It is easy to explain their challenges to the lecturers because they can also see and understand how the visually impaired students struggle within the class. Students can easily inform the lecturer on how they can assist and share the knowledge with other classmate that they do group assignments with, so that they can know how to work with them. Students get extra time when writing in venue-based assessment which assist them to be able to complete their tasks.

“I prefer face to face class attendance method because I can easily interact with my lecturers and classmate. I easily get assisted whenever I need assistance regarding any academic challenges that arise during the class. During venue-based assessments I get extra time, unlike during online assessment.” (Participant 6)

Some students expressed that they prefer face to face because some lecturers understand their disabilities when they see them in person. Other lecturers know how to accommodate and support visually impaired students in a classroom but have no idea on how accommodate and support visually impaired students during online classes. Other lecturers understand that visually impaired students use different types of study materials and brings them to class so that the student or students can go with other students on the same pace. Example: other lecturers prepare large print

documents for their visually impaired students so that they go through them in class when others are reading on the board. Students prefer face to face because it has fewer distractions.

"I prefer face to face class attendance method because lecturers are supportive and accommodate me. They ensure that I'm not left behind and I get provided with the necessary suitable notes that they are able to prepare for me and request RDC material production office to assist with other ones that they cannot prepare". (Participant 2)

However, the data collected reflect that there are few students that prefer online learning class attendance method because they get to attend classes wherever they are at any time. Students prefer online learning because they are learning while they are at their comfort area or place. Students do not have to struggle with the accessibility of the environment going from one class to other. This smaller group of visually impaired students prefer online learning because they do not have to deal with stigma and discrimination on class.

"I *prefer online learning because do not have to face the challenge of moving from one class to other as certain building and their surrounding are user friendly for me. I also [refer online because I learn while in my comfort zone." (Participant 10)*

Other students expressed that they prefer online learning because whenever they missed the class they can go back and go through the recording to cover up the chapter that was done. This also assist when you missed some information during the class because you can listen to the recording and be update with everyone. Most of visually impaired students use listening because they cannot see, and they can attend classes while doing other things like cleaning and cooking without missing the information.

"I prefer online learning because it's convenient and conducive for me as can attend anywhere I am. It's also conducive because I can go through the recording and make notes for myself, instead of waiting for braille practitioner to prepare notes for me." (Participant 4)

The data collected reflects that there are many challenges that are faced by visually impaired students since learning and teaching moved from face to face, to online teaching and learning. These are the following challenges that visually impaired students face on daily basis when attending and writing assessment through online learning: Poor network connection, inaccessibility of the online learning platform, untrained lecturers, allocation of time for assessments and adapting to online learning.

The first challenge is poor network connections which is an issue that is faced by many students that are attending their classes online. However, there is an assistance that the university offered which is data and for on-campus students also have unlimited wi-fi around the campus. This is also a benefit for visually impaired students in the university because they are staying on-campus.

Despite the assistance that the university offers, all the respondents that were interviewed mentioned that poor network connection is an issue that they must face almost every day when attending their online classes. They further mentioned that the data allocated for students which is 10G is not enough especially if you are attending more than 2 classes in a day, which 1 class is 1 hour 40 minutes. There is also an unlimited Wi-Fi which has low coverage and it connect for few minutes and disconnect after and it results in being kicked out of a session, then they have to reconnect and join the session again.

“I attended all my classes online and I face poor network connection almost every day. The university provide me with data 10G day and 10G night but is not enough to cover my classes. Even the wi-fi in my res it has low coverage as it connects and disconnect after few minutes.” (Participant 11).

According to John, Darragh, Jason, Seán, and Dónal (2021), one of the primary consequences of a poor internet connection is that students are unable to access online educational materials, limiting their capacity to complete projects and assignments, interact with lecturers in class, and attend online classes. Poor internet connection affects online classes, resulting in sluggish listening experiences, dropped connections, and a compromised learning environment.

The second challenge is inaccessibility of online learning platforms for visually impaired students. There are software's and technological assistive devices that are there to assist visually impaired students to be able to attend and do their academic activities and assessments. Assistive devices and software's have specifics that accommodate visually impaired students' needs and assist them to undertake their assessment. The participants mentioned that the online platforms are not accessible for visually impaired students, especially blackboard as the university online learning platform.

Blackboard is not accessible in a way that jaws screen reader does not operate on it, and it is the software that students who are totally blind use so that they can be able to operate it. This result to the issue of students having to rely on other students that can see to assist them to login.

