



**UNIVERSITY OF
KWAZULU-NATAL**

**INYUVESI
YAKWAZULU-NATALI**

**LECTURERS' LEARNING JOURNEYS OF TEACHING STUDENTS
WITH VISUAL IMPAIRMENT: A NARRATIVE INQUIRY**

by

ZWETHANDA DERRICK MSIMANGO

in fulfilment of the requirements for the degree

DOCTOR OF PHILOSOPHY

(EDUCATIONAL PSYCHOLOGY)

in the

SCHOOL OF EDUCATION

COLLEGE OF HUMANITIES

UNIVERSITY OF KWAZULU-NATAL

Durban

PROMOTER: PROFESSOR D. J. HLALELE

CO-PROMOTER: DOCTOR R. SUBRAYEN

JUNE 2024

ABSTRACT

This study explored lecturers' learning journeys in teaching students with visual impairment. According to Wilder and Lillvist (2018), the learning journey theory views learning as a social process that leads to development. A theory of change defines how an intervention's activities (project, program, or policy) contribute to a series of events that result in the desired or observed outcomes (Anderson, 2022). The Learning Journey Theory and Theory of Change advocate that every student with visual impairment must have access to quality education regardless of any disability. Promoting inclusion and reducing exclusions in the education system is the cornerstone of the inclusive policy on education. By utilising an interpretive qualitative one-case study approach involving narrative interviews, narrative focus-group discussions, and written reflection narratives, data from six lecturers was generated. The thematic narrative analysis method was applied to interpret the data. Findings from the study revealed those lecturers' learning journeys were understood as the inclusion and integrating of students with visual impairment with their mainstream peers in the same classroom to minimise stigmatisation, segregation, and exclusionary practices. Further, training was a major component influencing lecturers' learning journey; more than equity issues, ability, and period of student registration. The teaching of students with visual impairment is facing major challenges despite the progressive principles evident in policies. These challenges stem from a variety of negative factors including the lack of educational resources, insufficient funding, inappropriate or absence of training programmes, and the blurred interpretation of policy regarding students with visual impairment. The study recommended that for teaching students with visual impairment, practice and policy implementation should be supported by relevant, effective, and on-going training. Government and institutional support should include providing the required educational resources, clear policy guidelines, and employing lecturers with knowledge and skills of teaching students with visual impairment. For college lecturers to successfully manage students with disabilities, a change in mindset must begin with top-management such that coherent understanding, a shared vision, and collaboration with the entire teaching staff become evident in practice. Commitment and best practice principles in teaching students with visual impairment should be the norm throughout the whole institution. Lecturers and other role-players in education should view this learning journey in the context of the rights of students with visual impairment rather than focusing on impairment problems associated with exclusion and segregation. This study employed thematic and personal narrative analysis. The study concludes that since lecturers' learning journey involves teaching students with visual impairment, they should strive to achieve national objectives that enhance students'

trajectory to acquire information and skills which are vital for growth, confidence-building, and preparation for real-life experiences. The learning journey of lecturers will be successful if institutions enhance present and future human resource development and management. The effective adoption, understanding, and implementation of policy concerning students with visual impairment will contribute immensely to current and future human resource development of colleges, as well as create opportunities for further intensive research in this field.

Keywords: Diversity, inclusion, learning journey, narrative inquiry, pedagogies, professional training, strategies, teaching and learning resources, visual impairment

DECLARATION

I, **Zwethanda Derrick Msimango**, student number 218068190, declare that:

- This thesis is submitted for the Doctor of Philosophy in Educational Psychology degree at the University of KwaZulu-Natal. It is my independent work, and I have not submitted it before for a qualification at another institution of higher education.
- This thesis is my original work which does not contain any other person's data, pictures, graphs, or any other information. If so, then it has been specifically acknowledged as being sourced from other persons or institutions via in-text referencing and in the reference list.
- Where texts from sources were paraphrased, I acknowledged this in-text and in the reference list.
- This study, as intellectual property, belongs to the University of KwaZulu-Natal.

Signed:

Date: 24 March 2024

DEDICATION

I dedicate this thesis to my late mother, Emelina Khalasiphi Msimango, for setting the foundation for this academic journey of my life. I am indebted to her unrelenting confidence in me to reach greater heights in education. I am eternally appreciative for her efforts, despite the trying times. Her loving memory lives on.

This PhD is also dedicated to my wife (Mrs Grace Simangele Msimango), my three children (Minenhle, Hlelelwe, and S'vuno), my two friends (Sibusiso Shandu and Thembinkosi Ndlovu), all church members, and the TVET College Management.

ACKNOWLEDGEMENTS

First and foremost, the completion of this thesis is the result of numerous months of hard work supported by the presence and guidance of God my Maker, whose grace, mercy, and open love saw me through many difficult times during this academic journey.

Also, I would not have completed this PhD if individuals and groups had not supported me in diverse ways. Therefore, I would like to express my sincere gratitude and appreciation to the following:

- To Professor D. J. Hlalele my promoter, Dr R. Subrayen my co-promoter, the academic coaches, and mentors, it is with great sense of humility, respect, and honour that I acknowledge your expert assistance and patience. This study would not have materialised without your wisdom, persistence, and unswerving support. I remain indebted to you all forever.
- To my wife and children for encouraging me the whole way.
- To Mr J. J. M. Khanyile and Mr N. S. Mzimela for your financial support. God will richly bless you all.
- To the University of KwaZulu-Natal for also supporting me financially. I am very grateful to all the staff of the School of Education who assisted me with all the administrative challenges.
- To Dr B. N. Ndlovu, Dr J. Lutaaya, Mrs L. Ndlovu, Mrs Z. P. Tembe, Mrs F. C. Linda, Mr S. Mdluli and Mr Delani Ndlovu for inspiration, belief in me, and support throughout the years of study.
- To the Principal of Umfolozi TVET College, Mrs Elsie du Toit for allowing me to conduct the research study on site. Also, thanks go to Mr K. N. Zulu (campus manager), and all the office staff for their motivational support.
- To all the research participants for agreeing to engage in this study; your contributions are greatly appreciated. God bless you all.
- Lastly, to my language editor, Brian Naidoo, for refining the draft doctoral document.

LIST OF ABBREVIATIONS/ACRONYMS

AD	Assistive Devices
BEEd	Bachelor of Education
CPD	Continuing Professional Development
CSNB	Congenital Stationary Night Blindness
CVI	Cortical Vision Impairment
CVL	Central Vision Loss
DE	Diploma in Education
DHET	Department of Higher Education and Training
DTEL	Digital and Technology Enhanced Learning
ESD	Education for Sustainable Development
ETA	Education and Training Act
HW	Hardware
IEP	Individualised Education Programme
IEPs	Individualised Education Plans
JAWS	Job Access Word with Speed
LJ	Learning Journey
LWD	Learners with Disability
NATED	National Accredited Technical Education Diploma
NC(V)	National Certificate Vocational
OM	Orientation and Mobility
PQT	Post-Qualification Training
PSET	Post-School Education and Training

PTSD	Post-Traumatic Stress Disorder
PWD	People with Disability
RPD	Rights of People with Disability
SCL	Student-centred Learning
SEN	Special Education Needs
SPFD	Strategic Policy Framework in Disability
STEM	Science Technology Engineering and Mathematics
SVI	Student with Visual Impairment
SW	Software
TBI	Traumatic Brain Injury
TC	Theory of Change
TLA	Teaching and Learning Aids
TLSM	Teaching and Learning Support Materials
TNA	Thematic Narrative Analysis
TSE	Teacher Self-Efficiency
TVET	Technical and Vocational Education and Training
TVI	Teachers of Visually Impaired
UKZN	University of Kwa-Zulu-Natal
VI	Visual Impairment
WHO	World Health Organization

LIST OF TABLES

Table 1.1: Data generation plan	22
Table 4.1: Demographic information for the participants.....	103
Table 4.2: Research site visits.....	109
Table 5.1: Initial themes and categories.....	117

LIST OF FIGURES

Figure 4.1: ‘Impangele’ TVET College (pseudonym).....	110
--	-----

LIST OF APPENDICES

Appendix A: Ethical Clearance Letter.....	263
Appendix B: Gatekeeper’s Permission Letter	264
Appendix C: Informed Consent Letter For Lecturers	265
Appendix D: Informed Consent Letter For College Principal.....	271
Appendix E: Prompts (Semi-Structured Narrative Interviews).....	273
Appendix F: Written Reflection Narrative Schedule For Lecturers.....	281
Appendix G: Language Editing Certificate	284
Appendix H: Turnitin Report	285

TABLE OF CONTENTS

ABSTRACT	i
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF APPENDICES	x
CHAPTER ONE: ORIENTATION TO THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND	2
1.3 STATEMENT OF THE PROBLEM	4
1.4 RATIONALE FOR THE STUDY	5
1.4.1 Personal Dimension	5
1.4.2 Professional Dimension	7
1.4.3 Students with Visual Impairment	7
1.5 OVERVIEW OF LITERATURE	8
1.6 THEORETICAL FRAMEWORKS: AN OVERVIEW	8
1.6.1 The Learning Journey Theory	9
1.6.2 The Theory of Change	12
1.7 LOCATION OF THE STUDY	15
1.8 RESEARCH AIM AND OBJECTIVES.....	15
1.8.1 Aim	15
1.8.2 Objectives	15
1.9 RESEARCH QUESTIONS	16

1.9.1 Main Research Question	16
1.9.2 Subsidiary Research Questions.....	16
1.10 METHODOLOGY: AN OVERVIEW	16
1.10.1 Research Approach	16
1.10.2 Research Paradigm.....	17
1.10.3 Research Design.....	18
1.10.4 Sampling and Selection of Participants	18
1.10.5 Data Generation Method.....	19
1.11 DATA GENERATION PROCESSES.....	22
1.12 NARRATIVE ANALYSIS.....	24
1.13 SIGNIFICANCE OF THE STUDY.....	25
1.14 TRUSTWORTHINESS	26
1.15 ETHICAL CONSIDERATIONS.....	27
1.16 LIMITATIONS OF THE RESEARCH.....	28
1.17 CHAPTER LAYOUT.....	28
1.18 CHAPTER SUMMARY.....	29
CHAPTER TWO: THEORETICAL FRAMEWORK	30
2.1 INTRODUCTION	30
2.2 DEFINITION OF TERMS AND CONCEPTS	30
2.2.1 Learning Journey	30
2.2.2 Visual Impairment	31
2.2.3 Narrative Inquiry.....	33
2.3 THEORIES FRAMING THE STUDY.....	33
2.3.1 The Learning Journey Theory.....	33
2.3.2 Theory of Change	51
2.4 THEORETICAL INTEGRATION.....	62

2.5 A SUMMARY OF THE CHAPTER.....	64
CHAPTER THREE: A REVIEW OF RELATED LITERATURE.....	65
3.1 INTRODUCTION	65
3.2 VISUAL IMPAIRMENT AND INDIVIDUAL NEEDS	65
3.3 TYPES OF VISUAL IMPAIRMENT	67
3.3.1 Loss of Central Vision	67
3.3.2 Loss of Peripheral Vision.....	67
3.3.3 Blurred Vision.....	68
3.3.4 Generalised Haze	68
3.3.5 Extreme Light	68
3.3.6 Night Blindness.....	69
3.4 POSSIBLE CAUSES OF VISUAL IMPAIRMENT.....	69
3.4.1 Cataracts.....	69
3.4.2 Glaucoma	69
3.4.3 Cortical Visual Impairment.....	70
3.4.4 Infections.....	70
3.4.5 Malformations.....	71
3.4.6 Ocular Trauma	71
3.4.7 Optic Nerve Defects.....	72
3.4.8 Retinoblastoma	72
3.5 POSSIBLE SIGNS AND CHARACTERISTICS OF VISUAL IMPAIRMENT	72
3.6 DEVELOPMENTAL PROCESS AND IMPACT OF VISUAL IMPAIRMENT	73
3.6.1 Personal Impact of Visual Impairment	74
3.6.2 Economic Impact of Visual Impairment.....	75
3.7 ENHANCING LEARNING ENVIRONMENTS FOR STUDENTS WITH VISUAL IMPAIRMENTS	75

3.8 MODELS OF DISABILITY.....	77
3.8.1 Charity Model of Disability	77
3.8.2 Medical Model of Disability	78
3.8.3 Social Model of Disability	78
3.8.4 Human Rights Model of Disability.....	79
3.9 DIFFERENCE BETWEEN VISUAL IMPAIRMENT AND BLINDNESS.....	79
3.9.1 Visual Impairment: Differentiation.....	80
3.10 NAVIGATING TVET COLLEGES WITH VI STUDENTS	82
3.11 STRATEGIES OF TEACHING STUDENTS WITH VISUAL IMPAIRMENTS.....	82
3.11.1 Multi-sensory, Kinesthetic, and Tactile Learning.....	83
3.11.2 Auditory Learning.....	83
3.11.3 Storytelling as a Teaching Strategy	85
3.11.4 Demonstration Strategy	86
3.12 ACHIEVEMENTS AND CHALLENGES OF VI STUDENTS.....	87
3.13 TVET COLLEGE POLICY.....	88
3.14 THE TVET COLLEGE CURRICULUM.....	88
3.15 FACTORS FACILITATING THE TEACHING OF VI STUDENTS.....	89
3.15.1 Teaching and Learning Support Materials (TLSM)	89
3.15.2 Assistive Devices	90
3.16 CHAPTER SUMMARY.....	91
CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY.....	92
4.1 INTRODUCTION	92
4.2 RESEARCH METHODOLOGY.....	92
4.3 RESEARCH PARADIGM	94
4.3.1 Interpretive Paradigm.....	95
4.4 RESEARCH APPROACH	97

4.5 RESEARCH DESIGN	98
4.5.1 Narrative Inquiry	99
4.6 SELECTION OF PARTICIPANTS	100
4.7 METHODS OF DATA GENERATION	103
7.7.1 Narrative Interviews.....	104
4.7.2 Focus-group Interviews	105
4.7.3 Written Narrative Reflections	107
4.8 PROFILING OF RESEARCH SITE	107
4.9 NARRATIVE ANALYSIS.....	110
4.10 TRUSTWORTHINESS	111
4.10.1 Credibility	111
4.10.2 Dependability.....	112
4.10.3 Confirmability.....	112
4.10.4 Transferability.....	113
4.11 ETHICAL CONSIDERATIONS.....	113
4.12 LIMITATIONS OF THE STUDY.....	114
4.13 SUMMARY OF THE CHAPTER.....	115
CHAPTER FIVE: DATA PRESENTATION, ANALYSIS, AND INTERPRETATION..	116
5.1 INTRODUCTION	116
5.2 PRESENTATION OF RESULTS	118
5.2.1 Lecturers’ Narratives in Teaching Students with Visual Impairment	118
5.2.2 Adaptive Materials and Teaching Strategies	126
5.2.3 Provide Accommodations and Adjustments for VI students.....	131
5.3 REFLECTIONS ON ENTERING THE FIELD OF VISION IMPAIRMENT DURING PERSONAL LEARNING JOURNEYS	136
5.3.1 Lecturers’ Educational Experiences	137

5.3.2 Assessment Strategy	149
5.3.3 Training Provided by the College	151
5.3.4 Adherence to Policies for Teaching VI Students	156
5.4.5 Synthesis	160
5.5 CHAPTER SUMMARY	160
CHAPTER SIX: DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS.....	162
6.1 INTRODUCTION	162
6.2 DISCUSSION OF FINDINGS	163
6.2.1 Lecturer’s Learning Journeys in Teaching Students with Visual Impairment	163
6.2.2 Synthesis	168
6.3 TEACHING AND LEARNING METHODOLOGIES TO SUPPORT VI STUDENTS	168
6.3.1 Multi-sensory Strategy	169
6.3.2 Audio-based Learning	169
6.3.3 Storytelling Strategy	170
6.3.4 Demonstration Strategy	170
6.3.5 Synthesis	171
6.4 ATTENDING TO THE NEEDS OF VISUALLY IMPAIRED STUDENTS.....	171
6.4.1 Notes for Classes that have been Audio-recorded	172
6.4.2 Visual Aids Explained Verbally	172
6.4.3 Textured Models and Raised-line Drawings of Visual Materials.....	173
6.4.4 Notices on Walls that are Vocally Announced	173
6.4.5 Synthesis	174
6.5 CONCLUSIONS EMANATING FROM THE FINDINGS.....	174
6.6 LECTURERS’ REFLECTIONS ON TEACHING STUDENTS WITH (VI).....	175
6.6.1 Educational Qualifications and Practical Experiences	176

6.6.2 Techniques for Assessment.....	178
6.6.3 Training Received from the College.....	180
6.6.4 Policies to Support Students with Visual Impairment (VI)	181
6.6.5 Synthesis	183
6.7 RECOMMENDATIONS	183
6.7.1 Curriculum Support for Students with Visual Impairment.....	183
6.7.2 Advancement through Tertiary Training	184
6.7.3 On-going Training, Workshops, and Availability of Resources.....	184
6.7.4 Designing Standardised Physical Structures.....	185
6.7.5 Maintaining a Positive Attitude towards Students with Visual Impairments	186
6.7.6 Updating Policies to Better Support Students with Visual Impairment	186
6.7.7 Providing Sufficient Quality Educational Resources	186
6.7.8 Synthesis	187
6.8 SUGGESTIONS FOR FURTHER RESEARCH	187
CHAPTER SEVEN: SUMMARY OF FINDINGS, THE STUDY'S CONTRIBUTION, AND CONCLUSION TO THE STUDY.....	189
7.1 INTRODUCTION	189
7.2 SUMMARY OF THE FINDINGS	189
7.2.1 Lecturers' Narratives on Teaching Students with Visual Impairments	189
7.2.2 Adaptive Materials and Creative Teaching Strategies.....	190
7.2.3 Reflections on Entering the Field of VI, and Personal Learning Journeys.....	191
7.3 ADDITIONAL KNOWLEDGE AND PRACTICE	192
7.3.1 Demonstration as a Practical Knowledge Technique	192
7.3.2 Providing for Students with Visual Impairment	194
7.3.3 The Challenge of Selecting a Teaching Methodology.....	194
7.3.4 Lecturer Responsibilities in Teaching Students with Visual Impairment	195

7.3.5 Educational Achievement is Lacking among Student with Visual Impairment	196
7.3.6 Modifying College Policies to Accommodate VI Students	197
7.4 THE STUDY'S CONTRIBUTIONS	198
7.4.1 Contribution to Theory	198
7.4.2 Contribution to Methodology	199
7.4.3 Contribution to Preparation.....	199
7.5 MY DOCTORAL LEARNING JOURNEY	201
7.6 SUMMARY OF THE CHAPTER.....	202
7.7 CONCLUSION TO THE STUDY	203
REFERENCES.....	204
APPENDICES	263

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter one provided the background to this study regarding the phenomenon *lecturers' learning journeys of teaching students with visual impairment*. It also outlined the research context, and explained the rationale for undertaking the study. Also, the chapter presented the critical research questions, aim, objectives, overview of the theoretical framework, methodology, and literature study. All these study components respond to lecturers' journeys on the education of students with visual impairment. Moreover, trustworthiness and ethical considerations were briefly stated.

Aligned to the topic under investigation, a research study conducted by Mazama et al. (2019) is critical of the poor teaching methods employed by lecturers that lead to students' poor academic performance, including those with visual impairment (VI). Wakeman et al. (2021) agree that lecturers' inability to use appropriate and modern teaching approaches has resulted in poor academic achievement as evidenced by official assessments. Despite this understanding, there have been few, if any, initiatives to enhance lecturers' teaching methods. The purpose of this study is to recommend appropriate and effective techniques for teaching students with visual impairments in inclusive classrooms as part of the lecturers' learning experience. According to Awang-Hashim, Kaur and Valdez (2019), teaching methods involve utilising relevant knowledge, skills, and differentiated techniques to disseminate information to achieve higher performance outcomes. The fundamental intention should be to simplify the transfer of complex knowledge and skills by employing a variety of modern techniques to engender better student responses which lead to excellence in academic performance.

Visual impairment is a condition in which students have (Brunes et al., 2019). People with visual impairment are typically divided into groups such as those with congenital and acquired vision loss, which may be categorised as moderate or severe blindness. For the purposes of this study, visual impairment was defined as students who have restricted sight and light perception, as well as those who are not blind but are unable to read print material efficiently, even when a magnifying device is employed or the font is expanded.

The inclusive classroom learning environment has students of various abilities, skills, and knowledge which means that students with unique educational requirements, such as those with low vision, are placed in the same class as 'regular' students (Vuorinen, Erikivi, & Malmivaara, 2019). Additionally, educational environments must be modified to meet the requirements of students with disabilities (Teke & Sozbilir, 2019). In the education of students with exceptional needs, there are two approaches: separating students with exceptional needs from their peers and educating them in special education classes is one option, while offering education in inclusive classroom environments is another. The TVET colleges have devised a range of methods to resolve the challenges of teaching students with visual impairment, but there is much room for improvement.

1.2 BACKGROUND

The compelling motivation to pursue this study emerged from my interest in exploring and understanding lecturers' learning journeys in teaching students with visual impairment, as well as in acquiring incisive knowledge to supplement my previous study. My rich learning journeys as a TVET college lecturer who teaches student with visual impairments instilled a strong desire in me to pursue this research. Omar et al. (2020) define technical and vocational education and training (TVET) as formal, non-formal, and informal learning as methods for young people to acquire the information and skills required for professional success. Visual impairment is defined as a diminished capacity to see to such an extent that it produces problems that cannot be solved by conventional means, such as wearing prescribed glasses, which may cause difficulties with typical daily activities such as driving, reading, socializing, and walking. According to Ralejoe (2021), students with visual impairment confirmed that inclusion benefited their social lives by allowing them to acquire creative ways to interact with peers who did not have visual impairment. Furthermore, because of these advantages, peer students welcomed the inclusion of students with visual impairment in regular classrooms. Moreover, students with vision impairment (VI) utilised and adapted to digital technology to help them manage transitions (Pacheco, Yoong, & Lips, 2021). This adaptation by the visual impairment which led to their migration to digital technology resulted in a lack of knowledge and skills by lecturers to support those who use special technologies like social media, JAWS (Job Access Word with Speed), ruby magnifiers, low vision technology, and mobile devices. The findings of Gorbunova and Morozov's study (2021) may be of interest to musicians with severe visual impairment, blind students and their teachers, and professionals working with socialising and social adaptation issues in people with vision

impairment. This implies focusing on meeting the needs of the present TVET students without compromising those of future generations. Although lecturers who teach students with visual impairments are frequently trained in practical skills such as curriculum delivery and assistive technology, their worries and attitudes towards impairment are concerning (Watsmeyer et al., 2021). It is hardly surprising that South Africa's Education Ministry is dealing with a large backlog of trained and skilled teachers for students with visual impairment. This calls for better pre- and in-service training, and/or introducing intensive and regular short courses to empower existing personnel for change. Since teaching students with visual impairment is challenging (Deolia et al., 2019), I resolved to pursue further research to originate the distinctive challenges of lecturers who teach students with visual impairment. In this regard, key techniques generally included lecturers' capacity to monitor and provide feedback to the student in the classroom, action-oriented teaching skills like scaffolding and repetition, and building inclusiveness by facilitating fun activities, groupwork, and incentives (Alesech & Nayar, 2021). Furthermore, managing the setting in terms of seating arrangements and integrating the students from diverse groups and abilities were imperative. Yungungu's study (2021) recommends higher education institutions (HEIs) to establish an enabling atmosphere, not only for the sighted, but also for students with visual impairment. For example, the easy accessibility to educational resources empowers students with visual impairment to acquire skills that may assist them in their studies and in their future undertakings (Beyene, Mekonnen, & Giannoumis, 2020). Furthermore, the purpose of this study was to encourage officials at TVET colleges and other HEIs to modify learning spaces to accommodate students with visual impairments, as well as to guarantee that such spaces are not modified unnecessarily (Mncube, Hadebe-Ndlovu, & Uleanya, 2021). Generally, lecturers at TVET colleges have not undergone any formal training to prepare them to teach students with visual impairment. Novice lecturers, therefore, face many challenges in teaching students with visual impairment at HEIs. This study which focused on lecturers' learning journeys of teaching students with visual impairment, established that support was imperative for the students with visual impairment in classrooms, especially in terms of lecturers' utilising modern and appropriate pedagogical strategies to meet such students' specific needs. Khumalo (2019) concurs that lecturers should obtain assistance from college administration and the Department of Higher Education (DHET) while instructing students with vision impairments. The aforementioned parties previously expressed both positive and negative feelings about including students with visual impairment, which were impacted by lecturer, student, and environmental factors (Miyaychi, 2020). It is a given that students with visual impairment benefit from teachers who are

knowledgeable, skillful, creative, innovative, patient, and sensitive to their basic educational needs, and who meticulously package instructions and knowledge-transfer to enhance academic performance (Mncube et al., 2021).

To exacerbate the situation, most TVET colleges do not have the resources, infrastructure, or fail to interpret inclusive policies to accommodate students with visual impairment. Hence, priority should be on ensuring that these colleges have the capabilities and verve to accept and serve students with visual impairment (Hurst, 2018)). Therefore, the Strategic Policy Framework on Disability for the Post-School Education and Training System (DHET, 2018) should be interpreted correctly to guide access to HEI institutions, in addition to the provision of quality and equal service to enhance the academic performance of students with visual impairments.

1.3 STATEMENT OF THE PROBLEM

According to Meiring (2019), research should be meaningful and appropriate to promote social justice and scientific endeavours, and it should be in the pursuit of valid and new knowledge to contribute to individual, institutional, and professional development. Higher education is the ultimate level of education that prepares students to study independently which leads them to play a significant role in improving society (Carter et al., 2019). Hence, individuals in higher education must be accountable through their thinking and enactments to fulfil their responsibilities and exploit their potential to enhance the standard of academic performance to reach best practice levels (Latipah et al., 2021). Since students' psychological state differs from when they were in primary or secondary school, they expect a better quality of instruction to meet their individual needs to cope with real-life situations. However, Mensah et al. (2021) cite behaviour difficulties among students with visual impairment as a barrier for college lecturers. As a result, this study also investigates how lecturers' learning journeys are influenced by their instruction of students with visual impairments in TVET colleges.

According to Febtiningsih and Wibowo (2021), the difficulties encountered in teaching students with visual impairment stem from the curriculum and syllabus being inappropriate for the students' needs, time constraints on teaching, a lack of learning media, outdated teaching strategies, irrelevant teachers' qualifications and experience, and students' attitudes. As a result, lecturers have tremendous obstacles when teaching students with visual impairments. The TVET colleges mainly admit students from diverse backgrounds and health conditions into various programmes - some are students with visual impairment. Modiba and Sefotho (2019) assert that lecturers

experience confusion and feelings of incompetence due to insufficient training which points to the dire need for training, re-training, and ongoing professional development. Also, at some TVET colleges there is a lack of teaching aids such as braille, large print, and optical devices that can support students with visual impairment. Further, due to the Covid-19 pandemic, college learning activities have transitioned from face-to-face to online learning which disadvantages VI students (Kusumastuti & Supendra, 2021). According to Samarawickrama et al. (2021), visual impairment can affect students' ability to learn since their concept development when interacting with educational material is limited. Therefore, learning activities based on images and visually rich content are methods meant for mainstream learning, which can be challenging for students with visual impairments.

However, collaborations and special adaptations in both classrooms and laboratories could make science education more accessible to students with visual impairment (Kizilaslan, Sozbilir, & Zorluoglu, 2019). Students with visual impairment can obtain experience by weighing a range of items through simple adaptations. Because of the inclusion of figures, equations, and graphs, many science concepts are inaccessible to students with visual impairment. Although students with visual impairment have the same range of cognitive abilities as their peers, they struggle with science education which is highly reliant on vision (Kizilaslan et al., 2019). Therefore, students with visual impairment have major learning obstacles due to complicated science techniques and calculations.

1.4 RATIONALE FOR THE STUDY

The rationale for embarking on this research study was inspired by the personal dimension, professional dimension, and the desire to assist students with visual impairment.