"Blackboard is no accessible for me as a blind person because I use jaws screen reader software on my laptop so that I can be able to operate it. However, jaws screen reader does not operate on blackboard, and which means I must rely on my friends to assist me to login every time I need to use blackboard". (Participant 6)

Other students mentioned that they use zoom text software so that they can be able to see the presentations of the lecturers on blackboard without straining their eyes. Whenever there are maps or portraits on the presentation it hard to see them because when they zoom the picture on the screen become blurry and it strain the little eyesight they have.

"Blackboard is no accessible or user friendly because when I see zoom text to zoom in the pictures and maps during class the screen become blurry, which strains my eyes." (Participant 1)

According to Zongozzi (2020) there is no access to online learning environment for VIS as most of the software that are used by VIS does not operate on the online learning systems, such click in that is used by UNISA to write test, exams and to submit assignment. Most of VIS does not have required skills to operate computers and

laptops as they are used to use large print and braille study materials from their high schools (Tshifhiwa, 2019).

The third challenge is untrained lecturers that are teaching visually impaired students and they do not know how to accommodate during the online lesson/sessions. The respondents mentioned that some lecturers do not know who to teach visually impaired students online. You find that they are unable to explain graphs, maps and portraits to visually impaired students.

Some lecturers do not even explain the portraits and graphs, for example, they will just say the graph shows the statistics on how unemployment has increased during the past years. Some lecturers forget to prepare question papers for visually impaired students during assessments which led students starting late to write their assessments.

“My lecturers are unable to explain the graphs and portraits during the lessons and some they don’t even try to explain they just stated that the graph shows the stats of growth or decline. My lecturers sometimes forget to prepare question papers for me during assessments.” (Participant 13)

In a diverse learning environment, lecturers may have challenges in meeting the demands of students in various settings that impact their learning (Intakhab, 2011). In an educational setting, this difficulty is exacerbated by lecturers who are teaching visually impaired students and are unable to address their needs. For example, a lecturer may show a reading text on the projector without reading it. This ensures that abled pupils’ requirements are satisfied. However, visually impaired students’ needs are not satisfied as the instructor does not read the texts. Therefore, equal attention was not provided.

The fourth challenge is allocation of time during assessment which affects visually impaired students during the time of assessments. Students mentioned that they face challenges when it comes to allocation of time during online assessments. According to university G rules, Rule G13 under certain extraordinary conditions, deviations from the standard assessment procedures may be allowed by senate. Furthermore,

students mentioned that their lecturers do not allocate extra time for them when they are writing assessment online which results in not being able to complete their assessment. Other students mentioned that when they remind them about extra time, they say next time they will extend it, but they never do.

"I always don't get extra time when we are writing assessments online and I always remind my lecturers about it. During my undergraduate years when teaching and learning was face to face, I was always allocated extra time. Since things are online, I no longer get extra time." (Participant 2)

The last challenge is adapting to online teaching and learning from face-to-face teaching and learning, which affect most students in institution of higher education that are using online teaching and learning method. Visually impaired students are also affected by this challenge as they are moving to a different teaching and learning method that is new. Students mentioned that it is difficult to adapt from face to online teaching and learning as they use different devices to attend and write, they need training on how to use those devices.

"It is hard to adapt from face to face to online teaching and learning, as I was using Perkins machine (braille) to write my assessment last in high school. This when I got here, we got training around last week of February and classes were already started. Having lot of assignment and not knowing how to use computer." (Participant 7).

Other students mention that adapting to online learning is very difficult as people do not adapt the same, some takes time to adapt to change. Some students mentioned that it took time to be able to use laptops and computers as they were not using the before. Some mentioned that they were only able to type as they were using them to write assignment only. Students stated that they are writing slow when they are using computers, and it takes take for them to complete their assessment.

"I started with online learning in 2022 when I was doing first year, however, its 2 to 3 years using computer, but I cannot write fast. I write slowly and I always don't finish my assessment and it affect my marks". (Participant 9)

According to Kupar (2018), visually impaired students face challenge of writing and reading. Visually impaired students write very slowly because of their vision and when they look, they eye run fast which is the reason they tend to write slow.

The data collected from the participants reflects that there are still many issues that are faced by visually impaired students at the university of Limpopo, when it comes to online learning and teaching. It is also reflecting that there is a negative impact of social exclusion and isolation of students living with disabilities, as they are still certain group of students that are left behind. The group of students that is left behind is the minority group of students that also marginalised, and these challenges escalate the marginalisation of disabled students at the University of Limpopo.