1.4.1 Personal Dimension

My motivation for this study stemmed from my learning experiences and observations as a TVET college lecturer. As a professional teacher at a mainstream high school, I faced a variety of problems when teaching pupils with visual impairments. For example, because I had never used braille before, I had to learn it on the job while instructing my students. Lecturers must learn about numerous modern teaching tactics for students with visual impairments. Instead of exhibiting a photograph, a professor may need to display an actual flower for students with visual impairment to touch and smell. In general, the educational needs of students with disabilities, particularly those with vision impairment, are frequently disregarded and unaided. This leads to behaviour problems

which arise from the negative attitudes of lecturers, inappropriate teaching methods, family issues, and an unsuitable classroom environment (Mensah et al., 2021). The college where I work admits 20 to 25 students with visual impairments each year; these individuals are blind or partially blind.

According to Deslauriers et al. (2019), despite active learning being recognized as a superior form of instruction in the classroom, a recent survey revealed that the majority of collegiate STEM lecturers continued to use traditional teaching methods. The TVET lecturers, senior management, the community, and South Africans in general should benefit from this study as it can improve the quality of service and treatment, not just for the present, but also for future generations to contribute to global advancement by applying their skills and knowledge to relevant projects.

In South Africa (SA), up to 5% of the population has some sort of visual impairment (Kaunda & Chizwina, 2019). Constitutionally, all students in South Africa have the right to equitable education, and to be treated with dignity according to the law (Matshediso, 2018). Although it is over a decade since the introduction of inclusive education (IE) in SA, some students are still not receiving quality and equal education. Hence, it is imperative that institutions should ensure that the needs of students with visual impairment are catered for to enable them to succeed in their academic life, their careers, and to solve real-life challenges successfully (Kaunda & Chizwina, 2019). Currently HEIs have seen an increase in students with albinism, partial sightedness, mobility impairment, learning deficit, and other forms of disabilities, hence it becomes increasingly compelling that lecturers become proficient in teaching students with various abilities. Bouwmans et al. (2019) affirm that teachers are central to the education process, and thus are accountable for the quality of education and educational reforms in HEIs. Karuhawe (2021, p. 304) states that the notion of "providing necessary teaching and learning needs for increasing academic performance of students with visual impairment" refers to all basic educational demands that, if met, enable students to perform better in their studies and examinations at TVET colleges. According to King (2014), a TVET college should provide students with technical skills that would capacitate them to face the difficulties of the world; however, since educational institutions have not been satisfying students' basic requirements, this implies that low quality education and unsuitable settings were evident. This resulted from lecturers possessing insufficient subject knowledge, outdated methods of teaching, and unsuitable classroom spaces for the differentiated learning needs of students. To address these issues, the Government or HEIs should recruit knowledgeable and skilled personnel and provide modern infrastructure, not just to increase student enrolment but also to prioritise the provision of high-quality education.

1.4.2 Professional Dimension

According to Bidarkar, and Tekwani (2022), teaching is a profession with the highest levels of stress and dissatisfaction which affects teachers' wellbeing and performance. This study will be beneficial to the participants of this study as they might reflect on their learning journeys which might improve their teaching. Loneliness which is a prevalent negative condition among college students, can lead to psychological and behavioural problems (Kong et al., 2021). As such, students with visual impairment are especially vulnerable as they are at a higher risk of loneliness. This study aimed to understand how lecturers learning journeys in teaching students with visual impairments are shaped in particular ways. According to Jhetam and Mashige (2019), in the college setting, students may suffer a range of vision-related issues such as glare from light and difficulties when reading and reproducing printed information from the classroom-boards or textbooks. There is the need for better knowledge regarding vision issues that students are confronted with so that educators can apply appropriate adjustments to enhance the quality of education in TVET classrooms (Wilhelmsen, Eide & Felder, 2021).

1.4.3 Students with Visual Impairment

1.4.3.1 Nature of visual impairment

Students with visual impairment in inclusive classrooms often experience social participation difficulties during peer play with sighted students (Verver, Vervloed, & Steenbergen, 2020).

Visual impairment refers to a considerable loss of eyesight, even if the person wears corrective lenses. Because the form and severity of visual impairment can vary greatly, each student may require unique modifications to educational procedures and resources in order to learn effectively.

1.4.3.2 Needs and expectations of students with visual impairment

More than a billion people worldwide suffer from some sort of visual impairment, resulting in a wide range of devices used by them to cope with daily life (Reyes-Cruz, Fischer, & Reeves, 2020). Students with visual impairments must be welcomed and given opportunity to build social interactions at the institution and in the wider community. This encourages them to take risks that build self-confidence while remaining aware of their personal strengths, talents, learning styles, and interests; in other words, they should be given opportunities for experiential and incidental learning so that they can collaborate with people who understand the educational implications of visual loss. Moreover, they should have access to adequate learning resources including

technology, assistive devices to help them learn more effectively to succeed in daily life, and to be afforded the same rights and duties as sighted students - all of which will build self-esteem.

1.4.3.3 Educational implications for students

Students with visual impairment can enhance their graphic literacy skills by providing detailed descriptions of instructional content to make learning more accessible to them (Rosenblum et al., 2020). Students with visual impairment are more likely to have fewer natural learning experiences because they are not able to fully observe objects for interaction purposes. The areas of learning which particularly affect academic development are concept development, interpersonal communication, life skills, and orientation and mobility skills.

1.5 OVERVIEW OF LITERATURE

A survey of current relevant literature provided historical context, theoretical underpinnings, and related research for the topic under consideration. I researched the following topics: students with visual impairment, teaching students with visual impairment, and lecturers' learning journeys when teaching students with visual impairments.

1.6 THEORETICAL FRAMEWORKS: AN OVERVIEW

Two theories, the learning journey theory (LJT) and Theory of Change (TOC) which underpinned this study, were re-conceptualised to understand lecturers' learning journeys. The learning journey theory and theory of change were found to be more relevant to this study because their characteristics relate to how change happens in the short, medium, and long term to achieve intended outcomes. Both theories were found to complement each other; hence, promoting the answering of the research questions. A theoretical framework forms the underlying structure of any study (Merriam, 2009:02) and assists the researcher to justify the reasons for undertaking the study. It also informs the research design in line with the research aim, objectives, and research questions which results in the selection of appropriate research methods.

A theoretical framework offers a lens through which a study may be planned and viewed. The purpose of underpinning a study with a theoretical framework is to anchor the organisation of the data to answer the research questions. Grant and Osanloo (2019) emphasise that a theoretical framework leans on a selected model that grounds the planning of a research topic. In this study, the framing of lecturers' learning journeys involves having competent teaching staff from both technological and pedagogical points of view to enhance students with visual impairment' learning

experiences (Fernández et al., 2019). Within this context the study aimed to understand how lecturers' learning journeys were influenced by teaching students with visual impairment. Accordingly, Swart (2022) maintains that a theory is a set of assumptions and concepts ordered to inform us about the world, ourselves, or any relevant aspect of reality. Therefore, an appropriate theoretical framework should be adopted to resolve the research problem in line with the aim of the study. TVET colleges, with all of their programmes, are progressively admitting students with impairments, including those with vision impairment (Muzata et al., 2019), so differently abled students should learn alongside their abled peers, as indicated in the inclusive education policy. To ensure the successful inclusion of students with visual impairments, TVET colleges should routinely train all instructors in inclusive pedagogies (content and technique) so that they can create activities that promote interactive learning for all students.

1.6.1 The Learning Journey Theory

The researcher employed the theory of learning journeys (TLJ) as one of the frameworks in this study to emphasise that lecturers with a strong background in content and methodology will be successful in obtaining better outcomes for learners with visual impairment (Evans, Stokes, & Craig, 2021). To overcome some of the most profound problems that have plagued educational practice especially in inclusive contexts, pre- and in-service training is imperative. This can educate lecturers on the unique features of teaching students with visual impairment (Moria, 2019). Furthermore, regular training sessions and institutional support increase learning journeys, resulting in in-depth discernment and higher quality education for students with visual impairments. As a result, the importance of learning journey theory should be actively evaluated and widely applied in order to inform all important role-players in developing strategies for improving educational quality (Overton et al., 2020). Moreover, the LJT approach allows lecturers to professionalise their experiences in their workplaces such that they can select what aspect(s) of professional development they require to boost their knowledge and skills in terms of inclusivity. Lecturers may customise levels of assessment while curtailing content depth to adapt to workplace constraints. Also, according to Columna et al. (2019), physical activity provides multiple benefits to students with visual impairment (and lecturers). However, empirical studies are limited regarding how lecturers' learning journeys influence the participation of students with visual impairment. Hence, the purpose of this study was to explore lecturers' learning journeys in terms of how they enhanced the quality of teaching students with visual impairment.

Since the learning journey informs us about the lecturer's instructional activities by defining subjects (lecturers and students) and mediating tools (lesson plans, lesson objectives, instructional activities, assessment), teaching and learning should be geared towards best practice (Chizhik, 2018). Also, the learning journey theory (LJT) becomes instrumental in analysing the difficulties of instructional procedures by considering the following: the lecturer's role before, during, and after teaching and learning; tools lecturers employ before, during, and after teaching; and the plan for teaching and involving students with visual impairment during learning activities (Chizhik, 2018). This suggests that lecturers should teach qualitatively and creatively to meet students' needs by considering the integration of subjects as being foundational in the quest for better student and lecturer performance. In this regard, the provision of adequate resources is a priority for inclusive education to thrive, especially for students with visual impairment (Warren, Buckahan, & Parson, 2020). It is essential that HEIs invest considerably in resource allocation and adequate infrastructure to motivate students with visual impairment to develop a sense of belonging to attain high levels of competence to meet global benchmarks (Basu, & Basa, 2019). Learning journeys are a combination of the lecturers' striving to enrich students with visual impairment' narratives through a practical curriculum that fosters the preparation of students for future success in the world-of-work (Carr, & Lee, 2019). Teaching is a challenging profession which requires lecturers with progressive thinking, attitudes, and innovative methods of imparting knowledge that will assist learners to meet the demands of the Fourth Industrial Revolution (4IR) and to gain the competitive edge to stay relevant in a swiftly evolving global economy.

Additionally, lecturers' learning journeys are often beset with different challenges and dilemmas partly because of the need to cope with educational reform and innovations, as well as meeting accountability demands, both globally and locally (Lee, 2019). This suggests that innovative teaching is imperative to ensure student-centred learning especially when teaching students with visual impairment, an area where many lecturers are unprepared to adapt to (Manrique et al., 2019). This situation highlights the urgent need for students in different settings of inclusive education to be accommodated in regular classrooms to receive equal and quality education, free of discriminatory practices. Therefore, students with visual impairment need relevant and adequate resources (especially at TVET colleges) to become 4IR-competent. In reiteration, educating students with visual impairment poses a great challenge to lecturers, unlike sighted students who can learn easily by reading, observing, and imitating (Senjam, 2019); therefore, the importance of educating a student with visual impairment centres on making them literate, self-reliant, and useful

individuals to cope with life's challenges. However, students with learning disabilities, including students with visual impairment, continue to face challenges in gaining access to TVET colleges and to be accepted as equals (Lopez-Gavira, Orozco, & Doménech, 2021). Furthermore, the proportion of students with visual impairment who complete their college education is lower than the general population.

The LJT proposes several relevant strategies concerning enhancing lecturers' learning journeys in teaching students with visual impairment. This learning journey was developed from the work of Vygotsky (1978) a Russian psychologist but was expanded on by Leont'ev (1978), Luria (1979), and Engestrom (1987) who were also Russian psychologists (Chizhik, 2018; Daniels & Morales, 2017; Moretti, 2016; Sannino & Engestrom, 2018; Stetsenko & Trust, 2017). Vygotsky, Luria and Leont'ev asserted that the human mind is not situated in the brain but in actions and activities (Lupton & Watson, 2020) in which humans engage with the world by means of cultural artifacts such as signs and tools. Furthermore, Lane, Cabell, and Drew (2021) argue that lessons learnt from our mentee-mentor relationships and collective experiences can help us investigate lecturers' learning journeys when educating students with visual impairment. Furthermore, Aguilar (2019) believes that teachers' perspectives on subject matter and pedagogical practices can help us better understand the role of education in cultural preservation. As a result, social, cultural, and historical events shape human behavior and growth. Human development theories are used by educational psychologists to better understand individual learning styles and to inform lecturers' teaching practices at TVET colleges. People learn not only in schools but also at work and in the community, thus social contacts in everyday life enrich the lives of a wide range of people.

According to Zhang and Li (2021), the background information and conceptual knowledge of lecturers are useful, while the merging of related tales, case teaching, and question-and-answer techniques creates a classroom that is more entertaining and practical. Furthermore, the LJT combines lecturers' content expertise with their understanding of how to teach such content to assist lecturers and all students to achieve desired academic outcomes. The learning journey includes how the subject matter is modified to convey to students, and how lecturers relate the subject content to everyday life to stimulate meaningful learning (Moganashwari et al., 2018). The researcher selected this theory to facilitate the combination of content and pedagogy to drive students with visual impairment to a better level of learning in a specific context. The use of the LJT as a framework enhances lecturers' understanding that their background, beliefs, mindsets, students, and families influence the quality of conveying pedagogical content knowledge to

students with visual impairment. According to Wieman (2019), TVET colleges face the challenge of teaching students with more advanced thinking and problem-solving skills than previously because teaching nowadays involves a much bigger and more varied (inclusive) student population. In education, inclusivity refers to all students being recognised as equals who are encouraged to share and study in the same field of interest and context, regardless of their different abilities (Morelle & Tabane, 2019). Unfortunately, the South African education system continues to struggle to ensuring that learners with impairments, particularly those with visual impairments, are adequately integrated into mainstream institutions. This necessitates lecturer training as well as increased support from institutions, communities, and parents of visually impaired students, who should be included in educational decision-making.

Teachers in special education have been observed to successfully adapt to be more patient, kind, motivated, and committed to assisting their students (Hussin, 2021). Furthermore, many special education teachers stay in the field for a longer time as they are willing to make sacrifices in terms of time, energy, and money to raise a generation of special needs students towards a balanced and self-sufficient lifestyle. Accordingly, special education prepares a teacher to confront any obstacle with confidence. The findings of Cotán et al. (2021) which contributed to the development of inclusive teaching methods in HEI settings, reveal that primary school teachers have generally positive attitudes toward students with visual impairment, and that both initial and in-service inclusion-training positively improved their attitudes. However, Hamid and Mohamed (2021) claim that such students are not treated equally in developing countries where teachers' negative attitudes hinder the progress of the inclusive education system. According to a study conducted by Svendby (2021), lecturers' ignorance of student diversity remains a barrier to students' successfully engaging in inclusive educational settings. The views of TVET college lecturers on the integration of students with visual impairment into regular classrooms vary greatly (Ravenscroft et al., 2019).

1.6.2 The Theory of Change

The theory of change (TOC) is successful when used with the LJT to investigate lecturers' teaching of students with visual impairment in TVET colleges. The TOC resulting from Van der Laan's (2019) work is essentially a detailed description and illustration of how and why the desired change is likely to occur in a specific setting. It focuses on mapping out or filling in what has been defined as the 'missing middle', which is the gap between what a program or change initiative

accomplishes (its activities or interventions) and how these lead to the desired goals. Weiss (1995) popularized the theory of change (TOC) as a set of assumptions that explain both the mini-steps that lead to the long-term objective and the relationships between activities and outcomes at each stage. Simply said, TOC is a theory that describes how and why an effort works. Weiss (1995), who accomplished much to improve the function of assessment in her publications, explains what influences evaluators' roles as they review programs. Furthermore, the theory of change spells out the complexities involved in programme evaluation. According to Jennings (2019), the conception of history is rooted in changing material circumstances; therefore, material circumstances are referred to as the economic base or mode of production on which the economic base helps develop the social superstructure, which includes political and cultural institutions such as the state and the family. According to Stone and Brown (2021), the effectiveness of a college course is demonstrated by a shift in student attitudes on blindness and accessibility as a result of comprehensive educational interventions based on prior research and theory. As a result, student views about blindness are more positive after completing a course because they reported increased confidence and understanding in the areas of accessibility, inclusion, and assistive technology. Every year, academic institutions devote significant time and money to influencing, predicting, and understanding the decision-making choices of admitted students (Basu, Buckmire, & Lal, 2019).

Samarawickrama et al. (2021) argue that visual impairment can decrease students' ability to learn since their conceptual development while engagement with educational materials is constrained. As a result, learning activities reliant on graphics and visually rich content have become commonplace, making it difficult to engage children with visual impairments in learning. To solve this issue, this study looked at lecturers' learning journeys while instructing students with visual impairments, utilizing a synthesised learning method to bridge the gap between a student's learning trip and a mainstream learning experience. Hence, the suggested technique and the technology-built devices utilise comic books to extract semantic content which is stored in a database to audio-stream in different languages on demand. According to Kizilaslan, Zorluoglu, and Sozbilir (2021), students with visual impairments are easily distracted by unnecessary details; thus, it is equally essential to design materials and activities to be as simple as possible, as well as to focus on only a few core ideas in each practical work task rather than covering several concepts through a single activity. Also, braille readers use a braille display and text-to-speech synthesiser to read and comprehend mathematical expressions and equations (Van Leendert et al., 2021). Hence, lecturers

should possess technological, pedagogical, content knowledge, and skills for exploiting the potential of these devices, especially in mathematics education. Argued differently, they need to be completely aware of the ways in which assistive technology improves teaching for students with visual impairment.

In addition, braille readers read and interpret mathematical expressions and equations using a braille display and text-to-speech synthesiser (Van Leendert et al., 2021). As a result, lecturers must have technological, pedagogical, and content expertise, as well as the skills to fully utilize the potential of these devices, particularly in mathematics teaching. To put it another way, they must be well aware of how assistive technology enhances education for students with visual impairment. According to Gadiraju, Doyle, and Kane (2021), teachers of students with visual impairments teach academic and functional living skills at the same time to prepare them for success and independence. Because existing educational tools generally focus on academic instruction rather than a comprehensive approach, this study sought to better understand how lecturers' learning journeys impact their teaching of students with visual impairments.

This includes understanding how lecturers integrate behavioural skills like independence and support techniques in their preferred teaching strategy. The aspect of fairness is significant in teaching because assessments and instructional procedures must be modified to cater for students with visual impairment which becomes more complicated through the increasing diversity of students in 21st century classrooms (Rasooli et al., 2021). According to Keown, Smothers and Colson (2021), and the Individuals with Disabilities Education Improvement Act (2004), assistive technology must be considered for all students receiving special education services. As a result, pre-service teachers must be prepared by teacher preparation programs to choose, implement, and assess assistive technology for their future students.

This is highlighted by the changes, modern techniques, and innovative actions at all levels and settings of society, including education and cultural organisations that are required to adhere to global policies of inclusion (Kanari & Souliotou, 2021). Additionally, lecturers' learning journeys, learning settings, and learning activities should inform various levels of formal education and courses to gain a better understanding of teaching students with visual impairment.

1.7 LOCATION OF THE STUDY

This study was carried out in one of the TVET colleges in the far north of KwaZulu-Natal, South Africa. It is now the only TVET institution in the area that meets the unique needs of students with visual impairment. It has had an inclusive policy since 2012, when 15 students with visual impairment enrolled. Following this, the chairperson of the uThungulu Municipality's Disability Committee addressed the college and requested that it enroll students with visual impairment who had previously been denied admission to other institutions. The project manager submitted the concept to college administration, who commended it and so accommodated them. This marked the beginning of an inclusive education journey for lecturers, who had to adapt their teaching methodologies to suit these pupils. This college was chosen because it had suitable and convenient volunteers for this study, namely lecturers who teach students with visual impairment. Most lecturers from this college are professionals with different qualifications ranging from diplomas to master's degrees. However, not all of them possess a teaching qualification which suggests that not all were exposed to training in inclusive education. Distressingly, the college is currently under-resourced and not yet suitable for students with visual impairment (Ntombela, 2019).

1.8 RESEARCH AIM AND OBJECTIVES

1.8.1 Aim

- The study **sought** to explore lecturers' learning journeys of teaching students with visual impairment in inclusive classrooms.

1.8.2 Objectives

For the aim to be achieved, the following objectives were determined:

- To make sense on how do lecturers' learning journeys shape their teaching of students with visual impairments,
- To understand the challenges and opportunities that influence lecturers' learning journeys in teaching students with visual impairments; and
- To suggest strategies to enhance lecturers' learning journeys regarding teaching students with visual impairment.

1.9 RESEARCH QUESTIONS

1.9.1 Main Research Question

- What are the experiences and perceptions of lecturers regarding their learning journeys of teaching students with visual impairment?

1.9.2 Subsidiary Research Questions

- How do lecturers' learning journeys shape their teaching of students with visual impairments?
- What are the challenges and opportunities that influence lecturers' learning journeys in teaching students with visual impairments?
- What strategies can be suggested to enhance lecturers' learning journeys regarding teaching students with visual impairments?

1.10 METHODOLOGY: AN OVERVIEW

Methodology refers to specific procedures or techniques used to identify, collect, select, process, and analyse information on a specific subject. Buenaflor, Tabuena and Hilario (2021) add that research methodology describes how research is conducted, whether an unusual technique is being used, or whether the researcher developed a new method or significantly modified an existing one. Furthermore, researchers use methodology to interrogate individuals to obtain the data needed for a study. The methodology was qualitative, with interviews, narratives, and open-ended questions.

1.10.1 Research Approach

The study used a qualitative research methodology. According to Ravindran (2019), data analysis in qualitative research is an iterative and complicated process that focuses on eliciting tacit meanings associated with people's behaviors and responses to a phenomenon. One distinguishing element of qualitative research is that the researcher is not interested in figures or statistics, but rather in spoken and written words that represent how individuals perceive the world as they describe their lived experiences (Mayan, 2023). The participants were thus encouraged to share their understanding of how they taught students with visual impairments. Furthermore, qualitative research aims to clearly demonstrate its scientific nature in order to gain a thorough understanding of the phenomenon under investigation while maintaining the depth of the researcher's subjectivity

in a constantly changing and developing environment (Hayashi Jr, Abib, & Hoppen, 2019). However, validity in qualitative research can take many forms, including rigour, trustworthiness, appropriateness, and quality; and it can be defined by using a wide range of terms (Hayashi, 2019). Individuals who may be included in the group of participants should be able to provide in-depth knowledge concerning the phenomenon being studied. In this study, the researcher utilised purposive sampling, meaning that only participants who are currently TVET lecturers teaching students with visual impairments were recruited.

1.10.2 Research Paradigm

The narrative inquiry methodology develops narratives emanating from lived-experiences which served as the foundation of this research project (Mashiloane, 2019). This study was positioned within the interpretivist paradigm to make-sense of participants' real learning journeys. A narrative and case study, when merged as methodological frameworks, can contribute to understanding processes that explain current realities within professions and broader society. The researcher generated data from one institution—a TVET college in KZN—where lecturers who teach students with visual impairments were selected as participants. Since education is one of the most important development tools (Overton et al., 2020), the research paradigm refers to how the researcher views the world and how these are extended to shape research. Reid et al. (2021) state that a research paradigm or worldview is defined and distinguished according to ontologies (nature of reality), epistemologies (theory of knowledge and its validity), axiologies (nature of values), and methodologies. Reid et al. (2021) identify three types of paradigms: positivist, interpretive, and constructivist.

The interpretive paradigm seeks to comprehend people's lived experiences so that stories are based on these experiences. (Ntombela, 2019). Interpretivism uses a relativist ontology, which means that a single phenomenon can have multiple interpretations rather than a single fact that can be measured (Alharahsheh & Pius, 2020). According to Kankam (2019), the interpretive paradigm's goal is to access an incisive understanding, which often necessitates the researcher spending many hours in direct contact and immersion with those being interviewed to understand how they experience daily life and what is meaningful and relevant to them.

1.10.3 Research Design

1.10.3.1 Narrative inquiry

This study recorded TVET lecturers' verbatim responses by them narrating their stories. This was acquired to understand *what* and *how* their knowledge and skills were applied to teach in TVET colleges (Mashiloane, 2019). As with all narratives of lived-experiences, narrative inquiry restructures or restores the experiences as stories of lecturers which have numerous possible beginnings (Clandinin, 2019). As a result, lecturers' learning journeys are part of ongoing narratives of experience that are constantly revised and rewritten as individuals discover new ways of making sense of their roles as lecturers and meet new situations.

A study conducted by Kistoro (2021) which reveals teachers' experiences in teaching character education to autistic students, parallels Lee's (2019) narrative inquiry approach that investigated how creativity might be developed through personal and professional life experiences. Both recommended a pen-and-paper interview to allow participants to discuss their professional experiences by beginning with their early years of teaching students with impairment. Since narrative inquiry is a pervasive practice in that human beings have told stories of their lived-experiences from time immemorial (Hlalele, 2019), by engaging six lecturers as co-inquirers, I was able to record the narratives of lecturers which included personal and professional settings, knowledge, skills, and identities that shaped their experiences of teaching students with visual impairment.

1.10.4 Sampling and Selection of Participants

Purposive and convenience sampling techniques were employed in this study to select six suitable participants from one TVET college in KwaZulu-Natal (Eneizanet et al., 2020). This purposeful sampling of the lecturers had the potential to provide in-depth data on their learning journeys in teaching students with visual impairments. Through sharing their experiences, they enlightened other lecturers who might teach students with visual impairments in the future. Convenient sampling, according to Bertram and Christiansen (2014, p. 43), is using a sample that is "easy of reach by the researcher". These lecturers accessible because they taught at the college where am employed which is in close proximity to my residence. A purposive and convenience sample was selected from the population of nine TVET colleges in KwaZulu-Natal (Ntombela, 2019). This sample eventually consisted of six TVET college lecturers who were involved in teaching students with visual impairments. The participants were selected based on their identification within the

group of three lecturers from NC(V) and three lecturers from Report 191 (NATED), which included males and females. Interviews were conducted within participants' natural settings by using narrative interviewing techniques. Though using convenient sampling has its weaknesses such as the withdrawal of participants, I circumvented this by including eight participants so that if someone withdrew from the study, I was still able to keep to the original number of participants.

1.10.5 Data Generation Method

This study adopted three data generation methods: the narrative interview, a narrative group discussion, and written narrative reflections. In this manner I was able to dissect interview textual data that reproduce, in a complete way, the interweaving of events and the sedimentation of experiences pertaining to the interviewee's life history. Furthermore, a narrative interview is a verbal one-on-one or telephonic exchange in which an interviewer asks a set of open-ended questions, but also allows for fresh perspectives to develop from the conversation. A strong narrative interview begins well before the interview itself, and it necessarily requires specific training in the use of instruments, as well as the acquisition of specific abilities (Giovanna et al., 2019). Since a narrative interview is a one-on-one engagement, it enabled me to also interpret participants' non-verbal nuances that facilitated a better comprehension of their experiences of teaching students with visual impairment. The use of narratives to present interview data was advantageous in this study as it led to probing which illuminated grey areas (Willis, 2019). Also, open-ended questions allowed me to elicit elaborations to enrich the narratives which provided crucial data. Hyry et al. (2019) assert that teachers' stories related to emotions such that classroom diversity can be interpreted as moral negotiations where teachers' notions of teaching are challenged. According to Kohli (2019), teachers' narratives provide rich insights for teacher-education to better prepare teachers of colour for long, productive, and revolutionary careers; hence, the researcher should reassure them of confidentiality so that they can speak freely.

The semi-structured interviews were followed by the focus-group interviews where questions about their experiences were posed. The participants who were engaged in a narrative group discussion were able to share their experiences of teaching students with visual impairment. There were two focus group interviews (three lecturers from NCV, and three from NATED). According to Goh (2019), the question as to why focus group interviews should be used is important: a focus-group discussion allows participants to share knowledge and learn from each other's experiences – a process which simultaneously allowed me to gather deeper insights into their experiences.

The findings generated during the narrative interviews were compared to those of the narrative focus-group interviews. Although narrative focus groups are adequate for identifying a variety of fresh concerns, further groups are required to properly comprehend the complex issues (Hennink, Kaiser, & Weber, 2019). It is likely that data generated during a narrative focus-group interviews could yield different data from the data generated in the semi-structured interview because some participants might feel inhibited to discuss their experiences in front of other colleagues. Although the study conducted by Latifah and Rahmawati (2019) focused on narrative text writing through story-mapping, I as a researcher felt obliged to encourage interactive whole- group interviews, tolerance, and respect for one another. From an inclusive perspective, Haberlin (2019) extracted data from interviews, focus-groups, journal reflections, and participant-created written responses and illustrations. The focus-group technique in this qualitative study assisted me in triangulating data with that of those generated during narrative interviews which strengthened the reliability of the study's findings.

1.10.5.1 Narrative interviews

Anderson and Kirkpatrick (2016) affirm that narrative interviews situate persons who are being interviewed at the centre of a study. Therefore, they are a sound in collecting people's own stories about their experiences of teaching students with visual impairment. Whiteway (2019) reiterates that a narrative interview encourages participants to talk about their personal histories and educational experiences. Additionally, narrative interviews are described as being unstructured and in-depth data collection tools, with specific qualities that elicit both the participant's and the situational context's life stories (Muylaert et al., 2014). Therefore, the purpose of this method of interviewing is to motivate the interviewee (subject or informant) to divulge significant events in his/her life as well as to describe the social settings. According to Muylaert et al. (2019), in narrative interviews there is an important collaborative feature which allows the story to unfold through the interactions, exchanges, and dialogues between the interviewer and participants.

Narrative interviews are strategies of collecting people's stories about their lives, and the story behind the story (Anderson, 2016). Individuals have been narrating each other's stories through the centuries by using the vocal faculty which even crystalises parts of universal events into narrative forms (Bontje et al., 2019).

Individual interviews have long been a popular means of gathering information in a variety of fields, including psychology (Kruger et al., 2019). Furthermore, narrative research is a form of

qualitative analysis that assists researchers in gaining insight into the lived-experiences of the persons they are studying within their unique life circumstances and contexts. Narrative interviewers ask *what*, *how*, and *why* questions that are common in qualitative research. A personal narrative is at the heart of how human beings share information, represent identity, and convey ideas (Meraz, Osteen, & McGee, 2019). In other words, the narrative interview technique is excellent for presenting participants with opportunities to talk freely and describe their learning journeys in the form of a story. In this study, after the participants told their stories, I reviewed the interview guide. It guarantees a consistent participation experience for all participants and assists interviewers in knowing what questions to ask and when to ask them.

1.10.5.2 Narrative focus group interviews

The narrative focus-group interviews (FGD) technique is widely used in qualitative research to acquire a better understanding of social issues (Nyumba et al., 2018). Rather than a statistically representative sample of a larger population, this method collects information from a specifically chosen group of people. Furthermore, a narrative FGD allows you to gain insight into the views, experiences, and understandings of a group of people who have had similar experiences with a particular topic or event. Ritchie et al. (2014) concur with Padgett (2016) that participants in FGDs have comparable feelings and histories but are typically ignorant of one another. This means that employing narrative FGDs allows researchers to collect authentic data on issues that concern individuals while also comprehending their diverse views. The narrative FGD is frequently defined as a secondary method for gathering and analysing data (Cortini, Galanti, & Fantinelli, 2019) from individuals who have the characteristics, experience, and knowledge needed to provide rich information on the topic at a lower cost than individual interviews (Hada, Jack, & Coyer, 2019). Interviews were done in the college boardroom, which is not utilised by students. It was reserved for the length of all interviews to prevent disruptions.

1.10.5.3 Written narrative reflections

Using written reflections narratives helped the participants to process their experiences, and to recall how they applied certain methods when they taught students with visual impairment. Mann (2016) suggests that written reflections should showcase increasing engagement that deepens participation. According to Clandinin (2019), written narrative reflections based on teachers' understanding of schools and classrooms, as well as their practical expertise, encapsulate their experiential endeavors in a way that positions teachers as informed and knowing individuals.

Insights into narrative inquiry as an educational process that supports development and growth through reflective storytelling and re-storying led to the concept of teacher education as narrative inquiry. Ten narrative reflections on teachers' knowledge of schools and classrooms, as well as their practical knowledge, depict their experiential endeavors in a way that recognizes teachers as informed and knowing individuals. Understanding narrative inquiry as an instructive process that promotes change and growth through reflective storytelling and re-storying led to the concept of teacher education as narrative inquiry. Narratives play a significant role on how people make-sense of their lives to find meaning in their surroundings (Green, 2021). Furthermore, narrative research is increasingly being used in studies of educational practice and experience since lecturers are storytellers with rich lives, both individually and socially. Narrative inquiry emphasizes the importance of a reflective research method that includes participants' recall of their lived experiences. Larsen, London, and Emke (2016) identify two forms of reflections: reflection-in-action and reflection-on-action. Reflection-in-action refers to conscious reflections as well as the process and events as they unfold, whereas reflection-on-action entails individuals reflecting on past occurrences (Larsen et al., 2016).

This study prioritised the reflection-on-action process where participants reflected on their previous experiences when teaching students with visual impairment. Utilising written narrative reflections for this study encouraged participants to process their experiences to express how they apply preferred methods when teaching students with visual impairment. Mann (2016) contends that written reflections increase engagement by accelerating participation interaction. Moreover, narrative reflections focus on *how* a story is formed, *for whom* and *why*, including the cultural narratives that they draw from (Ntinda, 2019). In sum, narrative research is the study of how people experience the world to construct stories through pursuing the narrative reflection strategy.

1.11 DATA GENERATION PROCESSES

Table 1.1 below illustrates the stages of this study's data generation:

Table 1.1: Data generation plan (adapted from Vithal & Jansen, 2012)

The initial meeting with individual participants	Profiling participants' background information, such as age, institution, qualifications, and teaching experience.
--	--

Preparation stage with all participants	<ul style="list-style-type: none"> • Explaining broadly about the study's aims and objective, and informing them about their role and what to expect from them. • Discuss the study's finer points and state that all participants' experiences are valuable and real, therefore there are no incorrect or right answers.
Research questions	<ul style="list-style-type: none"> • What are the lecturers' learning journey in teaching students with visual impairments? • How do lecturers apply their learning journey experiences to shape their teaching of students with visual impairment? • Why are lecturers' learning journeys in teaching students with visual impairment shaped in particular ways?
Individual narrative interviews	<ul style="list-style-type: none"> • These are conducted with participants to share their experiences including clarification of certain events, probing, and prompting for elaboration.
Narrative focus group conversation	<ul style="list-style-type: none"> • Participants are grouped to share their learning journeys of teaching students with visual impairment.
Narrative-written reflection	<ul style="list-style-type: none"> • These are utilized so that participants can reflect on their experiences teaching children with visual impairment, including the approach they used.
Why was the data generated?	<ul style="list-style-type: none"> • The data was generated to answer the research questions. • It was also to explore the teaching approaches used by TVET college lecturers in teaching students with visual impairments.
Who provided the data?	<ul style="list-style-type: none"> • TVET college lecturers who teach students with visual impairment.

How many data sources have been accessed?	<ul style="list-style-type: none"> • Six College lecturers were interviewed.
How frequently was data generated?	<ul style="list-style-type: none"> • Each participant was interviewed twice: during a semi-structured interview, as well as in a focus group.
Justify the data generation plan. (Why was this the best method of gathering data to answer the essential research question?)	<ul style="list-style-type: none"> • Interviews provide the most direct depiction of lecturers' learning experiences while teaching students with visual impairments. • The narrative interview facilitates probing by asking more questions and allowing lecturers to openly share their rich experiences, which is critical in a qualitative study. • The narrative group interviews verifies the information gathered during the narrative interview. This study's sample size of six participants was likewise moderate and appropriate for a narrative group interview.

1.12 NARRATIVE ANALYSIS

In a qualitative study, data is presented as textual content for discussion. For this reason, this study included a discussion aligned to the presentation of the collected data. The method of analysing lecturers’ narratives concerning their learning journeys was seen as being critical to understanding lecturers’ “thinking; culture and behavior (Cortazzi, 2014. The researcher's empirical work focused on a variety of modern methodologies that are particularly well-suited to oral narratives of human experience. Narratives are valuable in study because they interpret rather than reproduce history. The 'truths' of narrative accounts are judged by the transitions they make between the past, present, and future (Eriksen, 2019). Furthermore, Sahito and Vaisanen (2018) state that story analysis seeks to describe the human and intimate components of experience, which can provide profound insights into the relationship between individual experiences and cultural environments.

Since storytellers ‘re-imagine’ their lives (similar to nations, organisations, ethnic/racial groups, and other collectives), the analysis of data should be through narrative analysis within inductive

reasoning to allow the researcher to work back-and-forth between themes until comprehensive sets of themes or sub-themes emerge (Creswell & Poth, 2017). In other words, to analyse and make-sense of the generated data, narrative analysis must be applied to depict personal experiences, while also providing insight into the correlation between individual experience and the cultural setting (Hlalele, Jiyane, & Radebe, 2020). Hence, this study applied the narrative inquiry approach because it focuses on human stories as a data collection sources.

In summary, the researcher used the processes of categorizing, analyzing, organizing, telling, and reporting themes (Braun et al., 2019; Noswell et al., 2017) to obtain rich and in-depth information from participants through audio-recordings of interviews, focus-group discussions, and narrative reflections.

1.13 SIGNIFICANCE OF THE STUDY

This study is of critical significance as it contributes to the existing body of knowledge concerning lecturers' learning journeys in teaching students with visual impairments. It sheds light on how interventions can be implemented to enhance lecturers' learning journeys when teaching students with visual impairments. Also, the historical, emotional, spiritual, and social implications of labelling Black and Brown students with visual impairment are severely criticised constitutionally (RSA, 1996) especially in inclusive education (Hernández-Saca & Cannon, 2019). For students with visual impairment in tertiary settings, biographical experiences, impairment, and confrontations with educational barriers all have an impact on their ability to access quality and equal learning, academic achievement, and their sense-of-self and belonging.

According to Ainscow (2020), inclusive education (IE) is still considered to serve students with visual impairment in regular education settings in several nations. Recognising that inclusive education can occur in a variety of HEI programmes, involves considering context as a potential influencing factor to access high-quality education (Love & Horn, 2021). Furthermore, assessing and promoting quality in inclusive classrooms necessitate being inclusion-proactive by all role-players in the DHET system. According to Francis et al. (2021), IE is widely recognized as a critical component in providing fair and high-quality education to all students, regardless of ability.

Students with visual impairments at TVET colleges are full-time students pursuing programs such as the National Certificate Vocational (NCV) and the National Assembly Training and Education Department (NATED) qualification. According to Miyauchi (2020), teachers' attitudes toward the

inclusion of students with visual impairments are both positive and negative and are influenced by teacher-student and environmental factors. It is largely through the inclusive education policy that students with visual impairments are afforded an equal opportunity to obtain the same quality education as their peers. Students with special education needs (SEN) such as students with visual impairment, benefit from inclusion in mainstream education (Van Kessel, 2021). However, developing and implementing inclusive education (IE) in reality is problematic. Olney and Dickinson (2019) assert that issues arising from the implementation of IE can be attributed in part to the interpretation of policy, to how it is enacted in practice, and the lack of an IE 'lesson booklet'.

1.14 TRUSTWORTHINESS

To enhance the trustworthiness of this study, the researcher familiarized himself with different data generation techniques and sources, such as narrative interviews and narrative group discussions. To ensure the trustworthiness of this study, credibility, reliability, confirmability, and transferability were observed (Setona, Sehularo, & Mokgaola, 2020). Access to trustworthy information is critical in a democratic society (Kvikne & Berget, 2021). Ensuring trustworthiness in qualitative research, according to Kornbluh (2015), is crucial, but at the same time challenging because researchers themselves are influenced by their subjectivity; hence, they enter the research world with specific notions. To maintain **credibility** regarding lecturers' learning journeys, the researcher used audio-recording devices (two different cell phones) to avoid data loss. Interviews and group discussions were audio-recorded to promote the authenticity of verbatim transcriptions which was more reliable than writing down every response from participants.

To adhere to the principle of **dependability**, the study was framed by relevant critical questions which were explained to the participants. Furthermore, the university was asked for ethical authorization to conduct the study, which included participants' informed consent (signed) to participate in the research.

Lumadi and Matlala (2019) define dependability as a component of trustworthiness that can be enhanced by consistency in procedures across participants across time using diverse data generation methods. The researcher used the narrative focus-group discussion technique, which was guided by an interview schedule. To ensure dependability, all participants were asked the same questions and in the same order.

Confirmability refers to the procedures used to guarantee that the data and findings are not influenced by participant and/or researcher bias. Confirmability of qualitative data is ensured by checking and rechecking data throughout the data collecting and analysis procedures to guarantee that results are replicable by others (Kornbluh, 2015). Since only the researcher had access to audio-recordings during the research processes, confidentiality and confirmability were maintained. Additionally, to maintain confirmability, all audio-recorded information and transcriptions were simultaneously member-checked for accuracy.

Transferability refers to an alternative to external validity or generalisability where findings and conclusions from the study may apply to a broader population and settings (Bertram & Christensen, 2014). This study was conducted by engaging a small purposively selected population; therefore, the findings cannot be generalised to another context unless they share common similar features. Therefore, this study may be beneficial to other TVET lecturers not be involved in this study.

1.15 ETHICAL CONSIDERATIONS

Researchers should consider the ideals and principles of ethical conduct when conducting studies involving human beings (Kaewkungwal & Adams, 2019). The ethical norms of autonomy, non-maleficence, and beneficence must be adhered to by the researcher. Autonomy, according to Bertram and Christiansen (2014), refers to respecting all the participants involved in the study who consented to voluntarily participate. To abide by this ethical principle, participants signed informed consent forms that explained the exit clause, which permitted participants to withdraw during any stage of the study's processes without being penalized in any way. Non-maleficence, according to Bertram and Christensen (2014, p. 66), means "do not harm" participants or any others, whether physically, emotionally, or socially. For this study, participants were assured of confidentiality of the information and protection of their identities (Creswell & Poth (2017).

Accordingly, this study assigned pseudonyms for each participant and for the research site. Pseudonyms are highly important for sensitive studies, especially when it comes to students with visual impairment. Bertram and Christensen (2014) posit that research should benefit the participants, or more broadly the research field, or society at large. Participants' rights, beliefs, and cultures were respected in that all questions were sensitively structured, free of any prejudice to any individual or group. As previously indicated, I sought ethical clearance from the University of KwaZulu-Natal (Appendix A), as well as approval from the TVET college principal to perform

the study on-site (Appendix D). Lastly, I ensured that all selected participants were given informed consent forms to read and sign after asking clarifying questions and becoming familiar with all aspects of the research that they were expected to engage in.

1.16 LIMITATIONS OF THE RESEARCH

Every research study has its restrictions, and no study is perfectly conducted. Ross and Zaidi (2019) state that limitations represent weaknesses within a research design that may influence the outcomes and conclusions of the research. The anticipated limitations in this study were absenteeism and the withdrawal of participants during the study because of circumstances that unexpectedly arose. Moreover, the relatively small sample hindered the generalisation factor of the study to other contexts. Furthermore, lecturers value their time and loathe being disturbed during lunchtime. They also attend regular subject and staff meetings. Some are overcommitted because they lecture in both the morning and evening classes, leaving them with no free time. To circumvent this limitation, I arranged 'convenient' dates with all participants and persuaded them that their contributions were invaluable.

1.17 CHAPTER LAYOUT

There were seven chapters in the study:

Chapter one outlines the study's background and rationale. The location of the study, the data generation process, the issue description, the purpose of the investigation, the aim and objectives, research questions, the study's importance, limits, and a chapter summary.

Chapter two offers a theoretical framework that attends the analysis of the data.

Chapter three presents a review of the related literature on the subject under exploration.

Chapter four discusses the research methodology.

Chapter five consists of data presentation and narrative analysis.

Chapter six explains the study's results and discusses the findings of the study.

Chapter seven presents the summary of findings, contribution of the study, conclusions, and recommendations.

1.18 CHAPTER SUMMARY

This chapter provided the background pertaining to lecturers' learning journeys of teaching students with visual impairment. It presented the aim, objectives, research questions, statement of problem, and objectives. Further, the chapter outlined the significance of the study, methodology, literature review, theoretical frameworks, ethical considerations, trustworthiness, limitations, and defined the different concepts used in the study. Lastly, it described the research paradigm, research design, and presented the division of chapters. The following chapter (2) discusses the theoretical frameworks that underpin this study.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 INTRODUCTION

The previous chapter (1) dealt with the orientation of the study which included background information, statement of the problem, data generation, research questions, aim and objectives, and the significance and rationale for the study which pertained to exploring lecturers' learning journeys of teaching students with visual impairment.

This chapter (2) presents the two theories framing the study. The aspects include both theories, definition of terms and concepts, importance, aims and objectives, principles, elements, as well as steps in designing a theory of change. The chapter concludes with a discussion on the importance of the theories and aspects of theoretical integration.

2.2 DEFINITION OF TERMS AND CONCEPTS

2.2.1 Learning Journey

A learning journey is a strategic approach to develop groups of leaders which is based on the principle that true behaviour change occurs over time, and that people learn best together when they personalise their experience. According to Moye (2021), the learning journey is intended to take place over time and includes a variety of learning aspects and experiences that use various methodologies. It is described as learning that challenges traditional perspectives which lead to new ways of being and viewing the world (Van Schalkwyk et al., 2019). Consequently, learning journeys resonate with lecturers globally, especially those in the health professions.

Since student diversity is scarcely grasped as an integral part of HEI among lecturers, it remains a barrier to some students' participation in educational settings (Svendby, 2021). Accordingly, one of the practices under inquiry in this qualitative study is the lack of cultural awareness of disability in the realm of diversity. This study detailed my journey toward greater disability understanding and more inclusive teaching methods. Concerning students' adaptation to adulthood, those with visual impairment (those who are blind or have low vision) require information and advice tailored to their individual needs (Kelly, 2019). Teachers in many countries had to deal with the placement of students with visual impairment in mainstream classrooms, which included the need to support

them to adapt to physical spaces and classroom activities involving movement (Hutzler et al., 2019). Unfortunately, for these reasons, physical education teachers are frequently unprepared or reluctant to implement inclusion. Even though a significant amount of research has been conducted on inclusivity, researchers have stressed the need for additional studies that might shed more light on factors that shape teachers' attitudes toward inclusion and their inclusive practices. According to Reddy (2019), cooperative learning should be used in all classes, regardless of student size or ability. This should strive to enhance students' cooperation skills, which are beneficial for holistic development—a technique of learning that will prepare them for the business world. Although cooperative learning offers advantages and disadvantages, the former outweighs the latter. For example, students entering the workforce must learn how to work as part of a team; cooperative learning teaches these abilities.

One of the study's goals was to investigate lecturers' experiences with incorporating an inquiry-based professional learning cycle into their daily practice, as well as to create a conceptual framework for teachers' professional development, particularly in terms of resilience (Fokaidou & Loizidou, 2019). Hence, a narrative inquiry approach investigated a range of factors that were thought to be major predictors of their educational performance and resilience. The audio-recording of lectures is sometimes viewed as being disruptive; however, technology has the potential to replace the existing higher education model by radically altering how students with visual impairment are taught (MacKay, 2019). Since there is little evidence that lecture recordings negatively impact student attendance or achievement, it is unclear why they are regarded as being 'disruptive'. Moreover, in higher education, assessment is an important aspect of the learning process for knowledge to be evaluated and applied in a variety of ways (Govero, 2019). Therefore, assessors utilise a variety of methods to evaluate students, ranging from formative to summative assessments, but a high level of validity and honesty should be maintained.

2.2.2 Visual Impairment

Visual impairment is defined as a significant and sometimes permanent reduction in visual acuity (Brunes et al., 2019). People with visual impairment are typically divided into congenital and acquired vision loss, as well as in categories of moderate, severe, and blindness. Visual impairment (VIs) impedes life and affects up to 60% of stroke survivors (Falkenberg et al., 2020). Because people with disabilities are part of the global population, understanding them should be a top priority for everyone. Individuals with visual impairment consist of a significant portion of our

population with disabilities, but unfortunately this consideration is frequently side lined. The number of students with visual impairment in HEIs is expanding in line with worldwide non-discriminatory legislation developments and inclusive education policies (McKinney & Swartz, 2020). Students with visual impairment were previously denied access to higher education, but with the implementing of current inclusive policies, such students are being accommodated increasingly at HEIs. Also, since more than a billion people worldwide suffer from some sort of vision impairment, a wide range of devices is now available and used by them to function in daily life (Reyes-Cruz, Fischer, & Reeves, 2020). However, very little is known about how assistive and non-assistive technology can be usefully applied to academic activities. Students with visual impairment (SVI) must communicate in a world that they cannot see (Lee et al., 2020); fortunately, conversational assistive technology such as remote-sighted aid has been developed to promote learning for SVIs at institutions.

Visual impairment, often known as visual impairment or vision loss, is a loss of vision severe enough to cause problems that cannot be rectified with standard means such as spectacles. It may also include persons who cannot see clearly because they do not have access to spectacles or contact lenses. Visual impairment is typically defined as corrected visual acuity less than 20/40 or 20/60. Blindness refers to severe or near-complete visual loss. Vision impairment can make it difficult to do normal daily duties such as driving, reading, socializing, and walking. Further, visual impairment encompasses both partial and complete impairment (RSA, Individuals with Disabilities Education Act, 2004). Vascular dementia is described as a loss of vision that causes problems that cannot be rectified with traditional means such as spectacles (Zorluglu et al., 2021). Due to the limitations that come with impairment, students with visual impairment struggle when studying science courses and their related concepts (Isaacson et al., 2016). Apart from the sense of sight, students with visual impairment access their other senses of hearing, touch, smell, and taste to obtain information (Zorluğlu et al., 2021). In this study, "visual impairment" refers to students who have partial or poor eyesight. Visual impairment can be defined legally and educationally; the researcher in this study used the educational definition, which takes into account a person's ability or degree of use of visual ability educationally, which is a generic term that encompasses a wide range of visual problems such as acuity, visual field, and/or eye movement deficits.

2.2.3 Narrative Inquiry

Narrative inquiry is based on the premise that people live storied lives; that is, telling stories and talking about stories that contribute to meaning-making of the world and building lives and communities (Clandinin & Huber, 2012). According to Head (2020), narrative inquiry is a flexible mode of investigation that focuses on how narrators construct meaning from their lived-experiences. Therefore, the discipline of narrative inquiry exploits its potential to contribute to the study of human experience where disparities must be carefully dissected and addressed. Since stories are effective for communicating, sharing experiences, learning, and teaching (Green et al., 2019), narrators will quantify immersive narrative experiences to encourage better morals for behaviour change, which includes telling stories to students with visual impairment. Additionally, narrative inquiry is grounded mostly in storytelling for participants to describe learning journeys freely from their perspectives, including experiences of their social lives. Narrative inquiry is a common activity in which humans have lived and recounted stories about their experiences for as long as we can remember (Hialele, 2019). Furthermore, a pen-and-paper interview should be undertaken to allow respondents to explain their professional experiences, beginning with their early years of teaching pupils with visual impairment, which is relevant to the purpose of this study.

2.3 THEORIES FRAMING THE STUDY

2.3.1 The Learning Journey Theory

According to Wilder and Lillvist (2018), the learning journey theory views learning as a social process that leads to development. Educational psychologists use human development theories to better understand individual learning and inform the teaching process. While working with students in TVET colleges is a significant component of lecturers' employment, it is not the sole aspect because lecturers' learning is a never-ending process. The learning journey theory examines how place-based learning broadens students' worldviews by exposing them to different ways of knowing. As such, this theory emphasizes the importance of social interaction in the mental, linguistic, and social development of humans. Lecturers have not yet learned the essential skills and knowledge to teach students with visual impairment; they should acquire the necessary skills through in-service training (Kizilaslan, Zorluoglu, & Sozbilir, 2021). Lane, Cabell, and Drew's study (2021) which was based on lessons learned in mentee-mentor relationships and from collective experiences, explored lecturers' learning journeys of teaching students with visual

impairment which inspired the researcher of the current study to adopt the learning journey theory as a data generation method. While learning journey theory influenced how people think about disability in academia, especially in disability studies, I believe it has had a limited impact on how people use the term *learning disability*. The system analyses the different learning levels that a student should reach as well as metrics that monitor student progress when creating learning paths (Romero et al., 2019). In this way, it suggests a learning path to ensure that the student achieves the highest possible level of learning. Implementing better and creative teaching methods for students with visual impairment is a complicated process driven by a range of circumstances. Learning journeys, as most lecturers and subject specialists are probably aware, may have a significant impact on how and what students learn. Since students imbibe all they come across every day (Bradford, 2021), learning becomes complex even though numerous psychological theories exist to explain how and why people learn. Hence, Kushnir (2020) suggested a learning theory in which the learning journey is the most important factor in the process.

2.3.1.1 Conceptualising a learning journey

The learning journey is one of the most important methods to narrate stories in educational settings, but there is the need for more incisive discussions about lecturers' learning. Students with visual impairment must adjust to their academic environment otherwise they will struggle to learn about daily classroom topics (Fajriah, Haryanti, & Siswayani, 2021). With reference to audio-storytelling, the lecturer must be creative to improve on teaching methods to grasp students' attention and interest. Since hearing is the primary sense for students with visual impairment, the learning journey theory focuses on learning as a social conversational activity that leads to knowledge acquisition (Vygotsky, 1934). When communication occurs, knowledge regarding students' learning must be transferred from the deliverer of information to the recipients (Gardner, 2021). A student's development is not only influenced by what was learned, but also includes what the student will be able to learn in collaboration with others. It is equally critical that the receiver of information develops learning skills and broadens his/her knowledge base (Griffith, 2019). Furthermore, experts' knowledge of students' learning can be enhanced if they heed what parents say about students' learning at home. Positive transitions are promoted by gaining a shared understanding of a specific student's progress which combines knowledge and experiences in contexts of learning. Even though educational transition is a developing field of study, there is a dearth of research on educational transitions for students with disabilities (Wilder & Lillvist,

2021). Key people in student learning environments must be cognisant of the quality of teaching and learning to exploit a student's future scholastic potential.

Additionally, what the student has learned in terms of knowledge and skills becomes an instrument for understanding and dealing with other challenging situations (Dewey, 1938). Hence, in research involving educational transitions, the concept of continuity is commonly used, but at first glance it appears to be a simple concept; in reality, what happens in the transition from one educational setting to the next can vary. Every new experience is linked to previous experiences that can change future experiences - defined as the continuity in experiences (Dewey, 1938). In other words, teachers must understand their students' earlier experiences to develop a reconstruction of learning via experience. In contrast, discontinuities, according to Wilder (2018), can present difficulties, opportunities, and symbolic limits that lead to new learning experiences such that students' learning and issues about relational, physical, philosophical, and institutional continuity can be used to study continuity and discontinuity in learning journeys.

Since change is an ever-present component of a learning path, many scholars have pushed for transitions as locations of change. Transitions are crucial points in the sociocultural learning process when children adjust their behaviour in response to new knowledge gained through social contact with their environment (Werner & Risius, 2021). Continuity and discontinuity are inextricably connected to change; hence, it might be difficult to distinguish between continuity and change at times as learning is linked with changes in cognitive structures. Key people in a student's life should have control over what changes and to what end to catch the positive aspects of change.

According to Paju (2019), lecturers in various classrooms are expected to deepen the understanding of subject content through quality teaching-learning activities. In this regard, lecturers' instruction should demonstrate coordination, cooperation, reflection, sound communication and collaboration. Collaboration can be motivated via a variety of factors including actions that promote a student's wellbeing. Another source of motivation could be the lecturer's desire to save time in the classroom through brevity in delivering subject content. Collaboration, which is critical to a student's learning path, is used to bridge knowledge gaps during educational transitions. The principles and procedures of an organisation should include collaborative processes initiated by lecturers as cooperative learning is critical for students to improve their academic performance in TVET colleges, as well as for future work (Schulz, Berndt,

& Hawlitschek, 2022). However, little is known about how cooperation is currently incorporated into TVET college courses for computer science students which presents special challenges for VI students. One of the key goals of inclusive education is to promote equity by providing the best education possible for all students (Ainscow, 2020); hence, individualised education planning (IEP) is one crucial tool for implementing inclusive education. Consequently, IEPs require collaboration between special and general educators such that all parties involved are respected, valued, and work toward a common goal. Besides lecturers, it is also critical for parents to be engaged in their children's learning journeys when they transition between school and tertiary institutions. In cognisance of the fact that a learning journey is a theoretical concept that describes how students learn from the time they move from one educational setting to another, one of the intentions of this study was to develop the notion of a learning journey and present it as a framework for analysing lecturers' learning journey when teaching students with visual impairment.