The study supports the argument made by Selepe and Molelemane (2021), that visually impaired students in Higher Education Institutions do not receive suitable study materials and assistive devices to assist them in their academic journey. They further stated that most of universities do not have braille and audio books, which are the books that are used by visually impaired students. The study shows that University of Limpopo do not have books that are suitable for visually impaired students.

SECTION B: Reakgona Disability Centre (RDC) staff members

4.8. DEMOGRAPHICS OF KEY INFORMANTS

This section outlines the key informant's demographics which is gender, age, highest qualification and how long they been working at RDC to assist the researcher to find relevant data.

Table: 4.6. Demographics of RDC staff members sampled.

Informants	**Gender**	**Age group**	**Highest qualification**	**Working period**
Informant 1	Female	41-50 years	Honours in Education	6-10 years
informant 2	Male	51 years and above	Masters in English	16 years and more
Informant 3	Female	31 to 40 years	Master's in Media Studies	1-5 years

The table above represent the key informants' demographic profile information. The informants were 3 RDC staff members, which is 2 females and 1 male. Informant 1 falls under the age group of 41-50 years, informant 2 falls under the age group of 51 years and above. While informant 3 falls under the age group of 31-40 years. Informant 1 has Honours in Education and informant 2 has Masters in English. While informant 3 has master's in media studies. The informants working period at RDC are as follows: informant 1's work period at RDC ranges between 6-10 and informant 2 ranges between 16 years and above. While informant 3's work period at RDC ranges between 1-5 years.

The informants 1 and 2 shows that they been working at the centre a longer period, which it means they have been working with visually impaired students and they have acquired more knowledge on how to assist and support the Visually impaired students. However, their qualification does not relate with their occupations and that might be a problem as they did not get the theoretical part of their jobs, because it means that they learned or learning as they are working with the students. Informant 3 has started working at the centre few years back and also the qualification she has does not relate with her occupation. It is also means that she is still learning on how to work, assist an support visually impaired students.

The demographics sections of the informants were added because the researcher need to show depth information about the informants and the relationship between the study and informants' knowledge about the experiences of visually impaired students on online learning. It also provides information about how lung have they being working visually impaired students and additional to show if the informants' educational background relates to their occupation or they learned the work with visually impaired students on the job.

4.9. KEY INFORMANTS' ROLE AT RDC

This theme aimed to outline the key informant's respective roles at RDC as the centre that advocates for the needs of students living with disabilities.

The key informants of the study are the employees of the University of Limpopo working at RDC. Informants 1 and 2 are Braille practitioners which their role is to prepare braille documents for visually impaired students. Their other role is to convert educational learning materials into alternative formats for visually impaired students. They maintain and manages all braille, large print and instrumental materials for visually impaired students. Key informant 3 is an administrator which is the main communication point between RDC, students and other department and stakeholders in the university. She's also working together with financial aid office to ensure that students living with disabilities get assistive devices.

These key informants are working with disabled students on daily basis, and they are available to see, know and understand the advantages and disadvantages of online learning on visually impaired students. There are the ones that assist students with their challenges, whenever they face any.

4.10. AVAILABLE ASSISTIVE DEVICES AND THE PERSON RESPONSIBLE TO SOURCING/PURCHASING THE DEVICES AND STUDY MATERIALS

This theme aimed to identify the assistive device that RDC has, which assist students to access online learning. It also I identify the person responsible to acquiring and purchase the assistive devices and study materials that specifically designed for visually impaired students.

Based on the data collected from the participants, RDC has assistive devices that assist visually impaired students to access online learning such as laptops, computer and many more. They also mentioned that RDC has computer lab that has computers and students can come and use them at any time because the computer lab operates 24hours.

"Yes, we have assistive devices that assist visually impaired students to access online learning and there is a computer lab that operates for 24hours". (Key Informant 1, 2 and 3)'

Based on the informant's information, the administrator's office and materials/braille production office are the ones responsible for acquiring/purchasing assistive devices and specifically designed study materials for visually impaired students.

"The office of administrator and material/braille production office are responsible for purchasing/outsourcing assistive devices and study material." (Key Informant 1, 2 and 3)'

The above data shows that the office of the administrator together with material/braille office work hand in hand to ensure that the centre has necessary assistive device and study materials for visually impaired students. According to Moriña and Biagiotti, (2022) universities have Disability Units where students living with disabilities can be assist and given support throughout their university journey, to also ensure that they create an environment that is inclusive and accessible for everyone.