Lastly, there is a temporal dimension to the theory of a learning journey. In one sense, a journey is a process of leaving one location to arrive at another - in another sense, a journey might be considered as being endless. Migrating from the normative view of inclusion as located inside special education and teacher-preparation programmes (Brian, 2020), implies that the time has come to integrate concepts of inclusive practice with professional development and school leadership. Transitions between educational settings are key episodes that occur when the learning journey is located between settings, and hence can be seen as crucial occurrences depending on the outcome of the transition's continuities and discontinuities. The learning journey encompasses more than just one or two educational transitions - it also includes the time and experiences between them. In sum, the learning journey covers the past, present, and future, but it is primarily concerned with the now; hence, assessing a student's performance at a certain point in time, such as before, during, or after a transition, provides a cross-sectional view of the student's learning journey.

2.3.1.2 Aim and objectives of the learning journey

This study focused on the lecturers' learning journeys in teaching students with visual impairment as part of a bigger picture of storytelling with the intention of gradually unravelling and developing a picture of each student's unique learning styles, interests, knowledge, and abilities. Professional development which is defined as the complicated learning processes that occur because of

meaningful interactions between a lecturer and the working environment is imperative to understand the holistic picture of a VI student (Vanassche & Lichterman, 2016). Therefore, one of the most important objectives of individuals' growth is to engage in educational pursuits to secure a better future. Although its importance is well acknowledged, we rarely examine how diverse theories of development generate radically disparate educational methods to influence academic performance. Thus, the situation can be enhanced by lecturers engaging with communities of practice to gain a better understanding of students through community interactions. In this manner, lecturer's teamwork with others, share their experiences, and gain new insights by participating in community events (Hung, Lee, & Vishnumahanti, 2014).

Lecturers' learning and development are increasingly regarded as containing more than subject knowledge, pedagogical expertise, teaching-learning philosophies, and the skills required to apply them (Beijaard, 2019). Learning to teach is an identity-forming process; hence, many other elements influence lecturers' views and behaviors in the classroom, which should be included in their professional development programmes. Therefore, learning opportunities that exist in life should be welcomed. Since we acquire knowledge at school, at home, at work, and in the community, it is thus beneficial to consider learning as a journey to assist lecturers in planning, designing, and structuring classroom activities to successfully attain set learning outcomes.

2.3.1.3 The learning journeys

(i) Learning journey in the past

Learning from your past experiences implies that before you start anew, you should reflect on your previous experiences which influence your current thinking. In the recent past, assistive technology for students with visual impairment caught the attention of the world (Senjam, 2020) such that rehabilitation interventions for impairment were developed, with assistive technology being one of the most popular advances. Assistive technology not only improves bodily functions, but also enhances everyday performance and independence, thus improving the quality of life for VI individuals. Although in general, impairment does not deprive a student's access to essential human needs and care (Ferreira-Meyers & Pitikoe, 2021), people with disabilities frequently face barriers to fundamental services like education, health-care, and inaccessible infrastructure; hence, the goal of this research was to investigate the learning experiences of lecturers who teach students with visual impairment.

(ii) New learning journeys

New learning journeys are developed and implemented to conscientise people to acquire skills they need to manage specific challenges and improve their daily quality of experiences. An important pedagogical skill for lecturers is their capacity to promote problem-solving skills (Zebehazy, Correa-Torres, & Botsford, 2022) such that in orientation and mobility (O&M) classes, well-planned problem-solving opportunities are availed. Importantly, pre-service O&M experts should design and support problem-solving activities in teacher-training programmes (Ocete et al., 2022). During previous decades, integrated inclusive schooling was a global trend which increased the number of VI students in classes, particularly in physical education classes. It is therefore critical that the management and control lecturers provide, including individual support and provision of resources, ensure that all students regardless of aptitude, can achieve their full potential through equal participation opportunities at TVET colleges internationally. Moreover, because institutions mobilised remote learning options to preserve educational continuity during Covid-19 closures of educational institutions (Chitanana, 2022), TVET colleges now offer a variety of remote learning options to reach students – this could benefit VI students. It is critical to make-sense of how college settings for students with and without visual impairment can be adapted to circumvent barriers to fulfil all students' unique requirements. However, evidence reveals shortcomings at instructional-organisational levels, as well as issues pertaining to social-emotional relationships with peers and teachers (Giese et al., 2022).

(iii) Capturing progress and sharing achievement

Achievement-recognition, profiling, and reporting are all intertwined and entail reflecting, assessing, characterising, and tracing each student's progress. Thus, one of the top global objectives is educational reform agendas that address the participation of students with special educational needs (SEN) in mainstream education. However, teacher efficacy is lower in students with multiple diagnoses than in students with a single diagnosis, and much worse in students with socio-emotional and/or behavioural disorders than in students with learning difficulties (Van Mieghem, Struyf, & Verschueren, 2022). Fortunately, instructors who use cooperative sources of support for students with special needs, such as team-teaching, observation, feedback, supervision, and individual student help both within and outside the classroom, have higher levels of teacher efficacy. It should be the norm for TVET colleges that cater for students with visual impairment

to make a concerted effort to provide a welcoming and supportive environment to enhance VI students' all-round performance (Ohba & Malenya, 2022).

Students who are visually impaired may have decreased confidence due to physical and academic accessibility challenges, which impacts their learning effectiveness, motivation, and engagement in science-related courses (Chang et al., 2022). As a result, lecturers should use mobile technology and card games to combine the multisensory scaffolding gamification teaching technique into an accessible biology learning experience for fully blind students. Additionally, emotional and cognitive involvements are two significant components of learning engagement (Liu et al., 2022) which are interconnected to predict learning success; but these interconnections have yet to be fully investigated. In addition, limits in detection methods for emotional and cognitive engagement have stymied practice and theory development. A growth mindset instils in students an attitude of positivity such that their intellectual abilities may be improved (Yeager et al., 2022). Sustaining a growth-mindset may necessitate institutional support that allows positive thinking to take root and develop to create a better future. Motivational factors are significant achievement-related actions in education for students making career decisions that will determine their future trajectories. However, in college science, technology, engineering, and mathematics (STEM) professions, competitive climates and demanding coursework can decrease motivation (Robinson et al., 2022).

2.3.1.4 The TVET college curriculum

According to Howson and Kingsbury (2021), the curriculum is a structured sequence of meaningful and intended activities. Purpose, content, alignment, size, learning activities, evaluation, physical environments, and learning collaborators are all examples of methods of thinking and doing (Barradell, Barrie, & Peseta 2018). Technical and Vocational Education and Training (TVET) colleges, which are part of the Department of Higher Education and Training (DHET), admit students with a minimum of a Grade 9 pass for National Vocational Certificate (NCV) and Engineering National Accredited Technical Education Diploma (Nated) programs, while students with Grade 12 certificates are enrolled in post-matric programs (DHET, 2016). In South Africa, the notion of inclusive education was established during the post-apartheid era, following many years of racially discriminatory policies. Currently, the TVET sector attracts a wide set of students, including individuals with impairments, socio-cultural and linguistic variances, varying economic backgrounds, and family structures, as well as different genders, races, and ethnicities (Bryant, Bryant, & Smith, 2016).

Teaching, learning, and curricula are critical components of TVET curricula that foster occupational and vocational functions in preparing South African students for the workforce. These develop practical workplace skills, acquisition of theoretical information, and prepares students for employment, whether formal or self-employment. Curriculum is concerned with knowledge that is designed and organised for educational purposes under historical, cultural, and social circumstances. The knowledge acquired focuses on information-legitimacy, how it is disseminated across cultures, and which educational identities and competencies are linked with delivering the content. Questions about curriculum as content have also been posed: whether the information is worth knowing, what kind of knowledge is required, and if instructional approaches stimulated learning (Brand, 2021).

Buthelezi (2018) claims that TVET lecturers in South Africa are diverse in many respects, including social background, history, educational qualifications, and experience. The lecturers can be divided into two groups, senior lecturers and recently appointed lecturers. When the NCV curriculum was first adopted, many senior and new lecturers believed they were unqualified or incapable to teach new subject material (Ngubane-Mokiwa, 2013). This was because lecturers were required to integrate theory into practice, compelling them to change from the known to the unknown (Buthelezi, 2018). According to Mashiloane (2019), TVET lecturers were supposed to be practically-oriented in their teaching methods so that students might benefit from real-world experience.

In an inclusive teaching environment student work and learn better in student-centred communities of practice where varied backgrounds and viewpoints are valued as the social culture of the learning environment (Kandiko et al., 2021). In this context, there is evidence that active learning and inclusion helped underrepresented student groups narrow the learning gap, increasing self-efficacy and a sense of social belonging (Ballen et al., 2017). Furthermore, creative technology-enhanced learning experiences improved engagement (Daniela, Strods, & Kalnia 2019). The curriculum-change initiative also sparked a desire to expand on research that highlighted the benefits of working with students on curriculum development (Matthews & Mercer-Mapstone 2018; Bovill & Woolmer 2019).

The four pillars of the TVET college transition program are:

- Reform curricula and assessments;
- Active Learning: Research-based pedagogy for discovery-based teaching;

- Diversity and Inclusion: Fostering a diverse and inclusive culture and sense of belonging;
- Digital and Technology-Enhanced Learning: Developing online and digital technologies to enhance curricula, pedagogy, and community engagement.

2.3.1.5 Principles of the learning journey theory

2.3.1.5.1 Safe learning

The learning facilitator should be fair with the developmental phases of students in the classroom. The *safe space* concept used in educational contexts, emphasises the classroom as a respectful and safe learning environment (Flensner & Von der Lippe, 2019). Hands-on activities for making science accessible to all students with disabilities, for example, are safe if teachers and students are aware of the potential hazards of chemicals and heating equipment, as well as the necessary safeguards and safety measures (Kizilaslan & Zorluoglu, 2019). Magnification devices, print scanners, taped lectures, adapted lab equipment, other print formats, lab assistants, raised lettering, tactile clues, and assignment and test time extensions are all common accommodations for blind or low vision students. As a result, students with visual impairments can, with help, follow the same curriculum as their sighted counterparts. Lamentably, access and inclusion in education settings might be denied for students with visual impairment because facilities are often designed for those who can see (Cain & Fanshawe, 2019). Furthermore, the several components that contribute to the formation of an inclusive and safe learning environment, such as college culture, behavior management, and curriculum, are portrayed visually. Therefore, lecturers should reflect on their journey into a college, through the office, into the classroom, and across the college grounds - all done visually - to hear the voices of individuals with vision impairment, which is critical in learning about the realities of teaching students with visual impairment.

2.3.1.5.2 Transformational learning

Transformational learning is defined as an intentional shift in behavior resulting from deliberate contemplation, questioning, and debate of one's frame of reference (Freed, Benavides, & Huffling, 2019). Change entails experimenting with new roles and relationships, preparing for future action, changing existing ideologies in light of new facts, and recognising the need for additional knowledge and abilities. Transformative learning is an approach to adult education that allows students to experience a deluge of insights that, with the right support, can lead to critical reflection to shift to new worldviews (Williams & Brant, 2019). According to Hodge (2019), transformative

learning has been investigated in a range of contexts, including formal contexts such as disciplinary and occupational learning, where the overarching goal is mastery of a significant body of knowledge. However, in transformative learning literature, what is labelled as 'technical' or 'instrumental' knowledge is not always considered as organically linked to transformation. Transformative learning in the mainstream stresses personally meaningful learning and liberation from restricted ways of being in the world. Reflection refers to how the experience is viewed from another lens with the intention of reflecting on past events to solve possible problems in society. Regarding the *why* on the deeper, socially created assumptions, beliefs, and values linked with the interpretation of the learning journey, one is allowed to change one's mental behaviours to rise and see oneself and the world in a new light (Raikou, 2019). In this study, the reflective process utilises the lecturer's previous knowledge and understanding to connect with new learning situations.

2.3.1.5.3 Active learning

Active learning requires students' participation in their education and allows them to control how they comprehend material and apply it to present day challenges (Harris et al., 2020). Because active learning techniques have proven to be quite successful, it has been promoted as a strategy to improve student performance and inclusion practices in the classroom (Ballen, 2020). Furthermore, active learning is described as a change in an individual's level of knowledge, abilities, and attitudes. Lecturers at TVET colleges are the key facilitators who have the most influence on students' learning; hence, student-centred learning (SCL) should be the core learning strategy so that students take an active role in classroom activities.

Challenges related to facilitating large groups of students during lectures in HEIs that promote passive learning, is incongruent with academic rhetoric and social concerns (Roberts, 2019). Attempts to change this practice have saved certain areas of students' higher education experience, but they have not changed the most important aspect of sustaining active learning. Learning, which is a cognitive process of gaining knowledge and information from personal experiences (Sgambi et al., 2019) can be accessed in a variety of ways which are influenced by ability, prerequisite knowledge, social and intercultural stimuli, and the environment. Lecturers at TVET colleges typically use passive and active teaching styles, but preference should migrate to active pedagogy and student-centred techniques which utilise digital teaching and learning devices (Philippe et al., 2020). Ballen et al. (2020) assert that student-centred activities accelerate intrinsic motivation and

critical-thinking skills to provide a more individualised and meaningful learning experience. Moreover, meta-cognitive information assists students achieve an active, contextual and embodied learning experience, while engaging in active learning creates deep learning experiences which is widely recognised in literature studies (Reilly, 2020). In other words, active learning is a teaching method that engages students with subject material to enhance the learning experience compared to traditional lecturing styles (McGreevy & Church, 2020). Consequently, active learning has been related to higher exam scores, long-term material retention, and a better learning experience.

2.3.1.5.4 Aligned learning

Learner-centred teaching and ubiquitous technology in the classroom have combined to provide lecturers with the unique prospect of developing lifetime learning abilities in students (Blaschke & Hase, 2019). Deep learning has recently reached state-of-the-art performance regarding a variety of computer vision tasks, including picture classification (Paul, Krishnan, & Munjal, 2019). In the wake of growing interest among education specialists in measuring the actual benefits of education beyond classroom results, the quality of competencies is increasingly becoming the focus of attention when assessing the quality of education systems (Wilhelm, Förster, & Zimmermann, 2019). However, focusing on competences in teaching to implement education for sustainable development (ESD) is a challenge, especially for HEIs because most countries still lack relevant institutional, thematic, and methodological guidance to shape teaching-learning processes (Zhou & Standaert, 2020).

Haegele et al. (2019) studied visual impairment and inclusion, especially on how physical education integrated experiences promote high-quality special education services, but contend that paraprofessional training is still required (Douglas et al., 2019). However, lecturers may find it difficult to choose acceptable materials for paraprofessional training. Since spatial cognition can affect students with visual impairment, training strategies that exploit the human brain's plasticity should be implemented as soon as possible. Hence, a new training regimen was designed and tested based on the reinforcement of audio-motor linkages, which helps students with visual impairment to develop spatial awareness (Cappagli et al., 2019).

Further, vision impairment is a broad concept that covers a variety of visual deficiency including ocular and brain diseases (McLinden et al., 2020). Students with visual impairment are thus a diverse group with a wide range of qualities, abilities, and requirements who have unique developmental and educational needs which are mostly related to limited possibilities to explore

their environment, learn through incidental experiences and acquire motor skills by listening and imitating others. With the appropriate help, students with visual impairment can cope with the same curriculum as their sighted peers. The development of software as a teaching and learning aid (TLA) for students with visual impairment is unsuitable in that it necessitates a custom design. To exacerbate the situation, reduced access to visual information stifles students' acquisition of personal agency. Also, lecturers must upgrade their competency profiles to meet the demands of the 21st century such that teaching methodologies change to empower 21st century VI students (Caena & Redecker, 2019).

2.3.1.5.5 Connected learning

Connected learning is learning that is interest-driven, supported by peers and mentors, and connected to academic, economic, and civic opportunities (Wortman & Ito, 2019). It describes how people can create learning pathways that connect their passions, contacts, and formal education to lead to future opportunities such as jobs (Bender & Peppler, 2019). Regrettably, most learning systems are not optimised for connected learning; for example, most institutions continue to teach subjects as discrete units that are disconnected from students' interests outside of the classroom. Experiential learning is a crucial teaching and learning approach that provides students with real-world learning experiences that prepare them for future employment (Zakaria, Wilkie, & Learning, 2020). By facilitating authentic learning experiences linked to real-life situations which they may encounter in their future employment, these activities can enhance critical-thinking, problem-solving, and practical skills. According to Vartiainen, Leinonen and Nissinen (2019), connected learning enables students to integrate their formal learning with a wider social network and a plethora of media tools that promotes an interest-driven and inquiry-oriented approach. Since there are only a few effectively linked learning implementations in a formal setting, technology has been integrated into many levels of teaching, presenting both opportunities and challenges in terms of learning and assessment. Consequently, simulated programming learning which requires a unique educational environment and understanding of human variables (Jamil & Isiaq, 2019), was one of the sub-fields of this research as it also explored the area of simulation tool-efficacy.

2.3.1.6 Elements of the learning journey process

2.3.1.6.1 Content knowledge

The information that lecturers must possess to be effective in their profession is known as content knowledge. It includes facts, theories, concepts, ideas, and language. Lecturers should have a deep understanding of the subject they teach as well as the curriculum that supports it. Students with visual impairment and general education lecturers should collaborate to ensure interactive access to the curriculum, including the science-related subjects (Rosenblum, Ristvey, & Hospital, 2019). Additionally, assistive technology plays an essential part in the delivery of the curriculum by lecturers of students with visual impairment (Zhou et al., 2019). Because there has been little research in this area, the goal of this study was to fill a vacuum by looking into lecturers' learning journeys when teaching students with visual impairment. Complex concepts and information presented in scientific lectures have been proven to represent major learning barriers for students with visual impairment (Kizilaslan et al., 2021). While it is widely acknowledged that high-quality practical work increases student engagement, interest, and curiosity, promoting the acquisition of a variety of skills, scientific knowledge, and conceptual understanding can only be achieved if lecturers adhere to delivering the curriculum using creative pedagogical methods, more practical work, and a critical reading skills approach to enhance learning for all students.

To better equip future physical education TVET lecturers, tools to reinforce content on educating students with visual impairment are needed. It is often that students with visual impairment have unsatisfactory physical education experiences (McNamara, Brian, & Bittner, 2021). To circumvent this situation, podcasts designed with instructional design principles and expert-developed content such as content-acquisition podcasts, may provide pre-service lecturers with knowledge and confidence to appropriately teach students with visual impairment. Broad content knowledge (CK) and the flexible use of different interpersonal and educational skills by lecturers are beneficial in teaching for success regarding students with visual impairment at TVET colleges (Welter et al., 2022). All students, including those with visual impairment should be able to learn science, but lecturers require functional academic teaching materials to achieve quality teaching standards. In Indonesia, a global assessment of lecturers' competence revealed that lecturers' professional development programmes have failed to improve lecturers' teaching quality, especially where content knowledge was required to be transferred effectively (Abdurrahman et al., 2019). Hence, lecturers must possess a thorough understanding of subject matter to assist

students to develop useful cognitive maps, relate one idea to another, connect teaching content to real-life situations, and overcome misconceptions to teach all students – these should drive the quality of lecturing to meet current global benchmarks.

2.3.1.6.2 Quality instruction

The degree to which education is appropriately provided, satisfies students' learning needs, learning styles, interests, and expectations, and is well connected to standards is known as quality instruction. Lecturers had to modify their lectures to help students with visual impairment understand science better (Chandrasekaran, et al., 2020). Lecturers of students with sensory and cognitive challenges often fall short on delivering quality instruction in mathematics despite a national drive on prioritising the subject through interventions (Johnson & Brawand, 2021). Since quality instruction is imperative in order for students with visual impairment to access information and acquire skills, students must have the creative capacity to process the information and practice skills to solve problems at college level and in real-life (Fauzi et al., 2019). In this regard, prior knowledge is invaluable for students to connect with current subject matter so that they can construct new knowledge through assimilation processes which are critical before applying mathematical solutions to areas of need. However, effective instruction and comprehension are critical for academic and professional success, but students with visual impairment encounter inherent difficulties in managing structural information contained in mathematical calculations (Spinczyk et al., 2019).

Unlike sighted students who can learn much by seeing and imitating, teaching students with visual impairment is challenging, but education is essential for all citizens regardless of impairment. According to *Article 26 of the United Nations' Universal Declaration of Human Rights*, everyone has the right to education, which means that technical education, irrespective of differences, should be provided to all. Therefore, the aim of teaching students with visual impairments are to help them become educated, self-sufficient, and responsible members of society. Since students with visual impairment require more time to learn new things or perform normal everyday activities, they require 'special' and committed lecturers and trainers, as well as other professionals to guide and supervise them (Senjam, 2019). Such students benefit from innovative methods of teaching, material adaptations, and clear communicative language. Furthermore, pupils with visual impairments should be encouraged to strengthen their perceptual and sensory abilities so that they can participate in new educational models. Alternative technologies for stimulating the blind

include touchscreen software for learning topics based on difficulty level, braille learning devices, and artificial intelligence (AI) software to recognize and recognise objects, faces, and other items (Gutiérrez, 2022). Lastly, in addition to the above tools, the teaching of numerical calculations involving students with visual impairment stimulates their attention.

2.3.1.6.3 Teaching climate

The classroom is the emotional space that influences each student's learning and progress. Accordingly, the lecturer oversees creating and maintaining a conducive learning environment. Our information and communication world is changing at breakneck speed, and education is evolving the same way (Almenara et al., 2022). There are always students with special educational needs (SEN); hence, inclusive education is defined as "a continuous process to provide high-quality education to all students and communities while respecting diversity and the various needs, abilities, characteristics, and learning expectations of students and communities by eliminating all forms of discrimination" (UNESCO, 2009, p. 3). To create an inclusive environment, the lecturer must teach all students, irrespective of their intrinsic, structural, and cultural competencies (Juárez & Comboni, 2016).

When students encounter more than the normal number of challenges during the teaching-learning process in comparison to their able peers, they are known as SEN students who require specialised support to cope with these challenges. To assist such students to reach their goals, a variety of technological resources and innovative instructional experiences should be offered (Olugu, 2020). Teaching students with visual impairment' physical education in non-integrated spaces has become commonplace but alarmingly the experiences of students with visual impairment in integrated settings are linked to bullying, isolation, and discrimination (Pellerin, Wilson, & Haegele, 2022). Although HEIs have prioritised inclusive curricula because of increased student diversity, regulatory changes and a shift toward a social model of impairment (Batty & Reilly, 2022), specific challenges experienced by STEM students with visual impairment in TVET laboratories still prevail. This calls for a more inclusive lab environment that can be created by engaging online help, better lab organisation, and assessment adjustments. Lastly, but importantly, students' level of intrinsic motivation is critical in shaping positive attitudes for regular and successful life-long performance.

2.3.1.6.4 Classroom management

Classroom management is a broad set of skills and information used by lecturers to keep students organized, orderly, focused, attentive, task-oriented, and academically productive. When lecturers use innovative classroom management approaches, they diminish behaviors that impede learning for both individual students and groups of students while increasing behavior that promotes or enhances learning. As a result, lecturers must be trained in classroom management in order to incorporate active learning practices for improved classroom management. In this regard, Filipek, Patrick and Stienstra (2022) support an ‘ecological’ approach to classroom management that includes student-centred teaching practices, planning, and quality student achievement. Individuals with sound self-regulation skills can manage their emotions, behaviours, and thoughts, but some lecturers' who are deficit in control may have a negative impact on classroom management (Akyar & Tuncer, 2022). According to Theelin, Van den Beemt and Van Brok (2019), computer-based classroom simulation is a successful technique to promote pre-service lecturers' interpersonal competence that will bridge the gap between teacher-education and educational practice.

Alternatively, the classroom management technique developed by Bohan, McDowell and Smyth (2022) involves awarding points to groups of students who respect class rules. As a result, the feedback technique was adapted to evaluate the necessity of immediate visual feedback. Although effective classroom management creates a positive learning environment and lays the groundwork for effective instruction (Harlach & Marx, 2022), it takes time to acquire experience in monitoring student conduct, which is especially crucial for lecturers who work with students who lag behind in their studies, have special needs (SEN), or are receiving special education services (Harlach et al, 2022). This implies that lecturers provide special education services for a variety of student needs in different settings to create a solid foundation for effective classroom management in a conducive environment. Such effective behaviour management prepares lecturers to provide high-quality instruction linked to improved language skills and better academic performance (Chow, Senter, & Morse, 2022). For students with and without disabilities, universal classroom management strategies can reduce disruptive behaviour and promote academic engagement; however, inexperienced instructors often have limited awareness of universal classroom management practices (Hirsch, Lloyd, & Kennedy, 2019) that involve the physical arrangement of the classroom, classroom procedures, and clearly stated expectations which are all foundational components of best practice (Collier-Meek et al., 2019). The impact of teacher-training

interventions regarding ensuring equity in lecturer implementation of a common positive behaviour classroom support technique related to behaviour-specific praise. Knochel et al. (2022) studied lecturers who were successful because they supported practices of praise and discipline across racially diverse students through lecturer self-monitoring and written performance feedback – the findings revealed better classroom management.

2.3.1.6.5 Lecturer beliefs

Lecturers' beliefs are embedded in implicit and explicit expectations about their professional and instructional practices, interactions with students, and learning processes. Students with visual impairment frequently struggle with emotional issues and have difficulty creating and sustaining social interactions (Manitsa, & Doikou, 2022), thus they actively seek social affirmation from their lecturers and peers, but they face numerous obstacles as the lack of relevant and quality lecturer-training and understanding concerning VI students is a major barrier. Students' academic learning and social inclusion depend on lecturers' help, while peer support enhances their self-esteem and social acceptance. Visual impairment or blindness ranging from partial to complete blindness with different visual acuity may affect learning if left unassisted (Kacheri et al., 2022). On the inclusion of students with special needs, Rihter and Potonik (2022) report on the impact of teachers' views regarding their classroom performance which indicates that some lecturers have positive attitudes toward students with special needs which facilitates the application of adaptations in visual art teaching, even when they do not feel qualified to do so.

Moreover, fostering students' spatial thinking skills advances STEM teaching-learning (Gagnier, Holochwost, & Fisher, 2022). Consequently, recent efforts concentrated on developing classroom interventions to improve students' spatial skills; however, these interventions should be administered by lecturers whose attitudes and opinions about spatial thinking influence the efficiency of such interventions. However, studies about college lecturers' perceptions and attitudes about the correlation of spatial thinking and STEM are limited. The study by Zilka, Grinshtain and Bogler (2022) interrogated lecturers' malleability of their skills, elements that transform their mindsets and transcend barriers that prevent transformational thinking. It was found that both internal (background and success experiences) and external (learning climate, principal support, and adjustments) elements foster lecturers' positive attitudes (Zilka et al, 2022). Lecturer learning communities have been promoted as a possible tool to improve teaching-learning across the board (Akiba et al., 2019). However, we still have many unanswered questions

about what aspects of collaborative learning in lecturer groups help lecturers to enhance their quality of delivering lectures to students with visual impairment.

2.3.1.6.6 Professional behaviours

Attitude, appearance, and manners all play a role in influencing professional behaviour in the workplace. It encompasses how you speak, dress, act, and make decisions. Treating your superiors, colleagues, and clients with respect is one of the most important aspects of professional job-behaviour. However, in the field of special education, professional ethics in teacher-training has received little attention (Decker, Wolfe, & Belcher, 2022). Even though more than 40% of scholarly articles addressing professional ethics mentioned challenges connected to lecturer-training, no empirical investigation involving pre-service special education teachers was conducted. According to Kim (2022), professional socialisation or networking is the process by which prospective lecturers internalise ethical beliefs in their field of expertise. This study examined lecturers' learning journey of teaching students with visual impairment which is connected to professional socialisation at TVET colleges. Clinical effectiveness and efficacy as lecturers must be determined and implemented in caring contexts where students' formative behaviours are moulded (Shafiq, Pourteimour, & Mazloumi, 2022). According to Lieberman, Ball, Beach and Perreault (2022), immersion in physical education teacher-preparation programmes dedicated to educating students with visual impairment can promote self-efficacy. According to Cheek et al. (2022), the use of interactive reading behaviours by the lecturer had a positive impact on social interactions of students with visual impairment who have diverse communication needs. Consequently, students improved their interactive communication, attention to text, and usage of shared reading skills.

Further, students with emotional and behavioural challenges exhibit deviancy and negative social skills which can hinder their development, especially in relationships (McGuire & Meadan, 2022). Given the period of time students spend with their lecturers, such lecturers may be enabled to create a community that can assist students to form and sustain cordial and healthy relationships while participating actively in classroom activities. According to a study by Mendonça et al. (2021), all students with special needs are eligible to attend HEIs that accommodate students with specific educational requirements, but must provide adaptation if needed.

2.3.1.5.2 Relevance of the learning journey theory to this study

Understanding the learning journey idea enables lecturers to interact with a diverse variety of students, allowing them to experiment with different learning styles in order to reach different individuals, resulting in instruction that is tailored to each student's needs and skills. Generally, approaches to teaching students with visual impairment have transformed since inclusion (Brussino, 2020). However, there are still occurrences where such students with visual impairment are discriminated against when compared to their sighted peers. Furthermore, education systems differ in their governance structures, resourcing systems, capacity-building, school-level interventions, monitoring, and policies regarding assisting students with visual impairment. For example, braille literacy adoption is a challenge due to the scarcity of skilled educators as learning braille script necessitates a high level of reliance on a special type of lecturer. This implies that the fewer special (braille) lecturers there are, the more difficult it is for students with visual impairment to receive the attention they require for meaningful education (Dawle & Ahmed, 2022). In addition, for decades the methods of teaching and learning through the use of braille have remained relatively unchanged, while educational technology has frequently altered how teaching-learning occurs. Since a learning path is a collection of learning units that leads to a specific learning outcome (Bian, et al., 2019), it is not difficult to create a single learning route that meets the needs of every student. In this scenario, an adaptive learning route can be constructed and developed. This requires an adaptive learning implementation methodology that dynamically provides learning resources based on each student's preferences and needs. This method pushed my beliefs and ways of seeing the world as a never-ending learning journey. One of the most pressing concerns confronting lecturers today is finding new ways to better engage the next generation of students by combining educational methodologies through technologies (Cajandig & Lomibao, 2020). This path assisted participants to answer all research questions adequately.

2.3.2 Theory of Change

2.3.2.1 The concept of the theory of change

This section explains *how* and *why* one may commission and manage an investigation by applying the theory of change. A theory of change defines how an intervention's activities (project, program, or policy) contribute to a series of events that result in the desired or observed outcomes. The theory of change is usually used during the planning stage, but it can also help in monitoring and

assessment. Anderson et al. (2022) tested a blended professional development model guided by the theory of change to assess lecturers' understanding of instilling creativity in classroom activities; they discovered that it was necessary to review lecturers' learning journeys in teaching students with visual impairments at one TVET college in KwaZulu-Natal. As a result, the curriculum was restructured using the theory of change, allowing for the construction of short and long-term plans that were less stressful, student-centered, and utilized modern institutional teaching practices.

Before creating and implementing a new program, it is vital to examine a theoretical or conceptual framework to guide the planning process (Ren and McGuckin, 2022). The researcher then explains its practical application and design using step-by-step instructions and visual illustrations to provide readers with the skills and information they need to implement the theory of change in their planning. Transitions to address practical problems, for example, could be used to alter socioeconomic conditions (Wildman, 2022). In other words, the theory of change serves as an illustration of how and why the desired change is predicted to occur in a certain setting. It focuses on mapping out or 'filling in' what has been defined as the 'missing middle' between what a change project performs (its activities or interventions) and how this leads to desired outcomes. People learn about themselves and their society through their intended goals (De Castro, 2019). Thus, including different people with different teaching expertise (lecturers, senior education specialists, and departmental heads) is significant and will strengthen students with visual impairment' academic performance. Consequently, the lecturer will acquire new knowledge on how to teach students with visual impairment in inclusive spaces. Hence, although curriculum review is a tedious process, it can be simplified if done strategically.

According to Gadiraju, Doyle, and Kane (2021), students with visual impairment' lecturers teach both academic and functional life skills to prepare them for success and independence. Current instructional technologies focus academic education over a holistic approach that benefits students. Therefore, this study aimed to understand how lecturers' learning journeys shape their teaching of students with visual impairment while integrating behavioural skills like independence and relevant support through adapting teaching strategies.

2.3.2.2 Aim and objectives on Theory of Change

Theory of change has been beneficial in assisting the researcher's evaluations during all the research's stages. The collection of data in line with the principles of the theory of change as well

as participants' responses created a lens to dissect the phenomenon under investigation. This was more than just selecting objectives; the theory of change can guide one not only on how to determine whether one has achieved one's objectives, but also *how*, *why*, and *with whom*. Also, lecturers at TVETs need support in reducing students' unwholesome pursuits (Behzadnia et al., 2022), but parents should also be involved in curtailing such behaviours through motivational strategies. Changes, systematic techniques, and actions at all levels of society, including education and cultural organisations, are required as part of global interventions for inclusion (Kanari & Souliotou, 2021). Additionally, lecturers' learning journeys, learning settings, and learning activities can be adapted to enhance various levels of formal education courses to gain a better understanding of teaching students with visual impairments. The question that lecturers frequently ask in the current policy and legislative environment of teaching students with and without special educational needs in the same classroom is: how best to implement inclusion and satisfy the diverse needs of their students in a class (Schwab, Sharma, & Hoffmann, 2022). It is also crucial to comprehend how all students feel about being included amid the growing concern about climate change and the implementation of energy-saving methods (Azizi et al., 2019).

Consequently, teaching and learning which is the core function of HEIs, will necessitate a dramatic rethinking of current curricula, pedagogy, and technological enhancement (Wessels, 2020). Lastly, South African TVET colleges can be modified to better prepare the future workforce for the Fourth Industrial Revolution (4IR).

2.3.2.3 Steps in designing a Theory of Change

2.3.2.3.1 Define your desired goal

The desired long-term aim of this study can be identified within the theory of change. Accordingly, when adopting learning technologies, the critical function of robust interaction was inextricably intertwined with the theory of change (Tawfik et al., 2022). Interaction is cited as crucial in terms of technological adoption, cognitive load, and usability. Following the identification of the desired impact, the participants identified outcomes to achieve the study's goal. Organising webinars is now one of the most effective strategies to attain the desired impact (Almeida, 2022). This study aimed to explore lecturers' learning journeys of teaching students with visual impairment to understand how lecturers shape their teaching of students with visual impairment in TVET colleges.

2.3.2.3.2 Determining outcomes

An outcome is a change in an individual's, group's, community's, organisation's, or institution's behaviour, relationships, actions, activities, policies, or practices. The following adage might be used to frame an intended outcome: *who should be doing what differently?* Lecturers at TVET colleges have seldom undergone any formal training to prepare them to educate students with visual impairment. In this context, the theory of change was designed to identify logical action pathways through investigating lecturers' learning journeys when teaching students with visual impairment (Durant et al., 2022). I discussed how lecturers use narratives from learning journeys to shape their teaching of students with visual impairment by applying the theory of change to achieve expected outcomes and to plan future pathways. To introduce adaptation and build confidence in lecturers, the processes of the theory of change must be monitored and evaluated on an ongoing basis. Novice lecturers who face many challenges in teaching students with visual impairment at TVET colleges, must first establish the learning and support needs of students with visual impairment in the class, and then select appropriate strategies.

2.3.2.3.3 Identifying pathways of change

After writing down all the expected outcomes on cards, they can then be arranged on the wall in logical cause-and-effect patterns. When a programme has multiple themes or difficulties, discrete change routes can be developed for each one - small teams can focus on each case. The content-based teaching that lecturers employ to organise and convey certain topics to increase students' understanding of various educational courses is referred to as pedagogical content knowledge [PCK] (Kaya, Aydemir, & Ebenezer, 2022). The resulting change pathways can then be linked at the end to form the entire theory of change. According to Fullan (2016), the ability to start, establish, and disseminate improvements in the educational and pedagogical fields is referred to as educational transformation. A variety of paths may exist between interventionist top-down techniques and independent grassroots activities that are associated with educational transformation (Straub & Vilsmaier, 2020). As a result, lecturers use a variety of visual methods to help students make-sense of phenomena associated with learning journeys. It is crucial that lecturers consider representational competency when creating instructional resources because it supports how students create their mental representations of concepts.

2.3.2.3.4 Specify your strategies

Once the stakeholders have selected one or more change paths, they can design methods to set the causal chain of events into action. Strategies are broad explanations of what the programme must do to achieve the desired results, while higher-order thinking incorporates logical reasoning which is traditionally referred to as critical-thinking (Rombout, Schuitema, & Volman, 2022). A critical-thinker is logical, open-minded, and considers arguments for and against a point of view before passing judgement (Rombout et al., 2022). Every strategy will include a change path. Strategies may be decided before the mapping of desired results, including measuring the expected influences. As such, the theory of change will aid in identifying expected outcomes and causal links, as well as determining how the strategies implemented will result in the desired effect.

All instructional activities, including those for students with visual impairment, must be tailored to the characteristics, learning styles, and skills of all students (Tale, 2020). Lecturers must prepare lessons that accelerate the passion for learning, knowledge, and social skills which will advantage all students in the present and in the future. Hence, lecturers must be capable of developing and designing successful teaching strategies to implement via lesson plans to benefit all students. Inclusive and innovative teaching methods that accommodate all students can be used in every learning activity (Prasetyo & Putri, 2022). Lastly, lecturers must select teaching strategies that will improve both the academic and non-academic lives of all students.

2.3.2.3.5 Connecting pathways of change

All underlying assumptions should be made explicit once the strategies, expected results, impact, and their links are confirmed. Attempting to document these assumptions can lead to the discovery of flaws in the theory of change while allowing stakeholders to become aware of each other's perceptions of reality. It is easy to become preoccupied in circular reasoning when articulating fundamental assumptions, but reflective practice encourages ongoing (re)creation of local knowledge by critically interrogating ideas, assumptions, experiences, and practices to identify effective teaching strategies to overcome challenges (Lubbe & Botha, 2020). This implies that lecturers should be encouraged to become more practical to embrace proactive policies rather than passively accepting the prescribed curriculum and other guidelines stipulated by policymakers.

As the potential for teaching and learning to support theory-informed classroom instruction and lecturer professional development grows, the emerging area of didactic pedagogics is attracting more attention. In this regard, current discourse is challenging brain-based learning as

technological developments speedily promote the production of new knowledge in teaching and learning (Tan & Amiel, 2022).

2.3.2.4 Principles for lecturer development

2.3.2.4.1 Change is a slow process

Change is slow but one should continue working toward one's objectives. Change is one of those aspects that sometimes lead to irrational behaviour, because while some people welcome change, others are resistant to it - both are legitimate and understandable, depending on the circumstances. While the change to a collaborative sharing process provides a broader view of lessons (Fry, Vik, & Karlsen, 2022), shared ownership to adapt and better the next lesson were the most important aspects of lecturers' learning. Students who are gradual learners and have limited learning abilities require repeat lectures and remedial work to 'catch-up' with their able peers (Zakiah, Supena, & Wulandari, 2022). Continuous commitment to promote lecturers' professional development is required to implement inclusive education in all forms (Walton et al., 2022). Also, developing learning communities based on lecturers' ideas of contextual learning and learning as a social practice is one way of sustaining professional learning. This will enhance the performance of students with exceptional needs as inclusion in the classroom is critical (Noreen, Intizar, & Gulzar, 2019). Lecturers who are the fundamental pillars of inclusive education play a critical role in offering social assistance without discrimination. It is critical for inclusive education lecturers to embrace diverse students and provide them with equal educational opportunities and conducive learning environments. Accordingly, Fansury, Lutfin and Arsyad (2019) conducted a study on the use of audiobooks for learning English regarding students with visual impairment, and it was found that these teaching tools made it easier for students to study anywhere and at any time which improved student motivation to learn. Each lecturer must develop a unique method for utilising materials to enhance students' performance in the classroom; ordinary students' material usage differs from that of students with visual impairment. Hence, teachers must alter their strategies when providing information to students with visual impairment as they may encounter difficulty understanding the lesson through traditional methods (Nasution, 2019). In sum, applying suitable teaching techniques can help students with visual impairment to learn more effectively.

2.3.2.4.2 Normative-re-educative strategies

Improving students' relationships with lecturers has significant, positive, and long-term ramifications for their academic and social growth. Students who have positive and helpful

relationships with their professors outperform those who have contentious encounters with their lecturers. In this context, normative behaviour results from norm invocation which is linked to social pressure but without direct punishment. Lecturing is a direct method of teaching where the lecturer serves as the primary source of information who explains the subject and concepts to students (Attaway & Ambarek, 2020). Lecturers have been widely criticised in higher education for a variety of reasons which include students' passivity as information-receivers with little engagement or integration of knowledge into their minds. Lecturers also have control over the provision of learning opportunities, both during continuous professional development interventions and in the classroom. However, the efficiency of lecturer learning opportunities and CPD programmes is also dependent on addressing lecturers' learning requirements (Smith et al., 2022).

2.3.2.4.3 All lecturer development activities should be classroom-centred

Fettig, Artman-Meeker and Chang (2022) suggest a person-centred approach to demonstrate how social-emotional education styles and teaching qualities are linked. To support students, a tiered professional development approach that acknowledges the complex relationships between teachers' practices, beliefs, and job attitudes is required. The mixed methods approach used in this study enabled an in-depth understanding of the learning environment and its interdependence on students' learning experiences across time (Closs, Mahat, & Imams, 2022). Hence, solutions for promoting a more holistic student learning experience through conducive learning settings should be developed at the institutional level.

According to Islam, Sarker, and Islam (2022), the blended approach, when combined with technology, could be effective in developing innovative and contextual teaching that involves all students in sharing, engaging, and cooperating for knowledge building. Ravenscroft et al. (2019) criticise lecturers with negative attitudes toward inclusion as well as those who fail to thoroughly prepare lessons to teach students with visual impairment, and suggest that further post-qualification training is needed for lecturers to be able to operationalise diverse ways that make it easier for students with visual impairment to participate. Focused professional development was identified by Pharis et al. (2019) as a strategy to improve lecturer quality to boost student achievement. The implementation of a range of professional learning activities with interactive learning methods, collective engagement, and collaboration among lecturers were other strategies to deliver quality professional learning programmes.

2.3.2.4.4 Lecturers' involvement in the preparation of courses

In an open distance learning (ODL) environment, information and communication technology (ICT) tools provide an ideal method for students to communicate interactively with their lecturers (Ngubane-Mokiwa & Khoza, 2021). This is especially true for students with impairment who require alternative formats of communication. *The United Nations Convention on the Rights of Persons with Disabilities* mandates that countries create effective legislation, policies, and administrative measures to protect disabled people's right to work. Odame et al. (2021) found that students with visual impairment learned crucial work-related skills like time- management, interpersonal communication, and teamwork during their college education. However, they faced numerous obstacles during their transition phase, including the lack of assistive devices and communication equipment.

The curriculum serves as a tool for achieving national goals by serving as a guide for setting learning goals for each student (Maryanti et al., 2021). It caters for the diverse potential of each student who may have unique learning requirements. Therefore, lecturers need to be actively involved in the preparation of TVET courses. Higher education providers are responsible for creating an inclusive learning environment by making individual adaptations. However, beyond the general TVET college requirements, laboratory practical teaching is not usually included (Hackl, & Ermolina, 2019). Students with visual impairment may face numerous challenges in lab classes which can be made as inclusive and accessible as possible by incorporating proactive adjustments into the design and preparation of laboratory programmes.

2.3.2.4.5 Trainers should themselves be lecturers

Lecturers must engage with technology because it can assist lecturers in teaching students with visual impairment (Apriani et al., 2021). Students learn more in a robust classroom setting than in a passive lecture setting. Despite overwhelming evidence, most instructors, at least in large-enrollment college courses, continue to utilise traditional approaches (Deslauriers et al., 2019). As a result, little is known about how students naturally react to active learning when they are not being promoted by the lecturer. Most courses are entirely taught through the lecture method which does not include two-way discourse and scholarly readings (Button et al., 2021). Consequently, students resort to synthesising essential ideas from a variety of readings on a single topic.

2.3.2.4.6 Training should be task-based and inductive

Building a learning environment in which students achieve educational goals is a huge problem for lecturers. Deep-learning has emerged as a potential effective learning technique across all machine-learning classes, especially within the reinforcement learning arena because of recent technological developments in the field of artificial intelligence [AI] (Vithayathil, Varghese, & Mahmoud, 2020). As a result of this new trend, a better technological domain known as deep-reinforcement-learning has emerged which combines deep learning's representational learning power with traditional reinforcement learning methods. Although these strategies improved performance to a great extent, they were primarily limited to systems that used reinforcement learning algorithms to learn a single task. Since faculty development programmes are designed to improve knowledge, attitudes, and behaviours to improve the learning environment for students (Rushe & Salter, 2020), qualitative measurements should be used to evaluate attitudinal and behavioural changes.

According to Peng and Pyper's study (2021), lecturers' pedagogical practice is the product of a process of negotiating the various pedagogical instruments available to them to achieve their teaching goals in their educational setting. As such, lecturers migrate from traditional teaching methods by incorporating diverse activities as a personal initiative in response to perceived obstacles in achieving their objectives. Importantly, before entering the classroom, a well-prepared lecturer must know *what* should be done, *why* it should be done, and *how* it should be done to facilitate effective learning. These questions can be better answered using a 'syllabus' which (Benbellal, 2019) list content and process items. This is a public list that is organised, has clear goals, includes a timeframe, and a preferred methodology or approach.

2.3.2.5 Elements of the Theory of Change

2.3.2.5.1 Human element

To provide inclusive education, instructors must be dedicated to continuing their professional development (Watton et al., 2022). Lamentably, evaluating sustainable development is fraught with difficulties because of its complexity, need for supplementary assessment standards, and the difficulty of evaluating at the confluence of human and natural systems. This task lends itself to theory-based evaluation which is based on critical realism (Miyaguchi, 2022). This requires knowledge of concepts related to socioecological, human, and natural systems which are valuable when building a theory of change for evaluating sustainable development. The success of change

activities related to teaching and learning is crucial to achieving improved student outcomes in STEM (Viskupic, Earl, & Shadle, 2022). Also, the human element to effect change is complex, but can be guided by change theories that explain *how* and *why* the desired change occurs. The integrating of a theory-based change model in a higher education setting can be evaluated by lecturers. They strengthen their experiences by adhering to a theory-based methodology to precipitate meaningful teaching and learning changes at HEIs.

Further, higher-level courses in human anatomy are known for their theoretical and practical content complexity (Mendonça et al., 2021). As a result, students with visual impairment must be accommodated through adaptation. The challenges that students with visual impairment experience are worrying. In this regard, gamification is a technique that entails using ‘play’ features to create a fulfilled game-like environment to improve user-experience and promote motivation and engagement to raise performance levels (Leto et al., 2022). Motivation is defined as being moved to do something, to act, and is regarded as one of the most important variables in the efficiency of teaching and learning in the educational area (Leitao et al., 2022). Since face-to-face lessons were suspended due to the COVID-19 pandemic restrictions, TVET colleges quickly adopted online teaching and learning platforms (Lederman, 2020; Lee et al., 2021). As a result, lecturers at TVET colleges who were at the frontline of such changes, faced severe problems in their professional practice (Watermeyer et al., 2021). This abrupt change was especially difficult for those who lacked the necessary knowledge or expertise for effective online teaching and learning (Rapanta et al., 2020).

2.3.2.5.2 The element of technology

The acceleration of digital technology during the previous 10 years has infiltrated all organizations as a result of advancements in communication, computing, and connectivity technologies (Garcez et al., 2022). This has sparked changes in role-players, structures, practices, values, and beliefs. The requirements for education systems are evolving because of the fourth industrial revolution (4IR) which is transforming industries all over the world (Goldin et al., 2022). This is also accomplished through introducing new pedagogic concepts such as blended learning, which combines the benefits of face-to-face and distance learning with digital platforms that can assist in enhancing competencies.

According to the World Health Organization (WHO), at least 2.2 billion individuals worldwide have vision impairment (WHO, 2019). Individuals with limited vision and individuals with

blindness are the two primary kinds of visual impairment, each with specific characteristics and needs. Depending on the kind, extent, and timing of visual loss, vision impairment might affect a student's independence, mobility, and academic success. Similarly, its effect on learning differs depending on the type and level of vision loss. Khribi (2022) states that VI students encounter problems in reading, writing, and utilising technology, even when using visual aids. *Classroom Suite* is a writing software that allows lecturers and students to design activities that support general education instructional goals, while also being accessible to students with impairment (Anderson & Anderson, 2022). This application includes pre-built activities that can be used in its original form or modified by the developer. *Classroom Suite* also has a programming component that allows one to customise the software to one's liking. Moreover, *Classroom Suite* allows lecturers to track student performance regarding activities created by lecturers.

According to Fernández-Batanero et al. (2022), the integration of Information and Communication Technologies (ICT) in higher education which is based on equality and equity requires a technologically competent lecturer. Therefore, lecturers need to be well-trained (pre-service and/or in-service) when it comes to technology which is about innovation, knowledge and skills transfer which are all tightly linked.

2.3.2.5.3 The element of strategy

Communication is a process where people use symbols and behaviours to transmit information and meaning. It is one of humanity's most fundamental practical endeavours which is extremely useful in the workplace, as well as an irreplaceable teaching approach (Gao & Latif, 2022). The teaching process should be aligned to distinct learning styles to achieve specific learning goals. The capacity of lecturers to use effective teaching techniques determines whether students' learning is enhanced to reach global benchmarks. For this purpose, there are numerous teaching models, each of which is based on a different learning theory to produce quality teaching to uplift all-round performance.

Another strategy is storytelling which is an effective way to communicate, collaborate, and be creative (Antunes et al., 2022). Interactive storytelling activities could help to circumvent obstacles to increase participation. Multisensory environments and interactive robots, for example, can provide multimodal input, opening new possibilities for inclusive storytelling among students with (and without) visual impairment. Self-assessment, self-reflection, progress indicators, finalising projects, and engaging in authentic activities were among the self-monitoring strategies

used to enhance the quality of teaching-learning at TVET colleges (Zhu, Bonk, & Berri, 2022). Students' self-management strategies (e.g. time and judicious resource management) vary based on their various levels of motivation. Discussion forums, teacher-feedback, flexibility, lecturer communities, clearly stated learning goals, appropriate materials, and small learning units were other helpful instructional elements.

2.3.3. Relevance of the Theory of Change to this Study

The fundamental value of the theory of change is that it interrogates many perspectives and assumptions regarding the change process, particularly those that appear to be self-evident. The goal is to ensure that they are appropriate – but we must discuss them to discern whether to include them to improve programme design and implementation. The popularity of the effectiveness of applying the principles of the theory of change is expanding as it is frequently utilised by evaluators (Laing, 2022). Additionally, it is important to collaborate to adapt a theory of change that increases its relevance for programme leaders and workers, while allowing evaluation to become an integral part of their project development. Moreover, lecturers and other professionals can easily incorporate the instructional-driven system's design and helpful features to assist students with visual impairment. According to Zhu (2021), flipped classroom teaching based on the theory of change can improve students' listening and speaking abilities as well as lecturers' professional skills because its adaptability is beneficial in making it effective to promote students with visual impairment' learning. The theory of change approach uses models of logic to describe *how* a programme is supposed to work, and to check *if* and *how* it accomplishes its stated goals. In sum, it is imperative to consider a theoretical or conceptual framework to guide the planning process of college programmes (Ren et al., 2022).

2.4 THEORETICAL INTEGRATION

The process of merging ideas from two or more theories into a single theoretical statement, typically to provide a more thorough and accurate account of deviant behavior, is referred to as theoretical integration. Two theories, the learning journey theory (LJT) and the theory of change (TOC) underpinned this study but were re-conceptualised to blend with lecturers' learning experiences. The integration of lecturers' learning journeys into the inclusive classroom environment requires competent lecturing staff proficient in both technological and pedagogical aspects of teaching and learning (Fernández et al., 2019). Within this context of exploring lecturers' learning journeys of teaching students with visual impairment, this study aimed to

understand how lecturers shaped their teaching. In this regard, learning journeys assisted in acquiring data that contributed to in-depth discernment to better describe the intricacies of teaching students with visual impairment. As a result, the usefulness of the LJT is widely acknowledged, despite the fact that we rarely explore theories that tell us broadly about many justifications and tactics for improving educational quality (Overton et al., 2020).

The theory of change (TOC) can be used in conjunction with the learning journey theory (LJT) to conduct interviews with lecturers who teach students with visual impairments at TVET colleges. Stone and Brown (2021) define the efficacy of a college course as a comprehensive educational intervention informed by past research and theory that changes student attitudes (for example, about blindness) and promotes accessibility. In this approach, students' negative attitudes toward blindness convert to positive ones after completing the course, resulting in enhanced confidence and knowledge of accessibility, inclusion, and assistive technology. Changes, systematic techniques, and actions at all levels and locations of society, including education and cultural organisations, are required as part of activism for inclusion (Kanari & Souliotou, 2021). The LJT and the TOC were found to be more relevant to this study because their characteristics relate to how change happens in the short, medium, and long-term to achieve the intended outcomes. According to a study conducted by Svendby (2021), lecturers' lack of knowledge of student diversity remains a barrier to effectively engage in educational settings. The perceptions of TVET college lecturers on the integration of visually impaired students into regular classrooms vary greatly (Ravenscroft et al., 2019). Although both theories were found to facilitate the understanding of the phenomenon under investigation, more research needs to be conducted to incisively dissect the perceptions of TVET lecturers concerning students with visual impairment.

Significantly, personal narratives act as an autobiographical memory bank because they have been related to beneficial developmental outcomes throughout life (Reese et al., 2011). Interactive story 'storage' systems enable the automatic generation of narratives and dialogue through semantics to convey experiences in diverse voices to different audiences (Rishes et al., 2013). Regrettably, there has been limited study on methods for connecting narratives to settings and events to story structures. To better discern how students with visual impairment, cultivate feelings of belonging, academic competence, goal commitment, and social capital, a combinatorial model should be considered (Diel-Amen, 2011). As knowledge increases daily at a rapid rate within varied dimensions, the process of teaching and learning has become complex, but formal and systematic. Hence, Tadros' (2019) integration model comprises a structural conceptualisation of lecturers'

journeys, as well as an examination of narrative attitudes of empowerment, problem-solving, goal-orientation, a multicultural framework, and strengths-based positive thinking in order to serve students better. According to Muthukrishna and Henrich (2019), an integrative all-encompassing theoretical framework would enable researchers to arrive at specific predictions instead of general premises. Therefore, without an expansive theoretical framework, outcomes are neither expected nor surprising depending on how they fit into the general theory of teaching and learning.

2.5 A SUMMARY OF THE CHAPTER

While chapter one described the study's orientation and backdrop, this chapter (2) focused on the two theories that guided the study. Firstly, the LJT was discussed in terms of its definition, aim, objectives, the curriculum, principles, terminology, concepts, processes and its significance to his study. Secondly, the TOC was also selected and discussed in terms of its aim, objectives, elements, steps in designing the theory, its relevance and integration into the TVET college curriculum, its practice, principles for lecturer development, and its importance to the current study. The following chapter (3) discusses the literature review.

CHAPTER THREE

A REVIEW OF RELATED LITERATURE

3.1 INTRODUCTION

The preceding chapter (2) looked at the theoretical underpinnings that framed this research. This chapter (3) attempted to define the concept *visual impairment*, types of impairment, possible causes of impairment, its possible signs, and characteristics of impairment, and impact of visual impairment on learning environments for students with visual impairment, strategies to address visual conditions to avoid impairment, the difference between visual impairment and blindness, navigating college with visual impairment, as well as identifying factors influencing the implementation of teaching strategies for students with visual impairment, with visual impairment in the inclusive classroom, and achievements and challenges of students with visual impairment. Furthermore, it addresses the factors that facilitate the effective teaching of students with visual impairment.

3.2 VISUAL IMPAIRMENT AND INDIVIDUAL NEEDS

Visual impairment is an issue that interferes with a student's academic and daily activities like driving, reading, socializing, and exercising (David, 2019). Most tasks require visual information, hence visually impaired people are at a disadvantage because vital information about their surroundings is unavailable (Felix, Kumar, & Veeramuthu, 2018). With recent advancements in inclusive education and assistive technology, it is now possible to provide more support to persons who are visually impaired. When compared to persons with good eyesight, visually impaired people showed a higher prevalence of depression (Evans, Fletcher, & Wormald, 2007). The *Individuals with Disabilities Education Act* (2017, p.16) describes it as "a visual impairment that, even after repair, harms a student's educational achievement". The Department of Education (RSA, 2012) defines students with visual impairment as having a visual disability that significantly limits their ability to see, interfering with their ability to understand visually presented material such as pictures, diagrams, and the written word.