Wolbring and Lillywhite (2021), stated that universities through Disability Units ensures that students have necessary and suitable assistive devices and study materials that they need so that they can be able do their assessments. Universities provide the units with necessary support and resources to ensure that students needs are catered for and they are able to be competitive academically.

4.11. AVAILABLE STUDY MATERIALS AT RDC AND HOW TO ACCESS STUDY MATERIALS AND ASSISTIVE DEVICE

This the aimed to identify study materials that are available at RDC for visually impaired students. It also outlines the processes on how the students access the assistive devices and study materials that are at RDC.

The study found that, RDC has study materials that are specifically designed for visually impaired students. The materials are braille documents, large print documents and soft copy documents. Braille and large print document are prepared by braille practitioners and notifies students when they are ready, and they come and collect. Soft copy documents they get them form the librarian.

“Yes, RDC has study materials that designed for visually impaired students, which is braille, large print and soft copy documents. Braille and large print documents are prepared by braille practitioner and inform students when they are ready.’ (Key Informant 1, 2 and 3)

The key informants mentioned that assistive devices that are owned by RDC are there to loan students. Students can come and loan an assistive device through the administrator’s office, braille/material production office, mobility and orientation and the office of IT technician. This depends on which assistive device do visually impaired students need.

“Assistive devices are there to loan students. Student come and loan devices through the office of the administrator, material/braille production office, mobility and orientation office and the IT technician office.” (Key Informants 1, 2 and 3)

Based on the about information students can go and loan assistive devices that they need from the centre and return them when they are done using them. They can also get assist from different offices when they need assistive devices. Comment about costs of these devices that are high so universities cannot afford for all students hence they then loan them. Assistive devices that are used by visually impaired students are expensive and the University cannot afford to purchase the devices for all the students, hence they loan them.

4.12. CHALLENGES THAT ARE FACED BY RDC WHEN SOURCING ASSISTIVE DEVICES AND PREPARING STUDY MATERIALS

This theme identifies the challenges that are faced by RDC when outsourcing/purchasing assistive devices that are used by visual impaired students to access online learning. It also identifies the challenges that they face when preparing study materials for visually impaired students.

Based on the data collected form key informants, the study found that it is hard to get audio books and braille books for students. The centre opted to prepare braille document so that the students can only have learning materials. They also mentioned

some documents are not editable, which makes it difficult for braille practitioner to make access for students. Sometimes those documents need to be retyped and it takes too much time to retype and that led to students getting study materials late. kaur (2018) stated that it is hard to get braille and audio books for visually impaired students that can be used for the current semester, and it is easy for university to hire people that can prepare the materials.

"It is hard to get braille and audio books for students. RDC opted to prepare braille documents for students and some of the documents are in editable which is a challenge. In editable document need to be retyped and they require too much time which causes delays in students getting study materials on time." (Key Informants 1 and 2)

RDC is trying their best to ensure that students get suitable study materials that they need. However, there are challenges that makes the process to be hard and long which results in students getting study materials late.

The key informants mentioned that the challenges that they face with sourcing/purchasing assistive device is that they rely on service providers, sometimes they deliver devices that are not up to the standards of the need of visually impaired students. Certain software's are provided by one service provider, which is a challenge because they take time to deliver and sometimes, they also take to come and update the software's.

"Assistive devices and software's the centre depends on service provider to get them and there are always delay. They sometimes deliver devices that are not up to standards of the student's needs." (Key Informant 1, 2, and 3)

Based on the above information the problem is that the centre relies on external service providers to provide them with assistive devices and software's. The service providers are sometimes delivering devices that are wrong.

4.13. ACADEMIC PERFORMANCE OF VISUALLY IMPAIRED STUDENTS

This theme aimed to outline the academic performance of visually impaired students and what can be the attribute to that performance.

Based on the information collected from key informants through interviews, the informants mentioned that visually impaired students perform at an average level in their studies. They mentioned that the reason students perform at an average level is because they are afraid to ask for assistance where they are facing challenges in their studies.

"Visually impaired students perform at an average level in their studies because they are afraid to ask for help where they are facing challenges." (Key Informant 1)

Other informants stated that students perform at an average level in their studies because there are struggling to adapt to online learning. They further mentioned that the other reasons are that online platforms are not accessible and user friendly, the students are using assistive devices that are not suitable for them, lecturers that are ignorant and getting study materials late. This was additionally mentioned by the students' participants, which means it is a serious issue that affect the students.

"Visually impaired students are performing at an average level in their academics because they are facing challenges such struggling with adapting to online learning, ignorant lecturers, getting study materials late and using assistive devices that are not suitable for their needs." (Key informant 2).