Students with visual impairment have significant problems in daily living and in social participation, with work duties being one of the most difficult (Brunes & Heir, 2022). One of the primary senses that allow us to interact with the natural world is vision (Vardar & Sharma, 2022),

therefore students with visual impairment may struggle with comprehension, organisation, and remaining on par with their able peers. Most students who are deemed to be visually impaired are partially sighted and can perform in the classroom with the help of low-vision equipment. Those with declining residual eyesight or who are blind may need to read and write in braille or use talking calculators that assist with mathematics difficulties, adapted books, or aided language stimulation. People who are blind or have low vision have many opportunities in programming, including the capacity to work independently (Mountapmbeme, Okafor, & Ludi, 2022). However, current research reveals that computer programmers with visual impairment encounter various problems in their daily activities as learning programming can be difficult (Hadwen-Bennett, Sentence, & Morrison, 2018). As a result, many modern programming environments are inaccessible to students with visual impairment, thus making use of a screen reader becomes difficult or impossible.

Many people will experience some form of visual impairment at some point in their lives. Some people can no longer see items that are far away, others struggle with reading small print. These issues are frequently corrected by using eyeglasses or contact lenses. More serious are students with visual impairment who may need more time to finish tasks that involve sight or to adjust to changes in light. Assistive technology equipment whether acquired commercially, or self-modified, or customised, increases, maintains, or improves the functional capabilities of an individual learner, thus enhancing participation and completion of tasks (Alnahdi, 2014). Assistive technology is increasingly being used to help with the daily needs of people with visual impairment (Periša et al., 2022). Blind people continue to experience difficulties relating to their traditional lifestyles (Santra & Deyasi, 2022). The assistive device may act as a tool to motivate students, assist lecturers in disseminating information, and help create teaching and learning experiences that will result in achieving set goals. Lecturers should also bear in mind that students with visual impairment benefit from utilising assistive devices, and thus they should always make them available, in addition to possessing knowledge to help learners to maximise their use. Also, since digital literacy is a requirement for students, as well as for those with visual impairment, full participation in societal events may overcome some educational barriers (Arslantas & Gul, 2022). Being digitally literate has become unavoidable as it assists in the advancement of knowledge and skills in both the academic and professional contexts in an ever-evolving workplace environment, as well as in educational settings. Although braille is the basic reading and writing medium for the

blind and partially sighted people, “they must learn to read and write in braille at the same time as the sighted learner” (Landsberg, Kruger, & Swart, 2013:379).

Further, computers are integral in inclusive spaces as it allows students to fully participate in the learning process. Students with visual impairment can use computers with screen access software to explore the screen, create and read documents, and surf the internet (Landsberg et al., 2013:379). The information is then converted to voice output. If large-print books are not accessible for partially-sighted students, magnifying glasses can be utilised. Parallel lines can be created on blank A4 paper with a black pen instead of using the standard classwork books with dull lines. For students with visual impairment, this adaptation will be more beneficial and noticeable (dark pen lining), especially if they have trouble writing between lines.

3.3 TYPES OF VISUAL IMPAIRMENT

3.3.1 Loss of Central Vision

The loss of center vision creates a haze or blind spot, whereas peripheral or side vision remains unaltered. Reading, recognizing people, and identifying most distant features become hazy as a result. Persons, not only students who experience central vision loss (CVL), report viewing at least as much television and movies as a student with normal vision (Costela et al., 2019). Many CVL viewers have major issues recognising people and following plots, as well as significant difficulties when viewing video on PCs and other electronic devices. Although many people with normal vision take facial recognition for granted, those with central vision loss find it difficult because it restricts social contacts and may lead to social isolation (Haris et al., 2020). Many conditions can cause central vision loss, but the most common cause is cone degeneration in the macular portion of the retina.

3.3.2 Loss of Peripheral Vision

Inability to distinguish objects on one or both sides, or directly above and/or below eye level, is a sign of peripheral or side vision loss. However, center vision is preserved, allowing for direct forward seeing. The inability to recognise objects and shapes in the peripheral part of the visual field is known as peripheral vision loss (Youns et al., 2019). As a result, this ailment can have an impact on people's daily lives by lowering their quality of life. Peripheral vision loss can impair reading speed because just a few words are visible at a time. Tunnel vision is a term used to describe the inability to see objects peripherally because peripheral vision loss has an impact on

the ability to evaluate and avoid potential threats (Younis, Al-Nuaimy Rowe, & Alomari, 2019). A variety of assistive navigation systems for wearable and portable devices have been developed to aid people with this type of vision problems. Most of these aids are designed to recognise obstacles and then give safe navigation courses for visually impaired people without considering the degree of danger.

3.3.3 Blurred Vision

Even with the most advanced traditional eyeglass correction, fuzzy vision makes both close and far objects appear out of focus. Students may use the term hazy vision to refer to a range of ocular issues, hence caution is advised to assist evaluation (Zhou et al., 2020). Blurred vision is defined as a lack of clarity or sharpness in eyesight. Low vision is a mild-to-severe kind of vision impairment in which best corrected visual acuity ranges from less than 6/18 in one eye to 3/60 in the other (Sodhi, 2020). A low vision subject may be able to use his/her residual eyesight to execute routine chores. Retinal disorders, glaucoma, and corneal diseases can all cause low vision.

3.3.4 Generalised Haze

A film or glare may appear over the whole visual area due to generalised haze. Many computer vision applications require image de-hazing (Gao, Liu, & Ma, 2018). However, removing intense haze from a single photograph remains a difficult task. Due to the availability of many visible night light sources with varied hues and non-uniform illumination, night haze removal is a seldom-posed problem (Kuanar et al., 2022). These light sources come in a variety of designs and add a distinct glow to night sceneries. Several ways of removing haze, which is a difficult exercise, have been devised (Ma et al., 2022). However, most of these remedies rely on several untested assumptions and manually-determined parameters, limiting their applicability to many contexts. Furthermore, haze reduction rarely considers temporal information within time-series photos.

3.3.5 Extreme Light

When normal levels of lighting overwhelm the visual sense, a washed-out image and/or glare may result. Light can cause pain or discomfort for people who are sensitive to it. It was found that light, whether abundant or scarce, can cause a wide range of photomechanical changes in crustaceans' complex eyes (Brodrick, 2021). Also, the visual system of the fiddler crab is frequently used as a model to investigate many elements of crustacean vision and neural pathways. Phillips et al. (2019) discovered that humans are generally sensitive to evening light. At 30 lux, which is

comparable to or lower than typical indoor lighting used at night, as well as light emitted by electronic devices, melatonin was suppressed 50%. Individuals' sensitivity to dusk light varied by almost 50 times. Differential vulnerability to circadian disruption and its subsequent impact on human health may be explained by inter-individual variations in light sensitivity.

3.3.6 Night Blindness

The inability to see outside at night, even under starlight or moonlight, or in poorly illuminated inside spaces such as movie theaters or restaurants, is known as night blindness. Congenital stationary night blindness with myopia (CSNB) is a condition in which the scotopic system is abnormal (Varin et al., 2021). Night blindness is the initial clinical indication of vitamin A insufficiency, characterized by inability to see in dim light (Bantihun et al., 2020). Congenital stationary night blindness is a rare, non-progressive inherited retinal disorder that can be clinically detected using fundus and electroretinogram abnormalities (Mahmood et al., 2021). Congenital stationary night blindness (Establish et al., 2019), is a clinically and genetically diverse retinal condition that is generally regarded as non-progressive or minimally progressive. The CSNB is diverse, showing all forms of inheritance, like other inherited retinal illnesses.

3.4 POSSIBLE CAUSES OF VISUAL IMPAIRMENT

3.4.1 Cataracts

A cataract is a clouding of the eye's lens and is the leading cause of blindness globally (Dawson,2021). Cataracts can develop at any age and for a variety of reasons, including being present from birth. A cataract is induced by the presence of high-molecular-weight (HMW) particles that disrupt the lens microarchitecture (Shiels, & Hejtmancik, 2019). Genes associated with hereditary cataracts include lens crystals, connexins, growth factors, membrane proteins, intermediate filament proteins, and chaperones. Murthy et al. (2010) discovered that the most prevalent cause of bilateral blindness (82.6%) was a cataract in one or both eyes, followed by retinal disorders (8.9%). Cataracts (50.3%) and refractive error (35.4%) were the most common causes in eyes with visual acuity ranging from 20/63 to 20/200, and refractive error (86.6%) in eyes with acuity ranging from 20/32 to 20/63.

3.4.2 Glaucoma

Glaucoma is a group of eye illnesses affecting the optic nerve, which is essential for normal vision. This type of damage is commonly caused by extremely high pressure in your eye. Glaucoma is

one of the most common causes of vision loss among persons over the age of 60. The human eye is a complex and fragile organ, making therapeutic efficacy problematic (Yadav, Rajpurohit, & Sharma, 2019). Additionally, glaucoma is caused by an increase in intra-ocular pressure in the aqueous humour, which is not only indecipherable, but can also cause blindness in many people. Primary open-angle glaucoma (POAG) is the most frequent type of glaucoma and the second leading cause of permanent vision loss in the United States (Faralli, Filla, & Peters, 2019).

Glaucoma is a neuro-degenerative eye illness that causes optic neuropathy and visual disturbances due to the cupping of the optic disc and degeneration of the optic nerve fibres (An et al., 2019). For open-angle glaucoma (OAG), reducing intraocular pressure (IOP) is an effective evidence-based treatment to maintain a good quality of life, but requires early diagnosis and effective IOP control. In today's ageing society, this is even more critical.

3.4.3 Cortical Visual Impairment

Cortical visual impairment (CVI) is produced by the brain; it is an accessibility issue in which the eyes can see but the brain cannot comprehend what they see. A disruption in the brain's visual cortex or peripheral visual pathways causes cortical vision impairment (CVI), which can be temporary or permanent. Higher order visual dysfunction is caused by damage to the retro geniculate visual pathways and cerebral structures involved in visual processing (Kran et al., 2019). Regrettably, CVI has become the most common cause of substantial vision loss in children in industrialised nations, yet it remains an under-recognized cause of visual impairment in terms of interventions geared at maximising visual development.

In industrialised countries, cortical visual impairment (CVI) is the most common cause of childhood visual impairment (Chang & Borchert, 2021). There is currently no standardised approach to visual assessment for developing children who are unable to engage in exams. A wide spectrum of visual dysfunctions known as cortical or cerebral visual impairment (CVIs) can affect learning and social interaction (Chokron, Kovarski, & Dutton, 2021). The current review describes CVI and gives instances that will be useful to pediatricians, student psychiatrists, and student neuro-psychologists who work with students with visual impairment.

3.4.4 Infections

Pain, poor vision, and a red eye are common symptoms of ocular infections among students. Conjunctivitis is the most frequent eye infection seen by primary care physicians, yet it seldom

leads to visual loss. Eye infections have become a major medical concern in recent years, with conjunctivitis and keratitis being the most prevalent treated illnesses (Ghafoorianfar et al., 2020). Because of poor ocular absorption, short ocular residence times, a significant risk of antibiotic resistance, and occasional allergic reactions, standard drug delivery mechanisms have failed to combat the condition. Blindness and vision loss are possible outcomes of fungal eye infections; hence, the condition is most common in the tropics, while cases in temperate climates are also on the rise (Walther et al., 2021).

Infections of the eyes can cause vision loss or impairment, which can be severe (Woreta et al., 2022). The presence of bacteria causes harm to the eye's structure. Thus, for efficient treatment of eye infections, rapid identification of the causative agents and testing of their therapeutic susceptibility are required. Eye infections are treated differently than other bodily infections that require systemic antibiotics (Kowalski et al., 2022). Endophthalmitis, keratitis, conjunctivitis, and other eye infections are treated using topical drops and direct injections to the infection site.

3.4.5 Malformations

Congenital abnormalities, congenital illnesses, and congenital malformations are all terminology derived from birth defects. They are structural or functional abnormalities (e.g., metabolic disorders) that develop throughout intrauterine life and can be detected prenatally, at birth, or later in infancy, such as hearing impairments. Congenital refers to a condition that occurs at or before birth. Arteriovenous malformations of the brain and spine are congenital abnormalities that can result in cerebral hemorrhage or permanent impairment, especially in children and teenagers (Hong et al., 2019). Errors in the acidogenesis process cause vascular malformations. They are present at birth but may not show up until later in life (Carqueja, Sousa, & Mansilha, 2018). Malformations of the head and neck are the most common, but they can occur anywhere in the body. Arteriovenous, venous, capillary, and lymphatic vessels are the most common. When there are multiple types of vessels, combined abnormalities arise.

3.4.6 Ocular Trauma

In the developed world, ocular trauma is one of the least known causes of vision loss. Cataracts and glaucoma can be caused by blunt or penetrating ocular damage. Unilateral blindness is mostly caused by trauma. Traumatic brain injury (TBI) is a leading cause of death and morbidity throughout the world (Das et al., 2019). The visual system is typically impacted by TBI, resulting in whole or partial vision loss, which has an impact on quality of life. It can also cause ocular

movement dysfunction, accommodation problems, and visual perception problems. Ocular trauma is the leading cause of unilateral loss of vision in underdeveloped nations, blinding about half a million people and partially blinding many more (Odebode et al., 2005). Monocular poor vision and blindness are commonly caused through eye injury (Sahraravand et al., 2020); tools used at work, at home, and during leisure time are main causes of largely preventable eye injuries that can lead to difficulties in life.

3.4.7 Optic Nerve Defects

The optic nerve consists of almost one million nerve fibres. Each eye's optic nerve transmits visual information to the brain via nerve signals. Vision loss is caused through damage to the optic nerve pathway. Optic atrophy is unique among eye illnesses because of its severity, which frequently results in significant vision loss (Vasyuta & Pedachenko, 2019). Furthermore, OA has several causes and is the result of various degenerative alterations along the optic pathway. Degeneration, edema, poor circulation, and compression of or traumatic damage to the optic nerve and its supplying arteries can all cause atrophic alterations. The optic nerve defect is a characteristic of the posterior ocular fundus that allows retinal ganglion cell axons to exit as retinal blood vessels enter and exit (Wang, Panda-Jonas, & Jonas, 2021). Optic nerve hypoplasia is a non-progressive condition characterized by poor vision and a small number of optic nerve axons; it can be unilateral or bilateral, single or in conjunction with other anomalies (Frisén & Holmegaard, 1978).

3.4.8 Retinoblastoma

Retinoblastoma is a form of retinal cancer. The retina is the light-sensitive layer at the back of the eye. Retinal eye cells grow fast in the early stages of a baby's development but then stop developing. In rare cases, one or more cells continue to grow and form retinoblastoma, a cancer. The most important goal in the treatment of retinoblastoma is to save the student's life (Warda et al., 2022). Retinoblastoma is the most frequent type of juvenile intraocular malignancy (Shields & Lally, 2019) which is a type of cancer that affects the thin nerve tissue behind the eyes (the area that is sensitive to light) and is mostly found in students (Andayani et al., 2019). Lastly, retinoblastoma is a form of disease caused by a genetic mutation that can affect one or both eyes

3.5 POSSIBLE SIGNS AND CHARACTERISTICS OF VISUAL IMPAIRMENT

The degree of visual impairment, age of onset and cognitive, linguistic, mobility, social, and emotional development influence the quality of progress regarding students with visual

impairments (Mboshi, 2018). Students with visual impairment do, however, have educational potential. The degree of a student's visual efficiency determines the ease or difficulty of achieving success. The following are characteristics of students with visual impairment:

- their cognitive abilities are comparable to those of sighted peers,
- they are unable to employ sight to aid their conceptual growth,
- their tactile experience influences the creation of their conceptions,
- they are unable to communicate using visual image,
- they may display stereotypical movements such as rocking or wiping their eyes,
- they are reclusive, reliant, and unable to read nonverbal clues,
- they struggle with spatial information and visual imaging,
- they cannot pick up or locate little objects, and
- red eyes and puffy eyelids are common physical signs (Mboshi, 2018).

Additionally, watery or discharge in eyes, uneven eyes, drooping eyelids, and crusts on the lids between the eyelashes are all signs of an infected eye. In addition, sufferers are unable to coordinate their eyes and hands, thus they have difficulty distinguishing similar-shaped letters, numbers, or alphabets (in words) such as *b* and *d*. They also find writing difficult or impossible, and they struggle to read books within the typical range, causing them to bring the book/object closer to their eyes. As normal eye function decreases with age and the likelihood of having eye-related diseases rises, thus visual impairment in elderly persons is a serious health problem (Tantirattanakulchai & Hounnaklang, 2023).

3.6 DEVELOPMENTAL PROCESS AND IMPACT OF VISUAL IMPAIRMENT

In the developed world, cerebral visual impairment is now the most common cause of visual impairment affecting students (McDowell, 2021). The number of students with visual impairments will continue to rise due to improved survival rates of pre-term newborns and other early detected brain diseases such as cerebral palsy, hydrocephalus, and periventricular white matter injury. As a result, the attention must shift to establishing effective strategies for assisting the expanding number of students who suffer from this condition. Kizilaslan (2019) established three levels of instructional design efficacy for teaching concepts to students with visual impairment. The first stage determined the visual impairment of students' learning needs about notions of matter structure which precipitated the second stage - the design and development of educational materials and activities. The instructional design's effectiveness was assessed in the third stage.

According to the WHO (2001), 1.4 million students with vision impairment (VI) are chronically blind and will be so for the rest of their life. According to the International Classification of Diseases (ICD-10): H54(9), moderate VI (visual acuity of 6/18-6/60) and severe VI (visual acuity of 6/60-3/60) are classified as 'low vision', which, along with total blindness (visual acuity of 3/60 to no light perception), encompasses all VIs (Mohanty et al., 2019). According to Pueyo et al. (2020), 70% to 80% of the world's 19 million schoolchildren with vision impairment may have been successfully treated if identified early on. Vision screening in youth is a cost-effective and evidence-based method of detecting vision impairment; however, present screening programmes have significant drawbacks, including the need for extensive training, a lack of modern screening tools, and the absence of cooperation from young children. (Pueyo et al., 2020).

Jones, Bartlett and Cooke (2019) discovered that students with visual impairment are more likely to be undernourished as they have challenges shopping for, preparing, and eating meals. Their quality of life is said to be low. Further, and lamentably, students with visual impairment are more likely to develop the Coronavirus-2 disease that causes acute respiratory syndrome than students without visual impairment (Senjam, 2020). This could have a significant impact on students with visual impairment, possibly putting their lives at risk. Visual impairment is a serious concern for health professionals and students whose daily activities require normal eyesight (Getnet et al., 2021). It causes medical, psychological, and socioeconomic problems for the patients as well as the nation, if it is not treated expeditiously. In sum, vision loss has a reverberating impact on people's lives, including their families, friends, and society in general.

3.6.1 Personal Impact of Visual Impairment

Individuals with vision loss frequently exhibit depressive symptoms (Onuigbo et al., 2019). By exposing TVET college students with visual impairment to a variety of intervention skills that would enable them to manage depressive symptoms could be a significant channel for them to feel less dejected and more energetic, allowing them to succeed in their academic pursuits. This affects their families and the general community (Atowa, Hansraj, & Wajuihian, 2019). When it is endogenous at birth or shortly after, it has a greater impact on development and learning than when it is acquired later in life (Atowa et al., 2019). Vision loss in youngsters leads to depression which has an impact on their scholastic opportunities, professional choices, social lives, and their ability to complete several reading-related tasks.

However, adaptive behaviours are beneficial in that they allow students to function independently (De Haan & Dale, 2019). Also, unpredictable vision issues are a major cause of decreased academic achievement, daily underperformance, and low self-esteem, (Falkenberg, Langaas, & Svarverud, 2019). Unfortunately, even though most vision impairment is easily treatable, it receives little attention from national health care services at TVET colleges. Since reading is an important function of social engagement because it enhances independence, communication, cognitive agility, and the general quality of life, central vision loss treatment is necessary to halt macular degeneration which is a common cause of sight-reading loss which has implications for TVET colleges where students rely on sight to perform optimally in their studies.

3.6.2 Economic Impact of Visual Impairment

For students with visual impairment who rely on the tactile and hearing senses for learning, contemporary techniques of teaching are not effective (Sardana et al., 2019). Hence, tactile and auditory approaches were found to be beneficial in educating and motivating students with visual impairment; for example, when learning about oral hygiene (Kurtovi & Ivani, 2019). Because visual impairment can lead to a loss of functional ability, the need for accommodations and assistive devices, or the need to rely on others for assistance becomes evident. As a result, feelings of melancholy, reliance, inadequacy, and dread may arise, thus putting a person at risk for depression and reducing life's pleasures and career opportunities. Moreover, access and inclusion in educational settings might be disregarded pertaining to students with vision impairment because infrastructure and facilities are typically designed for those who can see (Cain & Fanshawe, 2019). Also, many factors that contribute to the creation of an inclusive and safe learning environment such as school culture, behaviour management, and curriculum, are presented in a visual format. According to Castle, Greasley and Burland (2022), visual impairment can affect students' economic and social progress. For instance, despite evidence of the importance of music in many people's lives and the health advantages connected with musical engagement, these VI people's musical lives have rarely been studied, thus stifling their future work prospects.

3.7 ENHANCING LEARNING ENVIRONMENTS FOR STUDENTS WITH VISUAL IMPAIRMENTS

Students with visual impairments and blindness in digital library environments are vulnerable owing to design flaws that hinder them from interacting with content features (Xie et al., 2020). The frequency of assistance-seeking scenarios for blind and visual impairment users is reduced by

designing digital library help features based on their needs. Supplementing help tools will make it easier for users to interact with digital libraries. Abdollah et al. (2020) studied the benefits of external versus the internal focus of attention for improving motor performance and learning in a variety of tasks, situations, and populations, and found that instructions that encourage an exterior focus rather than an internal one improves both discrete and continuous motor skill performance in people with visual impairment.

Students with visual impairment have a difficult time learning (Cheng & Lai, 2020). Researchers have recommended technology-supported solutions to promote students with visual impairment's adaptability to the learning environment to achievement improvement in their learning endeavours. As a result, the use of technology-assisted special education has risen steadily in recent years. However, there is currently a dearth of research concerning the use and development patterns of using technology in special education. Nowadays, technology is increasingly used to support the learning process based on the needs of students. In higher education settings, students must use their own devices to record attendance and engagement in classes using online systems and other teaching-learning resources such as schedules and virtual learning environments (Jdaitawi & Kanaan, 2022). Real-world applications of digital technology such as augmented reality, have been introduced in a variety of disciplines, yielding a variety of benefits. For the past few years, digitisation has been employed in higher education to improve the physical, cognitive, personal, and social abilities of individuals with special needs. However, further research is needed to determine how digital tools can help children learn more effectively in virtual spaces.

In STEM education learning environments play a significant role in instructional interventions and research (Duijzer et al., 2019). Students' physiological experiences are important in learning journeys, and thus of learning, in digital environments. Examples of modifying the learning environment by utilising ICT tools for students with visual impairment are outlined below (Pogrund, 2018):

- Use furniture, rugs, and coloured tape, divide the classroom into subject divisions such as music, work, and snack spaces;
- Arrange furniture so that it is not strewn about the room, but is always in the same spot;
- Designate areas within learning spaces for materials and toys;
- Always return materials to their proper location;

- Remove visual clutter from the classroom and cover open shelves with a solid-coloured cloth to reduce distractions;
- To reduce glare from overhead illumination, use non-reflective surfaces;
- To concentrate on a given task, use individual illumination; and
- To prevent distractions and discomfort from the light, seat a student with his or her back to the window.

Regrettably, traditional manipulatives are limited for students with visual impairment (Marichal et al., 2022). It is possible that digitally complementing manipulatives with input via alternative modalities may improve the situation. It is recommended that utilising haptic and auditory channels in a setting that encourages inquiry and supports active touch-counting techniques, will benefit students with visual impairment.

3.8 MODELS OF DISABILITY

Several disability models have been discussed in the literature review. They are the moral/religious, medical, welfare/charity, social, and human rights models (Durham and Ramcharan, 2018). According to the moral/religious concept, disability is viewed as a punishment from God for failing to follow His principles or as a challenge to faith. Disability is viewed as a disease or a tragedy in the medical model which leads disabled people to be seen as being pitiful with no expectation of them contributing meaningfully to society. Persons with disabilities are viewed as victims of their impairment who require assistance, services, and institutions under the welfare/charity model. These models differ from the moral model in that they promote the compassionate treatment of people with impairment (Retief & Letsosa, 2018, p. 6). The charity, social, medical, and human rights models were chosen for this study and are discussed below.

3.8.1 Charity Model of Disability

The charity approach to disability is viewed as beneficial to disabled people, but it does not regard disabled people's experiences and expertise as vital or relevant. This technique involves well-intentioned 'do-gooders' working on our behalf without our knowledge because we have little control over the situation. Individuals with disabilities have largely rejected the charity model in favour of one based on human rights (Masters, 2022). This paradigm was chosen due to the ongoing breaches of the rights of people with disabilities. Bhanushali (2007) focuses on the changing face of the disability movement, from treating people with disabilities as a sin, to treating them with charity and granting them equal rights and equal opportunity.

The charity model was based on ideas of divine justice, human beneficence, and care for the disabled which resulted in their segregation from the rest of society in practice (Griffo, 2014), whereas the medical model saw justice as treatments or compensations for individual pathologies rather than positive enablement for active living. The concept of disability evolved from the charity perspective to being rights-based, implying that it is a major public health issue that affects people globally (Haque, 2020).

3.8.2 Medical Model of Disability

According to the medical model, disease is diagnosed and characterized through a systematic process of observation, description, and distinction, employing standardised techniques such as medical examinations, tests, or a set of symptom descriptions. The medical model of disability has long influenced public and professional views regarding impairment, depicting it as a disorder that exists solely within a person's body and can only be treated by medical specialists. The medical model is utilized to legitimise a wide range of educational practices in special education, having a considerable impact on special education approaches and strategies (Massoumeh & Leila, 2012). This model is founded on the idea that all learning difficulties are caused by an illness or an organic disease. According to Massoumeh et al. (2012), the medical model is a powerful explanatory force that deserves to be investigated for its role in the evolution of special education teaching methods.

3.8.3 Social Model of Disability

The social model was created by disabled individuals. It was partly due to society's reaction to them, but it was also owing to their interactions with the health and welfare systems, which left them feeling socially isolated and subjugated. People with special needs require a stronger social model that serves as a bridge to a society that enables and protects their rights: the right to a dignified existence as well as the right to live in an environment that allows persons with disabilities to thrive (Bergh et al., 2019). The social model emerged in response to the medical model, which had become ingrained in society (Eneya & Mostert, 2019). The social model distinguishes between impairment and disability; impairment is considered an attribute resulting from an injury, genetic makeup, or disease, whereas disability is a socially produced reality. According to the social model, persons with disabilities are disabled because society was built for able-bodied people without concern for those with impairments, and hence discriminates against them (Oliver, 1990). However, within disability studies, the social model has been almost as strongly criticised as the medical model.

3.8.4 Human Rights Model of Disability

Human Rights is a set of ideals relating to fairness and equality. These principles are founded on what people across the world feel are necessary for living a happy life devoid of fear, discrimination, and harassment. Students with disabilities have a basic human right to engage in education at the same level as students without disabilities (Krol, 2019). The global conversation around human rights, universal education, and inclusive education has shifted social norms around disability and education (Ensi Mau et al., 2019). According to Carroll et al. (2018), everyone has the right to freedom of opinion and expression; however, this may not be the case for those with communication disabilities.

3.9 DIFFERENCE BETWEEN VISUAL IMPAIRMENT AND BLINDNESS

Visual impairment (VI) is a comprehensive word that refers to a wide range of people with vision problems, from low vision to blindness (Ejiakor et al., 2019). This suggests that anybody with a vision problem is visually impaired. According to Kim (2021), being visually impaired means having a vision insight of less than 20/70. If one's visual insight is this poor, it means that their sight cannot be enhanced by ordinary glasses or contact lenses, yet they can see something, even if it is just slightly (Wood, 2020). When a person is unable to see anything, including light, the condition is referred to as blindness (Wood, 2020). Individual blindness is defined as either entirely blind or completely blind. When one is partially blind, one can see something; but when one is completely blind, one is unable to see anything at all (Due & Lange, 2019). Blindness is defined by Steinmetz et al. (2021) as sight of less than 3/60 or a visual field of less than 10. This understanding embraces both partial and complete blindness. According to Haegele, Zhu and Holland (2020), total blindness is vision of less than 20/200 which means that such a person cannot see at range of about six meters to what a normal person can see at about 70 meters. People with visual impairments are classed based on their insight and field. This insight helped the researcher better understand TVET college lecturers' learning journeys, particularly when it came to teaching strategies for students with visual impairment.

The definition of visual impairment is as follows: “loss in the capacity to see to a certain degree that produces issues not fixable by ordinary means, such as spectacles” (Kizilaslan, 2020, P,82). The inability to see can be because of an accident, disease, or a hereditary condition (Charmaz, 2020). According to Bonsaksen, Brunes and Heir (2022), students with visual impairment tend to be at a higher risk of enduring potentially traumatic life events and developing post-traumatic

stress disorder (PTSD). Students with visual impairment face a variety of difficult challenges in their daily lives that most people find to be simple (Huang, Wu, & Liu, 2022). Therefore, depression and anxiety have both been linked to visual impairment. Also, students with congenital blindness had a lower accuracy rate than students with acquired blindness, and their performance was poorer than that of sighted students (Chen et al., 2022). Furthermore, students who were born blind demonstrated the slowest recognition speeds. Finally, due to accessibility difficulties, blind students may have reduced learning effectiveness, motivation, and engagement in science-related courses.

3.9.1 Visual Impairment: Differentiation

3.9.1.1 Partially-sighted

A person with partial vision in one or both eyes is described as having this condition. Audio description has generally been aimed toward assisting blind and partially sighted students (Bestard-Bou & Arias-Badia, 2022). Three-dimensional printing has been utilised to help blind and partially sighted students participate in educational, cultural, and social activities by enabling access through touch (Karaduman, Alan, & Yiğit, 2022). Digital literacy is a requirement for first-year higher education students as well as persons with visual impairment to fully engage in society and overcome some educational barriers (Arslantas & Gul, 2022). This study's intention was to explore lecturers' learning journey of teaching students with visual impairment because such students frequently struggle with emotional issues and have difficulty creating and sustaining social relations (Manitsa & Doikou, 2022).

3.9.1.2 Low vision

Visual acuity of 20/70 or below is considered severe. Neither glasses nor contact lenses can help here. Depression and anxiety are prevalent in students with visual impairment including the blind, but they typically go untreated (Munster et al., 2022). Additionally, indoor navigation is difficult for those with low vision, even if they can benefit from visual information (Chi, Niu, & Sawabe, 2022). Consequently, many academics have proposed various techniques to increase VI students' navigation efficiency and accuracy, such as providing an audio cue as an aid. However, the visual rating has been overlooked, even though it is critical in providing high-quality assistance to people with various visual impairments. It has been proven that audio-based navigation devices can aid with the navigation, mobility, and orientation of those who are blind or have low vision (Liu et al., 2022). Since the daily lives of people are hampered by visual impairment through damage or

disease to the optical system which can occur anywhere along the visual pathway, better interventions through science should be explored to make the lives of students with visual impairment more comfortable to successfully pursue academic goals at TVET colleges (Dhaded et al., 2022).

3.9.1.3 Legally blind

Being legally blind indicates that a person's better-seeing eye has a corrected vision of 20/200. A person who is blind is unable to detect light and rely on guiding gadgets and human help to compensate for their lack of vision (Cortez, Valenton, & Ibarra, 2022). According to Rafiee et al., (2022) night blindness occurs through the narrowing of the visual field, loss of retinal pigment epithelial function, and tubular vision which are all symptoms of retinitis pigmentosa. People fear total blindness more than any other disability (Dowling, 2020), and studies on retinal disease show that it is currently the primary cause of permanent blindness. Defects in the optical media (lens and cornea) that transmit and focus light rays onto the retina may usually be corrected surgically, but such procedures are not available in some regions of the world, leaving up to 20 to 30 million legally blind persons. Although technology has improved the lives of students with visual impairment, readers who are blind or have poor eyesight may have difficulties viewing infographics, limiting access to knowledge, which is a fundamental human right required for independence and inclusion.

3.9.1.4 Blindness

This is when you lose your sight completely. Total blindness is a term used to describe those who have completely lost their ability to perceive light, also known as 'no light perception' (Lee & Mesfin, 2017). Statistics show that only approximately 15% of persons with eye problems are entirely blind; the majority of people with visual impairment have some eyesight. Blindness can reduce students' learning effectiveness, motivation, and involvement in science courses (Chang et al., 2022). Merugu and Ghinea's (2022) study, in cooperation with a World Health Organization vision evaluation (2019), discovered that at least 2.2 billion people worldwide suffer from visual impairment. Furthermore, Government of India's National Blindness & Visual Impairment Survey 2015-2019, the overall estimated prevalence of blindness in people aged 50 and up is 1.99%, and the overall estimated prevalence of people with visual impairment in people aged 50 and up is 13.76% - such figures are concerning and necessitate urgent intervention innovations in the ophthalmic sciences.

3.10 NAVIGATING TVET COLLEGES WITH VI STUDENTS

Despite the efforts of the National Government, non-governmental organizations (NGOs), and educational institutions, children with visual impairments do not have equal access to Post-School Education and Training (PSET) in South Africa. Globally, higher education institutions are recognising their responsibility to ensure the full inclusion of students and personnel with diverse needs and/or disabilities (Ferguson et al., 2019). Students with disabilities in higher education must notify their institution so that they can obtain a variety of reasonable accommodations to help them learn (Grimes et al., 2019). In the United States, 5.8% of university students disclose their condition to their institution of learning (Grimes et al. 2019). It is assumed that there is a larger community of students who choose non-disclosure, and hence do not qualify for help. Even though much has been done to improve legislation for students with visual impairment (DHET, 2018), there is minimal research on TVET colleges concerning VI students, especially policy issues (Allais & Wedekind, 2020).

Moreover, for most of their lives, students with visual impairment had to learn on their own how to function as students with special needs. This led to problems as they made their way along the ‘journey’ to college; but fortunately, they already learnt how to make learning adaptations. At some TVET colleges they created a low-tech, low-cost, sturdy, and unobtrusive navigational travelling aid to supplement the use of the white cane for those with visual impairment (Ramadan et al., 2022). This gadget incorporates ultrasonic range-sensing with proportionate vibrational output. In addition, a navigational aid was developed - a sensing belt with independent ultrasonic distance sensors. These instruments assist VI students regarding independent indoor navigation, especially in unfamiliar environments (Najjar, Al-Issa, & Hosny, 2022). Such technological advances, particularly in mobile computing, can provide technical aid to students with visual impairment in their daily chores, thus improving their quality of life by facilitating their integration into society.

3.11 STRATEGIES OF TEACHING STUDENTS WITH VISUAL IMPAIRMENTS

An inclusive classroom, instruction is a process that necessitates the creation of activities that satisfy learning objectives. All instructional activities, particularly those for students with special needs, must be adapted to their unique characteristics, learning styles, and skills (Taole, 2020). Lecturers must prepare creative lessons that arouse interest in learning, knowledge, and social skills to benefit all students. Also, lecturers must be capable of creating and implementing

successful instructional strategies for all students. Lecturers must select teaching strategies that will improve both the academic and non-academic skills of all students. The selected instructional techniques must provide students with learning experiences that are immersed in discussions, problem-solving, and joint decision-making to promote meaningful learning activities (Allais & Wedekind, 2020; Kou et al., 2020).

3.11.1 Multi-sensory, Kinesthetic, and Tactile Learning

Students with visual impairment learn using their senses of touch, taste, smell, and hearing (apart from vision). While reading literature on learning via the senses, the sense of touch (tactile) was deemed the best to use in a teaching strategy for children with visual impairment. Baker (2020) describes it as kinesthetic learning, Chun et al. (2019) as tactile learning, and Heller et al. (2019) as a multisensory method. These authors believe that teaching pupils with visual impairments using the sensation of touch is the most successful approach. This type of learning promotes meaning that is linked to touch, feeling, or movement of the body. Through their sense of touch, students tap into information about objects. For example, a student can understand a map by highlighting the limits of the thread (Curwen, Ardell, & MacGillivray, 2019). Elli, Bedny and Landau (2021) explain that VI students should be capable of touching an object since this allows them to 'see' what their sighted classmates see. When VI students physically feel an object, they are more likely to form a mental image of what that object looks like. Papavlasopoulou, Giannakos and Jaccheri (2019) caution lecturers about forcing students to touch an object if they do not want to. The use of the 'hand-see' approach to communicating statistical formulas to blind students was recommended in a study on teaching preliminary statistics (Fakhri, 2020). Furthermore, the lecturer develops a 3-dimensional normal distributor for students to grade statistics data formulas, as well as a graph to help people with visual impairments grasp statistical data. Students with visual impairment feel the distributor as it changes slope and goes away from the mean in either direction. The pupil is more likely to understand what the thing is and its statistical calculations after experiencing the dimension.

3.11.2 Auditory Learning

Many researchers propose the auditory learning method (Rahayu, Suryani, & Zainiyati, 2020), which involves using words to create a picture that interprets or gives meaning to the words (White et al., 2020). This means that spoken words form 'visuals' that convey meaning. According to Khoza (2015), lecturers' teaching is relevant and gratifying when they provide an environment in

which students can develop their own interpretation of what is being taught. For diverse people, meaning is always established differently, and in distinct ways (Titchkosky, 2020). As a result, meaning is never stable and instead varies depending on the context; for example, a message received creates a different picture in the mind of a pupil with a visual impairment since we interpret information differently.

According to Judd (2020), the first step in effectively using the auditory learning method is for lecturers to assess the nature of the student's visual impairments during an informal, private talk with the student and parents. Being a researcher, getting to know the student will help determine how to assist in his/her studies. Judd (2020) adds that lecturers who teach VI students should exercise extra care when presenting material to accommodate these students. For these students, it is essential to clarify terminology concretely, especially when it comes to graphs. Joseph et al. (2019) advise that lecturers should not use for students with visual impairments, ambiguous directional cues like this, that, here, or there might make learning difficult. In most cases, due such students are automatically excluded from receiving information. According to Ramadhan, Sukma and Indriyani (2019), language should be utilized appropriately to define terms to build a mental picture of what is being told, and it is recommended that when presenting information, one be precise and speak clearly at a moderate tempo to allow students to develop mental images. According to Morris, Swinnerton and Coop (2019), lecturers should read aloud to help students absorb information from the textbook and record the class on their devices. This encourages lecturers to pronounce words correctly and slowly so that students may comprehend them when they listen to them later on audio devices. While reading aloud is useful in class, it is not appropriate for examinations (Sato, 2019) since it may create a distraction for others.

Even though the two methods are recommended as being the best for students with visual impairments, lecturers should devote time to understanding them to apply them in class. However, for visual students this is monotonous because the content should be repeated to assist students with visual impairments to develop their image. In other words, because sighted students have already grasped the information, repeating it may cause them to become bored (Hughes, Costley, & Lange, 2019). According to Abdullaeva and Gafurova (2021), these methods require lecturers to do extra work such as modifying classes, homework, and exams to suit students with visual impairment. Unfortunately, adjustments to lesson plans, homework, and final examinations to accommodate students with visual impairment may increase lecturers' workloads, leading to negative attitudes toward students with visual impairment.

3.11.3 Storytelling as a Teaching Strategy

The storytelling (narrative) teaching strategy in its most basic form is a means by which a culture passes on to the next generation what they have found to be useful (Miller & Pennycuff, 2010). The curriculum can be thought of as a specific medium for delivering a tale about the world by using this strategy. When the narrator narrates the story with diverse gestures and variations in moods, volume, and sound, narration as a tactic becomes more interesting to students with visual impairments. Therefore, the narrator (the lecturer) must be well-versed in various techniques of voice production to elicit VI students' responses. Since narratives involve a series of related events or experiences, whether nonfictional or fictional, a sequence of written or spoken words, tale can be told using still photographs, moving visuals, or a combination of both. Lecturers' knowledge of schools and classrooms as personal stages captures the idea of experience in a way that allows us to talk about them as informed and knowing people (Clandinin, 2019). The curriculum can be thought of as a specific storehouse to deliver stories about the world when teaching through the narrative strategy. The lecturers' narrative of characters and events through time and space imprints a pattern of images in students with visual impairment' minds that enhances knowledge-acquisition that leads to better outcomes.

Further, different pedagogical methods must be employed to increase the literacy levels of all students. In this regard, storytelling improves orality, language skills, reading comprehension, communication, and writing skills to improve VI students' academic performance (Cherawati, Musthafa, & Cahyani, 2019). Hence, lecturers who teach students with visual impairments must possess the necessary skills and knowledge to implement creative and innovative strategies to ensure that the narrative method is effectively implemented. Although the *No Student Left Behind* (NSLB) initiative made significant progress in improving children's literacy levels, many students still struggle to meet the required standard of reading. According to experts Kizilaslan, Zorluoglu and Sozbilir (2021), the following should be considered when teaching students with visual impairment:

- In the situation that students do not understand the lecturer's voice, the lecturer must identify himself/herself.
- When entering or leaving the classroom, the lecturer should make a verbal notification.
- Lecturers should stand under medium lighting, and not with their backs to the window to ensure visibility.

- Clear and audible oral communication is required to indicate what is written on the board or presented on the OHP, particularly charts and diagrams (Ghodke et al., 2019).

3.11.4 Demonstration Strategy

McLain (2021) asserts that demonstrating is a vital instructional strategy in practical topics. It encourages learners' knowledge, observation, and imitation skills, as well as autonomy and technique modification. The demonstration method is a method of delivering information in KBM that includes how to do something with a clear visual explanation (Purwana, 2021). Additionally, the demonstration method can be employed to improve student achievement by identifying problems, defining problems, planning, implementing actions, and assessing the results. Any planned performance of an occupation skill, scientific theory, or experiment is considered a demonstration (Triayomi, 2019). It is assumed that demonstrating an occupational skill is the most efficient method to teach it. The use of the demonstration method in mathematics could help students learn more effectively (Pulungan, 2021). It is suggested that conducting research by using the demonstration method could encourage students to be more motivated to attain quality results. This method also encourages students to be more active and creative in their English studies (Nugraha, 2021). It means that procedure text writing competence has a substantial effect in the experimental class. The result is that students who use the demonstration method have better procedure text writing skills than those who do not. The lecturer must consider the following advice to affect the demonstration teaching method to be successful in improving students with visual impairment' quality of academic performance (Morelle & Tabane, 2019):

- The lecturer should practice or rehearse his/her presentation before the lecture.
- Prepare for any difficult questions, and potential setbacks.
- Obtain all materials, tools, equipment, visual and teaching aids ahead of time and verify they are in good working order.
- Ensure that all resources are readily available and well-organized.
- The demonstration shouldn't last more than 15 minutes.
- Remove all extraneous things, inspect lighting, visibility, student grouping, and closeness to electrical, gas, and water outlets.
- Plan to use the method—start with something small and work your way up to something more sophisticated.

Importantly, the lecturer should ensure that all students can see and hear the lesson while presenting a demonstration method. Maintaining eye contact with the entire class and asking questions promotes focus, allowing students to readily absorb the demonstrated lesson. The use of signs, focus on essential themes, adherence to safety standards, proper instruction, and suitable intervals all motivate students to want to learn more (Nel, 2016).

The Bantu education policy of the apartheid regime deprived Black schools and students of support and materials, while the white minority schools were provided with ample resources in a wholesome learning environment (Mzangwa, 2019). This discrimination that still ripples through present times had a devastating and crippling effect on the Black majority. Fortunately, the major goal of the new democracy's universal education plan, which includes inclusive education, was to create an egalitarian society that meets the requirements of all students, regardless of colour, ethnicity, religious beliefs, or disability. To make this a reality, students' needs must be prioritized, and inclusive education can be considered as a vehicle for achieving equity and high-quality education (Sibanda & Mathwasa, 2020).

3.12 ACHIEVEMENTS AND CHALLENGES OF VI STUDENTS

Visual impairment refers to being partially sighted or being blind. Regarding higher education, students with visual impairment confront several structural and psychological challenges (Selepe & Moleleman, 2022). External elements that contribute to the academic success of visually impaired and blind students include social support, college student services, family and staff support, accessible and disability-friendly infrastructure, and resources, among others.

Although inclusive education was created to deliver successful outcomes, the success of the programme is highly dependent on lecturers who are the curriculum's implementers. Lecturers should be majorly involved to understand the new educational ideology of the new democracy. If lecturers do not believe in themselves or their abilities, they will have no real knowledge and hope to pass on to the next generation. Hence, Asongu et al. (2021), lecturers should be equipped with information and competencies necessary to effectively implement inclusive education policies. Porter (2022) identified proper training, support, and resources as critical necessities to assist lecturers in implementing the comprehensive policy. Importantly, the Government should set aside funds to provide training and resources that lecturers require to attain best practice outcomes (Fakolade, Adeniyi, & Tella, 2017). Accordingly, assistance from all stakeholders is necessary for lecturers to cope with the needs of students with VI. Because lecturers are confronted with students

with a variety of learning difficulties each year, continuous support should be a non-negotiable (Fakolade et al., 2017). For example, a student with vision impairment this year, and a student with a hearing impairment the following year (deaf), require different types of care and support which should be provided on an ongoing basis. In reiteration, to successfully execute an inclusive education policy, adequate infrastructure, relevant resources, and committed and qualified lecturers are priorities (Razmjoo et al., 2021). If these components are lacking, then lecturers' attitudes towards inclusion in their classes might turn to be negative.

3.13 TVET COLLEGE POLICY

According to Sithole, Wissink, and Chiwawa (2022), South Africa's TVET colleges have undergone numerous alterations since 1994, with the reforms resulting in substantial improvements.

In 1994, the TVET strategy in South Africa emphasised the critical role that this sector plays in promoting economic growth and reducing socioeconomic inequalities. Three decades after these laws were first passed and enacted, South Africa's TVET sector has not been able to achieve the country's top aim of lowering unemployment.

One may only enroll as a student at a TVET college if one meets the legal prerequisites for admission to study there, as well as any additional admission requirements that may be stipulated by College Council and outlined in the College Student Code of Conduct.

The Skill Development Act objects to create plans, improve worker skills establish leadership, provide financing for skill development, and control employment services (Jenkins, 2022).

The focus of TVET institutions is to educate and prepare young people for the job market by teaching them the necessary knowledge, skills, and attitudes (Allais, 2022). Therefore, they assist both students who wish to complete their education and young people who wish to enroll in vocational programs following the completion of Grade 9 or Grade 12 in school.

3.14 THE TVET COLLEGE CURRICULUM

The theory-practice combination that has long been embedded in vocational education might migrate to a 'practice-only' programme. Further education and training (FET) colleges are urged to convert their classroom-based curricula to unit standard-based programmes with ongoing assessment, instead of assessment in the form of national examinations. The TVET colleges'

relevant stakeholders must be willing and ready to accept change by striving for excellence in the ever-changing technological environments (Aina & Ogegbo, 2022). Since families, corporations, colleges, and nations are all affected by change which is a continual and significant component of life, what matters is how the transition is managed.

Official policy on the ongoing professional development of vocational teachers was introduced into the South African teacher-training scene in 2013 (Papier, 2022). There were few nationally recognized teacher-training education programs for technical and vocational educators prior to this time. As a result, the new Policy on Professional Qualifications for Lecturers in TVET (2013) sought not only to regulate the employment of educators in the vocational sector, but also to raise the profile of vocational educators, who had previously been undervalued by university and school-based educators. Teane and Gombe's study (2022) discovered that lecturers' and students' low self-efficacy resulted in students being passive in class which contributed to poor student-performance. The Department of Education (DoE) should prioritise professional training programmes for TVET lecturers to promote a conducive teaching and learning environment. One of the most arduous and vital duties for lecturers is evaluating students' work (Atukunda & Maja, 2022), and if lecturers do not know how to change assessment instruction to meet assessment aims and standards, they will not live up to DHET expectations (Atukunda et al., 2022). Hence, TVET college lecturers should understand what to assess, how to assess, and why they assess. This gives a clear message to students about what is worth learning, how to learn it, and how effectively they are expected to learn. The TVET programmes are critical in providing the necessary capabilities which include both academic and non-academic skills to promote youth development career opportunities (Ngware, 2022). Youths who drop out of TVET colleges face a variety of challenges related to the skills gap, including an inability to gain access to the labour market.

3.15 FACTORS FACILITATING THE TEACHING OF VI STUDENTS

3.15.1 Teaching and Learning Support Materials (TLSM)

The availability of teaching and learning support materials (TLSM) in our inclusive classrooms helps to ensure that teaching techniques are improved and successfully implemented. The effective use of computer technology in inclusive classrooms is critical for maximising student with visual impairment potential. Additionally, innovative teaching methods ensure success in inclusive classrooms, and availing assistive devices for students with visual impairment is critical in supporting an inclusive education system. Assistive devices were created to encourage learning

(Ndlovu, 2020), therefore this study intended to contribute to the current debate on the provision of assistive technology and support services for students with visual impairment in low-resource settings, particularly in the HEI sector in South Africa.

Furthermore, technology contributed to the creation of assistive devices for students with disabilities (Beingolea et al., 2021). Specifically, many of these technologies are designed to assist students who are blind or visually impaired to connect with their surroundings in a more engaging way (obstacles, objects, and navigation). According to Fraser (2021), an assistive device is any item, piece of equipment, or product system used to increase, maintain, or improve the functional skills of persons with disabilities, regardless of whether it is acquired commercially, adapted, or customized. However, the astronomical prices of these devices put them beyond the reach of students with visual impairment.

3.15.2 Assistive Devices

Assistive technology can help students with impairment in a variety of ways, including as a teaching tool (Bouck, Park, & Stenzel, 2020). Assistive technology (AT) enables VI students and their able classmates to bridge the gap in knowledge and skills acquisition (Atanga et al., 2020). This, however, necessitates lecturers to become well-trained and skilled in the use of Technology. There are assistive technology services professionals who recommend specific technology tools to specific education programme teams. There are also training-sessions or workshops for developing assistive technology competencies for lecturers. Therefore, the design of an assistive device should not intimidate students and lecturers – it should suit users' functional needs without causing social discomfort. For students with visual impairment, assistive technology is critical for gaining access to information and educational settings (Abualrejal et al., 2021). Therefore, such students who confront numerous challenges at TVETs, can depend on assistive technology to aid them in achieving their educational goals.

Also, the use of assistive technology in teaching students with visual impairment in inclusive classrooms was found to improve the implementation of teaching methods. Therefore, the use of assistive devices is critical in employing effective teaching practices in the inclusive classroom to attain better results for all students. By using assistive teaching technology, students with visual impairment can study, follow instructions, and grasp subject content with ease, thus enabling them to fully participate in the teaching and learning process without many hindrances (Bakken, Putta, & Uskov, 2021). Access to a traditional calculator in inclusive classes is unnecessary due to

advancements in computer technology. Moreover, assistive technology enhances computer access for persons with impairment (Okonji & Ogwezzy, 2019). In addition, students with visual impairment can construct and solve computations with ease with a customised calculator, which features a braille keyboard and a raised display. However, the use of assistive technologies in developing nations continues to lag behind that of industrialised economies.

3.16 CHAPTER SUMMARY

This chapter explored the lecturers' learning journeys of teaching students with visual impairments in KwaZulu-Natal TVET colleges. Relevant literature was perused from different sources such as books, journals, doctoral studies, the internet sites, and policies, among others. This literature study also reviewed the theoretical framework, Vygotsky's (1979) theory of learning journeys and the theory of change by Weiss (1995) underpinned this study. Visual impairment was dissected incisively including types of visual impairment, possible causes of visual impairment, and enhancing learning environments for students with visual impairments, among others. The following chapter (4) discusses the research design and methodology that informed how this study was conducted.

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

In the preceding chapter (3), current literature that was relevant to the topic under investigation was perused and discussed. This study which adopted a qualitative research methodology captured voices of lecturers teaching students with visual impairment.

This chapter (4) focuses on the methods that were employed to understand the learning journeys of lecturers who taught students with visual impairments at a specific TVET college. It begins with a rationale for the research methodology, the interpretive research paradigm, the qualitative research strategy, and the suitability of the research design. A sampling technique that was used is described, and how the study sample was identified and recruited is presented. The background of the participants and their profiling are tabulated. The use of narrative interviews, narrative focus-group interviews, and written narrative reflections to generate data are also explained. This was followed by a discussion on the narrative analysis process. Ethical considerations are outlined as an integral component of the study. The chapter concludes with explaining the limitations of the study.

4.2 RESEARCH METHODOLOGY

To understand the learning journeys of selected lecturers who educated students with vision impairment in a TVET college in KwaZulu-Natal, this study adopted qualitative approach that was informed by an interpretive paradigm. In addition, in qualitative research, specific individuals (a sample) are involved in data generation processes. Furthermore, a researcher's methodology refers to the precise procedures or approaches utilized to find, select, and analyse obtained material concerning the research issue. According to Buenafior, Tabuena and Hilario (2021), the research methodology comprises of processes that a researcher follows to conduct the investigation. This entails the techniques employed to select and analyse data that was required to address the aim, objectives, and research questions of the study.

Three research methodologies that are generally employed are qualitative, quantitative, and mixed methods approaches (Theron, 2015). However, the most comprehensive and effective way of interrogating a social phenomenon is through the qualitative research approach. While a

quantitative approach is formal, objective, and systematic in generating numerical data that enables the researcher to seek a relationship between variables (Hayashi, Abib, & Hoppens, 2019), the qualitative approach elicits the views of study participants to understand a social phenomenon. The research topic is thus viewed through the lens of various selected human participants who have knowledge and experience of the phenomenon under investigation. This study utilised only qualitative research methods because the researcher wanted to understand how the selected participants interpreted the given phenomenon; namely, the learning journeys of lecturers who taught students with visual impairment. Merriam (2010, p. 48) defines qualitative research as “a multi-method approach that tries to explore phenomena in their natural surroundings and [that] attempts to make-sense of events in terms of the meaning individuals attribute to them”. This definition coincided with the purpose of this study which would be achieved via the qualitative research approach because it best unearths the information that was required. Human (2010, p. 9) claims that qualitative researchers gather data using both spoken and written language, after which they analyse this information and group it into themes for manageable and clear data organisation. To obtain the required information for analysis, narrative interviews, narrative focus-group discussions, and written narrative reflections were appropriate to generate the data.

Since the main goal of the study was to discover the learning journeys of lecturers who taught students with visual impairment, a qualitative approach was deemed to be the most relevant and appropriate for this investigation. Moreover, the qualitative approach elicits subjective data that is generated by probing into participants’ responses to obtain rich and deeper insights pertaining to the topic under investigation. Such data is usually generated at a safe venue where the participants do not feel intimidated (De Vos et al., 2011, P. 65). Based on this advice, the researcher visited the participants at their homes and generated data by conducting one-on-one semi-structured interviews using pre-determined questions. The TVET college that was targeted had ten lecturers who all taught students with various visual impairment, but only six of these lecturers eventually agreed to participate in the study. The collected data was generated verbally and not numerically as the researcher aimed to comprehend the participants’ experiences of teaching students with visual impairments in accordance with qualitative research processes.

4.3 RESEARCH PARADIGM

Bertram and Christiansen (2014) and Asghar (2013), the worldview that defines how the researcher demeanours research is entrenched in the adopted research paradigm. A research paradigm is a philosophical framework that serves as the starting point for any research project. According to Creswell (2016), a research paradigm is a group of presumptions, ideals, and convictions about the fundamental elements of reality that give rise to a specific worldview. In other words, it serves as the lens through which a researcher observes and analyses the world. The research paradigm is a perspective on the proper methods for generating, presenting, and analysing data and thus it may be seen as the lens through which issues are viewed and resolved (Kaushik & Walsh, 2019).