Based on the information from informants visually impaired students are faced with challenges that lead them to perform at an average level in their studies. The challenges will result in visually impaired students not being able to qualify for the preferred postgraduate degree.

4.14. SUMMARY OF THE CHAPTER

This chapter presented, interpreted, and discussed the finding on the study from visually impaired students an RDC staff members. It presented the findings regards the demographics of the student's participants and key informants, online teaching

and learning experience of visually impaired students. It also presented the findings about the assistive devices and the study materials used by visually impaired students and the devices that the centre has and how do the students access them.

The findings about the academic performance and characteristics of visually impaired students were also covered in the chapter. The difficulties of online learning and the preferred method of attendance for students with visual impairments. The function of RDC's key informants and the difficulties the organization encounters in creating study guides and obtaining assistive technology for students with visual impairments.

4.15. CONCLUSION

Important information about online teaching and learning and its difficulties was made clear by the data that was presented. Additionally, it provided information on how well visually impaired students performed in online courses. Choosing instructional resources that meet the needs of each individual student is crucial. The university ought to make use of universally accessible online platforms.

CHAPTER 5

5. SUMMARY, RECOMMENDATION AND CONCLUTION

5.1. INTRODUCTION

This chapter present the summary, recommendations and conclusion of the study.

5.2. RECOMMENDATIONS

This section presented the recommendation that measures that can be implemented to overcome online learning challenges. The recommendation and suggestion are based on what the research study has discovered and what the social inclusion theory encourage and advocates for. Thus, the following recommendations are made:

Visually impaired students should learn to voice out their challenges that they face during their online classes so that the lecturers can be aware they are students who are facing challenges during the session. Visually impaired students should share with their lecturer the types of study materials that they prefer so that they can be able to prepare question paper that accommodates them. Students should also share knowledge with their lecturers on how they can assist and support them through their studies. This will create an environment that is inclusive and conducive for their learning.

Reakgona Disability Centre (RDC) staff members should explain the challenges that they are facing with preparing study materials for visually impaired students to students and lecturer, consequently they may assist. They should also share with the university the challenges that they face when acquiring assistive devices and study materials with the university management so that work together to assist students. For RDC staff to effectively support and help students, they should have a positive working relationship with academic staff.

Lecturers should try to find out how many students with disabilities do they have in their classes so that they can be able to know the types of disabilities and how do assist them. They should also communicate with students where they do not understand the disabilities so that the students can assist them, as they know what it is that they need to assist themselves to be able to move with their peer with the same pace. Lastly they should establish a good working relationship with RDC so that they can be able to assist students better.

University of Limpopo should offer lecturer training and workshops concerning disabilities, especially visually impairment and sign languages as they have many challenges in the learning environment. earning support, such as technological assistive devices, is necessary for people with visual impairments. By implementing mandatory inductions, awareness-raising workshops, and workshops to address and train lecturers on issues pertaining to visually impaired students in online education, the university should promote inclusivity. Additionally, the university ought to promote communication between RDC and faculty by developing fresh concepts for assisting visually impaired students in obtaining information and study materials.

The university should work together with RDC to ensure that the centre has assistive devices that are updated so that visually impaired students can be able to do their academic activities. The university should also use online teaching and learning platform that accommodates everyone including visually impaired students. The university should also consult with other institutions like Blind SA and special schools that has visually impaired students on where they audio do and braille books and how to support students. Additionally, the university makes a statement regarding VI students' education. For VI students to learn, compliance must be guaranteed.

Software developers should develop software that accommodates visually impaired students and can operate on the online teaching and learning platforms. In other words they should design software that will be able to read blackboard and explains and describe graphs, portraits and maps.

5.3. CONCLUSION

Considering the study's findings, this chapter offered conclusions and suggestions. The study's overall conclusions showed that, for visually impaired students, online instruction has more detrimental effects than beneficial ones because the software they use does not work with Blackboard, making it difficult for them to access online platforms. The study also came to the conclusion that using online teaching and learning has an impact on including visually impaired students in sessions or lessons because they have trouble understanding certain information on graphs, portraits, and maps because the software cannot read them, the lecturers are unsure of how to explain them, or they do not explain them at all. The study also comes to the conclusion that when visually impaired students use online teaching and learning

platforms to attend classes, their equal access to education is limited. The overall conclusion was that the university uses an online platform that is inaccessible to students with visual impairments, while RDC is having trouble creating study materials for students and obtaining assistive technology and study materials for these students.

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