The etiological meaning of *paradigm* is ‘a pattern’ in Greek. The term *paradigm* is thus used in educational research to describe the researcher’s perspective or worldview, which is a way of thinking, or a school of thought, that influences how study findings are interpreted or given significance (Kivunja & Kuyini, 2017). The research paradigm inevitably reflects the qualitative researcher’s views on the current world and the one he or she aspires to inhabit. Furthermore, the research paradigm reveals the principles that govern what should be examined, how it should be explored, and how the study’s findings should be interpreted (Kivunja et al., 2017; Reid et al., 2021). This study adopted the interpretivist research paradigm which is founded on the notion that participants in a qualitative study actively participate at every stage of the data collection process. Both the positivist and post-positivist (interpretative) research philosophies, according to Frost (2010), are derived from the Western tradition of science that assumes that humans can think, reflect, and change their behaviour if they are aware that they are being examined (Kivunja & Kuyini, 2017). Therefore, to best utilise the interpretative paradigm, a narrative inquiry methodology, which uses stories as a methodological way of developing narratives of lived-experiences, served as the foundation for data collection procedures (Mashiloane, 2019). This means that the study was located within the interpretivist paradigm so that the researcher could understand the realities of the participants’ learning journeys. Narrative inquiry was thus utilized as a strategy to comprehend the professional and personal realities that the participants attached to their engagements with visually impaired students at the selected college.

The stories that were narrated reflected the participants’ own and authentic experiences (Ntombela, 2019). This implies that, because interpretivism uses a relativist ontology, a same

experience may have many interpretations as perceived by the six lecturers (Alharahsheh & Pius, 2020). According to Kankam (2019), the goal of using the interpretive paradigm is to gain a thorough understanding of the phenomenon under investigation, which often requires the researcher to spend many hours in direct contact with those being interviewed to understand how they experience daily life and what is meaningful and relevant to them.

4.3.1 Interpretive Paradigm

Using the interpretative paradigm technique, the researcher examined lecturers' learning experiences by deconstructing their thoughts and perspectives on others in order to make sense of educating students with VI and how they deal with their obstacles. From a constructivist standpoint, shared sense-making is a social construction process that involves interactions among lecturers. Sharing their learning journeys is a collaborative process in which students utilize language to create meaning through communication (Coburn, 2005). Understanding students with visual impairment through sense-making strategies entails creating and implementing a shared understanding of policy statements in ordinary college settings (Fullan, Rincón-Gallardo, & Hargreaves, 2015). As a result, comprehending common knowledge and practices is critical to lecturers' sense-making processes, which rely on a shared construction of meaning. Learning journeys are thus essential for a thorough understanding of instructors' experiences (Pietarinen, Pyhältö, & Soini, 2017). According to Bryman (2010), qualitative research is based on the researchers' interpretations, participant replies, and research reports. Stake (2010) defines the researcher as the research instrument due to their personal experience in making interpretations. According to Yin (2014), the researcher is the key research instrument since external devices cannot measure certain critical real-world events that can only be examined by drawing conclusions from observed data and speaking with people. However, because the researcher is the primary research instrument in qualitative research, this might raise issues regarding study bias, particularly in terms of personal interest (Bryman & Bell, 2011). Because the researcher's life influences how he or she addresses critical components of a study, he or she cannot avoid personal involvement in the study (Hughes, 2010). De Vaus (2012) suggests detecting and monitoring researchers' biases, as well as how they may influence data collection and interpretation. According to De Vaus (2012), research conducted using interpretive ontology principles views reality as subjective and socially created, with both the researcher and the (object) respondent participating in the knowing process. As a result, understanding that reality requires personal interpretation and action. According to Charmaz (2014), the subjective researcher seeks the truth

through the respondent's eyes. This implies that what exists is the same as what we all agree exists. A research paradigm is also defined and characterized based on ontology (the nature of reality), epistemology (the theory of knowledge and its validity), axiology (the nature of values), and technique. Reid et al. (2021) identifies three paradigms: positivist, interpretivist, and constructionist.

4.3.1.1 Ontology

A qualitative approach to learning journey theory was chosen in conjunction with the interpretative paradigm in terms of ontology, epistemology, axiology, and methodology. The interpretative paradigm was concerned with interpreting the world based on lecturers' subjective experiences. Furthermore, teaching tactics such as interviews rely on a courteous and dignified interaction between participants (and the researcher) to investigate lecturers' learning experiences when teaching students with vision impairment. Lecturers use interpretive paradigms to investigate their experiences and shape their thoughts and perspectives in order to better comprehend their learning journeys. According to Kivunja and Kuyini (2017) and Farrow et al. (2020, p. 26), "it is important to have a firm understanding of ontology, epistemology, axiology, and methodology that explain basic assumptions, beliefs, norms, and values that each paradigm holds". Accordingly, the researcher followed all interpretative paradigm rules. This method guaranteed that lecturers shared their expertise and experiences with others in order to have a better understanding of the culture around them. In support, Cohen and Manion (2018) argue that qualitative research considers persons as meaning-making beings who conscientiously generate explanations of events and use those explanations to learn about and behave in their reality.

4.3.1.2 Epistemology

Gray (2014) and Farrow et al. (2020) argue that epistemology encompasses important and practical types of knowledge, whereas Kivunji and Kuyini (2017) and Okesina (2020) define epistemology as the process by which a researcher learns the truth and reality. As a result, lecturers' personal narratives are better understood, allowing them to make sense of their engagements. Kivunji and Kuyini (2017) and Okesina (2020) emphasize that the learning journey can be influenced by a range of factors such as previous experiences, expertise, and lecturers' obstacles. It is assumed that the investigator interprets their data by analyzing it in a manner influenced by their interactions with participants (lecturers). This implies that the researcher is capable of constructing sociological knowledge through personal narratives in natural environments. This

approach's basic premise is that researchers and participants collaborate on activities such as listening to elicit research data, reading collected information aloud to one another, writing it down, and recording it. As a result, Interpretivism is more than just gathering information from teachers; it is based on how the researcher and participants interpret reality, and it promotes the understanding that there are multiple ways to participate in the research process (Creswell & Poth, 2018).

4.3.1.3 Axiology

Axiology is one of the ethical problems that should be considered while designing a research project to get appropriate conclusions by analyzing philosophical views (Kivunja & Kuyini, 2017). It entails developing, assessing, and comprehending concepts of appropriate and inappropriate behavior in the research. In this study, axiology was utilized to determine the relevance and worth of several areas, including participants, data collection and analysis, and the audience to whom the results will be presented. As a result, I addressed the question of where morality or ethical action derives its fundamental principles. Furthermore, when the researcher solicits responses, he or she should consider respecting the inherent rights of all participants in the study. I followed ethical guidelines throughout the investigation (see Appendix A). As a result, I used a theoretical approach to help me make the best decisions for all elements of the research process. Axiological principles aided in the definition, interpretation, and comprehension of notions addressing ethical and unethical behavior in relation to lecturers' knowledge and learning journeys when teaching students with VI. To maintain sound ethics, the investigator must assess the value attributed to each component of the study, including the participants, data, and the population to whom the study findings will be presented. As a result, the researcher evaluated human values, safety, rights, privacy, respect, and moral concerns (ARC, 2015; Farrow et al., 2020; Okesina, 2020).

4.4 RESEARCH APPROACH

This study adopted a qualitative approach in line with the interpretive paradigm. One distinguishing element of qualitative research is that the researcher is not interested in figures or statistics, but rather in spoken and written words that represent how individuals perceive the world as they describe their lived experiences (Mayan, 2023). The participants were thus encouraged to share their understanding of how they taught students with visual impairments. Creswell and Poth (2017) state that qualitative research is useful when a social phenomenon needs to be explored. Smith, Wells and Hawkes (2022) add that qualitative research was concerned with understanding

the cultural processes and social contexts that influence behavioural patterns. In elaboration, qualitative researchers such as Mayan (2022), Aspers, (2019), and Bertram, and Corte (2019) state that through probing and prompting, a qualitative researcher can dig deeper to obtain rich and in-depth data. Moreover, qualitative researchers endeavour to understand a particular social situation or event through ongoing interaction with selected participants (Putnam & Banghart, 2017) which allows them to explore and ultimately understand the meanings human beings ascribe to a social or human problem (De Oliveira, 2023; Feine et al., 2019).

As qualitative researchers allow their participants to express their lived-experiences, people have different ways of constructing information, and so multiple methods of data-generation can be employed (Nieuwenhuis, 2016). This allows the researcher to be flexible to explore ways in which participants interpret their world. However, it is noted that one downside of the qualitative technique is that the data processing process can be time-consuming, and the researcher may oversimplify the conclusions in some way (Köhler, Smith & Bhakoo, 2022). The researcher was aware of this danger and endeavoured to stay true to the generated data and the findings that emanated. The researcher's engagement with the participants focused on how they experienced and perceived their role as lecturers of students with visual impairment, and specifically how they guided these students to achieve success in the TVET college context. The closeness to the participants in their home setting facilitated the interpretation of data in a way that was true to the participants' experiences and views.

4.5 RESEARCH DESIGN

Research design refers to the procedures and tactics used by a researcher to undertake a study. The design enables researchers to tailor research methodologies to the subject under examination. According to Yin (2014, p. 240), a research design is a strategy that logically connects the research questions with the generated data that will be later analysed. Singh et al. (2023) define a research design as the planned framework of an inquiry to create data to satisfy the study's aim, objectives, and research questions. Esoimeme (2021) reiterates that a research design is the strategy that is used to conduct an intended investigation. In other words, the research design can be thought of as the framework of research; it is the 'glue' that connects all of the pieces in the research study; in short, it is a strategy for the proposed research effort. Since a qualitative inquiry aims to elicit feelings and perspectives that are not generally tested or revealed in people's daily lives (Bakračević et al., 2022), the research design that was utilised comprised of various processes to

evoke college lecturers' perspectives and how they engaged students with visual impairment to cope with their TVET studies. The following sub-sections outline the processes of collecting data for this study:

4.5.1 Narrative Inquiry

This study recorded TVET college lecturers' verbatim responses during their narration of their respective stories, including how they had acquired the skills to teach students with visual impairment (Mashiloane, 2019). Narrative inquiry is a phenomenological qualitative research methodology that investigates individual human experiences (Ford, 2020). As with all narratives pertaining to experiences, the lecturers' educational journeys had numerous beginnings (Clandinin, 2019). These narratives may have been constantly revised and rewritten as they learned new approaches and encountered new situations in which to make sense of their positions as lecturers and individuals. Similarly, Kistoro's (2021) study reveals teachers' experiences of teaching character education to autistic children, whereas Lee (2019) used the narrative inquiry approach to investigate how creativity might be developed through personal and professional life experiences. Based on the techniques used in these studies, I (the current researcher) also used a pen-and-paper data generation approach to allow the participants to narrate their professional experiences in writing, beginning with the early years of their experiences of teaching students with visual impairments. Narrative inquiry is a ubiquitous practice, as human beings have lived and told their stories for as long as they were able to use speech (Hlalele, 2019, p. 102). Therefore, engaging six lecturers as co-inquirers, the researcher was able to utilise narrative inquiry to explore how lecturers' personal and professional settings, knowledge, and identities were shaped by their experiences; and how, in turn, these experiences shaped their teaching of students with visual impairment.

The narrative inquiry methodology allows for dissecting individual experiences over time and in context (Caine, Estenfan, & Clandinin, 2013). Interestingly, Creswell (2007) points out that narrative inquiry begins with inquiring into the researcher's own stories of experience; hence, I was afforded an opportunity in this study to share my own story about my personal and professional experiences. The stories of participants involved cultural, social, and institutional descriptions (Clandinin, 2013). Furthermore, narrative inquiry is noticeable by its prominence when there is engagement between researcher and participant (Creswell, 2007). This relational engagement is aimed at understanding and making meaning of experiences through conversations,

dialogue, and participation in the daily lives of participants (Creswell, 2007; Marshall & Rossman, 2006).

Since this study sought to explore the lived experiences of lecturers' learning journeys in teaching students with visual impairments, I found it appropriate to engage in the narrative style. In so doing, the stories were articulated from the 'horse's mouth'. This means that the lecturers made their voices heard as they articulated their stories in their own words. Because narrative inquirers need to establish a good rapport with their participants in order to elicit rich stories, I sought to develop a mutual professional relationship with my participants through our interactions; as a result, they were free to tell me their stories of lived-experiences (Caine et al., 2013; Clandinin, 2013). I also worked in conjunction with participants by spending lengthy periods of time at venues and times convenient to them; this enabled me develop a cohesive, harmonious, and mutual relationship with each lecturer which led to the generation of in-depth stories.

4.6 SELECTION OF PARTICIPANTS

Purposive and convenience sampling were used to select participants, which Etikan et al. (2016, p. 3) define as "choosing participants based on the qualities they have". This was the best type of sampling for this study because participants were chosen based on their accessibility, proximity to the researcher, and potential to provide rich information that would help the researcher fully comprehend the phenomenon under study (Bertram & Christiansen, 2014; Cooper & Schindler, 2014; Yin, 2016; Creswell, 2009). Furthermore, this sampling strategy was not time-consuming or expensive, and it was reasonably simple to implement because the participants were readily available. The researcher, who taught students with visual impairments at the Mvumezi TVET Campus from 2012 to 2022, was familiar with both staff and students with visual impairments.

The researcher was thus informed to make specific choices about whom to include in the sample (Bertram & Christiansen, 2014). An important inclusion criterion was that participants had to be current lecturers at the college. Six participants were recruited which was a manageable number for interviewing, and it allowed for a narrative focus-group interview (Saunders et al., 2016). Because the study used a qualitative approach, the participants were chosen based on their ability to contribute quality information rather than number. Participants were chosen based on their identification among the groups of three academics from NC(V) and three lecturers from the Report 191 group (NATED). All participants were highly involved as lecturers interacting with students with visual impairment. The fact that the participants interacted with students with visual

impairment was pivotal to the study as their views yielded authentic, valid, and rich data based on their perceptions, experiences, and concerns (Patton, 2015). According to Cohen et al. (2011), convenience sampling is a strategy for selecting participants from a target demographic who meet specific criteria such as easy access, proximity, availability, experience, and readiness. For travel reasons, I chose lecturers who were close to where I lived. The closer the proximity, the more frequent were the meetings; hence, I was enabled to draw more deep and profound information from participants. The following is a brief biographical description of each of the participants. It should be noted that pseudonyms were used to identify the participants.

Simon

Simon, a 46-year-old male lecturer at the time of the study, hails from North Coast at KwaZulu-Natal, had been teaching for more than 16 years but had had only 4 years' experience of teaching students with visual impairment. Simon did not teach students with visual impairment together with other sighted students' classrooms but engaged with them at a separate venue. He held a professional qualification (Diploma in Education) and had recently graduated with honours in inclusive education, which he had pursued as a project on students with visual impairment that had started in 2014. His plan was to obtain a master's degree in inclusive education due to his passion for teaching students with visual impairments.

Mbalenhle

Mbalenhle, a female lecturer aged 34 at the time of the study, is from the far north coast of KwaZulu-Natal and has more than 14 years' teaching experience. She had nine years' experience teaching students with visual impairments in an inclusive classroom. At the time of the study, she taught only one student with a visual impairment in a class of sighted students. She held a professional qualification (a diploma in education) and an honors degree in mathematics from the University of South Africa (UNISA).

Themba

Themba, a male lecturer aged 37 at the time of the study, was also from KwaZulu-Natal and had 12 years of working experience, of which 11 years had been dedicated to teaching students with visual impairments in an inclusive classroom. He had worked for more than four years in a local industry. He was a teacher by inclination, as he held a BTech degree from the University of Zululand.

Lucky

Lucky, a male lecturer aged 44 years old at the time of the study, was from a rural area on the South Coast of KwaZulu-Natal. He had fewer than 17 years of teaching experience and had taught students with visual impairments during this time. He taught only students with visual impairment in a segregated classroom. He was not a teacher by profession but obtained degrees in human relations and a BEd (honours) from the University of KwaZulu-Natal.

Bhuti

Bhuti, a male lecturer aged 41 years old, was from the far north of KwaZulu-Natal and had more than 14 years of teaching experience. He taught students with visual impairments in an inclusive classroom for 12 years. At the time of the study, he taught three students with visual impairments in a class of sighted students. He had a professional qualification (a diploma in education) and an Advanced Certificate in Education (mathematics) from the University of South Africa (UNISA).

Sipho

Sipho, a male lecturer, was 39 years old. He was from the far north of KwaZulu-Natal. He had more than 14 years of teaching experience and had taught students with visual impairments in an inclusive classroom for seven years. He taught only four students with visual impairments in a class of sighted students at the time of the study. He obtained a diploma in education as well as an advanced certificate in technology education from the University of South Africa (UNISA). Table 4.1 below summarizes the demographic data of the research participants. One female and five males' lecturers participated in the study.

Table 4.1: Demographic information for the participants

No.	Pseudonym	Male/Female	Years	Qualification	Teaching experience for student with visual impairments
1.	Simon	Male	46	Diploma	4
2.	Mbalenhle	Female	34	Degree	9
3.	Themba	Male	37	BEd Hons.	11
4.	Lucky	Male	44	BEd Hons.	13
5.	Bhuti	Male	41	Diploma	12
6.	Sipho	Male	39	ACE	7

Table 4.1 above offers details of the chosen participants for the study. As noted earlier, the purposive sampling process was used to select six participants from research site (one TVET college). The site and participants were selected to provide rich information that defined the lecturer's learning journeys in Kwa-Zulu Natal.

4.7 METHODS OF DATA GENERATION

Three different methods of data generation were used: narrative interviews, narrative focus-group interviews, and written reflection narrative. These methods elicited in-depth information after which incisive data analysis was executed (Maree, 2016; Nieuwenhuis, 2016). The interview questions were prepared after evaluating the literature, particularly on intersectionality in special education, collaborative teacher education, and existing assessments of preservice teachers' understanding of diversity (Boveda & Aronson, 2019). Wahyuni (2012) maintains that data generation methods utilise specific techniques to gather data to provide evidence. Narrative approaches in a research study focus on how a story developed, for whom it is intended, why, as well as the cultural narratives that it draws on (Ntinda, 2019). Thus, narrative research studies reveal how people experience the world. As a narrative researcher such stories were gathered to foster a deep understanding of the topic under investigation.

4.7.1 Narrative Interviews

The narrative interview is considered as a dialogue in which storytellers share experiences from their past and present lives (Holt, 2010). According to Anderson and Kirkpatrick (2016), narrative interviewing situates the narrators at the centre of a study. It is therefore a means of generating people's own stories about their experiences in various social contexts. Whiteway's (2019) narrative interview approach encouraged the participants to talk about their personal histories and educational experiences. This tool can therefore be used as an unstructured approach to elicit in-depth data that originate from the participants' life stories and the contexts in which these stories were experienced (Muylaert et al., 2014). The purpose of this style of interviewing is to motivate the interviewee to narrate to the interviewer about a significant event or experience in his or her life against the social background where it occurred. According to Muylaert et al. (2019, p.104), "narrative interviews are collaborative as the stories emerge from the interaction, exchange, and dialogue between the interviewer and the participant".

Anderson (2016) agrees that conducting narrative interviews is a way of generating people's stories about their learning journey of teaching students with visual impairments. People have for centuries been narrating events and condensing parts of the universe into narrative form (Bontje et al., 2019). Some or all of the questions the researcher poses may be open-ended, broad, and general to allow participants to clearly communicate the meaning they attach to a situation or phenomenon (Creswell & Poth, 2017).

Additionally, individual interviews have long been a popular means of generating information in a variety of fields, including psychology (Kruger et al., 2019). Narrative interviewers ask *what*, *how* and *why* questions that are common in qualitative research. A personal narrative is fundamental to how humans share information, portray themselves, and communicate ideas (Meraz, Osteen, & McGee, 2019). The narrative interview format was thus an excellent method to guide participants to describe their learning journeys in the form of personal stories.

Based on the above information, the researcher was inspired to conduct narrative interviews as a data collection tool. These interviews occurred in the form of verbal, one-on-one (face-to-face) exchanges in which the interviewer (the researcher) asked a set of open-ended questions, but also allowed for fresh perspectives to develop during the conversation. A strong narrative interview begins well before the interview itself, but it requires specific training in the instrument's use as well as the development of specific abilities (Giovanna, Chiara, Chiara, Paola, & Chiara, 2019).

Since the narrative interviews that were conducted were on a one-on-one basis, it allowed the researcher to observe the non-verbal cues that the participants exuded to better comprehend their experiences and views on the teaching of students with visual impairment (Willis, 2019). Moreover, as the questions were open-ended, they allowed the researcher to probe deeper for clarity and elaboration. Hyry et al. (2019) argue that lecturers' accounts about emotions and classroom diversity can be read as moral conflicts in which lecturers' beliefs and teaching concepts are questioned. For instance, in Kohli's (2019) study, teachers' narratives provided important insights regarding teacher-education to better prepare trainee-teachers of colour for long, productive, and revolutionary careers. It was a flexible process as the researcher sometimes had to skip or adapt questions that had already been addressed because some inquiries had been answered before they could even be posed. Each interview was scheduled to last one hour, but the enthusiasm of the participants to provide in-depth accounts made it last longer. After the participants had finished telling their stories, the researcher reviewed the interview guide to ensure that all the pre-planned inquiries had been covered. A limitation that was encountered during the narrative interviews was that even though the interviews had been planned with a set duration to pose only relevant questions to garner reliable data, the entire process was challenging as it required some skill to keep the process on track. This challenge was overcome because the rapport and trust allowed the conversations to flow freely and naturally as there were no right or wrong answers and their names were kept confidential.

4.7.2 Focus-group Interviews

The narrative focus-group interview is a popular qualitative method for acquiring a better knowledge of a specific social issue (Nyumba et al., 2018). Rather than getting statistically representative data from a larger population, the strategy collects information from an intentionally chosen (small) group of people. A narrative focus-group interview also allows you to look into the perspectives, experiences, and understandings of a group of people who have had similar experiences with a particular topic or event. Ritchie et al. (2014) agree with Padgett (2016) that participants in a focus group have similar information, feelings, and histories but are frequently ignorant of one another's perspectives until they express them during the conversation. The narrative focus-group methodology is normally a secondary method for generating and analysing data (Cortini, Galanti, & Fantinelli, 2019), but it is imperative that the researcher recruits individuals who have the characteristics, experience, and knowledge needed to provide rich

information on the topic. A focus-group discussion allows for in-depth information to be captured at a lower cost than individual interviews (Hada, Jack, & Coyer, 2019).

Moreover, by utilising narrative focus-group interviews the researcher was able to obtain the authentic views of a group of specialists, as well as to understand their perspectives on the topic under investigation. When selecting a sample for narrative focus-group discussions, it is recommended that the maximum number of participants be twelve and the minimum six (Saunders, 2016). The six participants selected for this study provided the researcher with expansive and rich data (Yin, 2016). This was aided by the participants being knowledgeable and experienced, as they had been at the institution since the commencement of the pilot-program initiative and thus were fully skilled in teaching students with visual impairments at this TVET college. The focus-group interviews were conducted in the college boardroom as there would be no disturbances. Each interview took about an hour, and it was audiotaped (with consent) to ensure that it was safely documented for transcription.

As the narrative one-on-one interviews were followed by the two-narrative focus-group interviews where further in-depth or probing questions about the participants' experiences were asked, the lecturers were able to share with colleagues their experiences in teaching students with visual impairments. Two narrative focus-group interviews were conducted: one with the three lecturers from NCV, and one with the three lecturers from NATED. According to Goh (2019), a narrative focus-group discussion allows participants to share their knowledge and learn from each other's' experiences, while simultaneously allowing the researcher to garner deeper insight into their shared experiences.

Further, the researcher realised that data generated during the narrative focus-group discussion might yield different data from the face-to-face narrative interviews because some participants might not discuss their views and experiences in detail in the presence of their colleagues. Latifah and Rahmawati (2019) who focused on teaching and learning narrative text writing through story-mapping, advise that the researcher should encourage whole group discussion, tolerance, and respect for one another in focus-group interviews, which was followed rigorously in this study. In line with Haberlin's (2019) study which drew data from narrative interviews, narrative focus-group discussions, written narrative reflections, as well as participant-created written responses and illustrations, the researcher resolved that the focus-group interviews in this study would assist in triangulating the data generated during the narrative one-on-one interviews.

According to Clandinin (2019), referring to lecturers' knowledge of inclusive classrooms about increases insights into narratives as an educative process. In other words, narratives play a significant role about how people make-sense of their lives and find meaning in their surroundings (Green, 2021). Furthermore, narrative research is increasingly being used in educational practice studies since lecturers, like all other people, are storytellers who have rich personal, social, and professional lives.

4.7.3 Written Narrative Reflections

Narrative inquiry highlights the importance of reflection in the research process; a written reflection narrative includes participants' written memory of experiences and occurrences. Larsen, London, and Emke (2016) propose two different sorts of reflections: reflection-in-action and reflection-on-action. Reflection-in-action refers to conscious reflections, whereas reflection-on-action relates to people recalling prior occurrences (Larsen et al., 2016). This study utilised reflection-on-action process as the researcher asked the participants to reflect on previous experiences that they had faced when teaching students with visual impairment. Using written reflections narratives helped the participants to process their experiences, and to recall how they applied certain methods when they taught students with visual impairment. Mann (2016) suggests that written reflections should showcase increasing engagement that deepens participation. This research exposes researchers to narrative inquiry in a variety of contexts and formats (Barkhuizen & Consoli). Even the tried-and-tested techniques for data elicitation and analysis that were applied in the past were generally 'narrative' in nature. A written reflective narrative is a form of personal writing that enables individuals to reflect on past events and transitions in their lives. Thus, the narratives presented in this study were generated from interviews with participants who extracted their stories from in their written reflective narrative schedules.

4.8 PROFILING OF RESEARCH SITE

This study was conducted at Impangele¹ TVET College which is in the far north of KwaZulu-Natal. This college has nine campuses that are located within communities in both urban and rural settings. The study focused on one campus in a township 22 kilometres from Richards Bay. This

¹ A pseudonym is used to protect the identity of the college.

campus is not far from a police station, a clinic, the local offices of the Department of Home Affairs, and several high schools. It will be referred to as the Mvumezi Campus hereafter. As Impangele TVET college is a public institution, it is under the governance of the Continuing Education and Training Act No. 16 of 2006 (RSA, 2006) which is monitored by the Department of Higher Education and Training (DHET). This campus is managed by a campus principal, three heads of departments, and four education specialists. The campus has security guards and controlled access, and employs approximately 45 teaching staff, 20 support staff, and 20 maintenance staff. At the time of the study, the college had enrolled approximately 2 200 Black students, 36 of whom had different learning and physical disabilities.

South Africa has a total of fifty TVET colleges nationwide, with nine in the KwaZulu-Natal province, including the 'Impumelelo' TVET College (pseudonym) from where the participants were recruited. In this TVET college there are 266 lecturers. Impumelelo TVET College is spread across seven campuses: Ndlondlo, Mbayimbayi, Madadeni, Nkawini, Eshowe, Bhashela, the last one is Mvumezi. There are about 1500 students enrolled at each campus. On 'Impumelelo' Campus, there are sixty lecturers. The students were enrolled for National Certificate Vocational (NCV) programmes, Report 191 (Business and Engineering), and skills programmes that were all subsidised by the State. The National Students Financial Aid Scheme (NSFAS) is used to fund the education of about 97% of these students. Since it first accepted twenty-five students with visual impairments in 2014, this institution has been implementing an inclusive education programme. The Transport and Logistics Department at this college had two students with visual impairment enrolled in 2018; in 2019, there were 35 students with visual impairment. Lecturers had to modify their pedagogical strategies to accommodate such students, whose enrolment rate signalled the beginning of inclusive education. A sample of six participants in this research, who are lecturers of these students, is the reason this college was selected as the institution under study.

This campus has boarding facilities that are mostly used by students with impairments and learning disabilities, as well as a few students who are financially needy and who cannot afford rental houses in the township. Recreational facilities are available on campus. Classrooms are shared, but three classrooms have been specially equipped to accommodate students with visual impairments. It is noteworthy that the campus boasts a long ramp that extends from the parking lot to the classrooms for ease of access. Mvumezi Campus of Impangele TVET College started an inclusive education pilot program in 2010 when it enrolled only ten students with visual

impairments. However, there has been significant growth over the years as increasing numbers of students with a variety of learning and visual impairments have enrolled.

All students from diverse backgrounds are welcome at the college, regardless of their gender, religion, socioeconomic, or cultural background. The study discovered that they employed strategies that promote education for all college students. As a result, the researcher envisaged that the chosen TVET college may support the aim of the study. Details on the research site visits are indicated in Table 4.2 below:

Table 4.2: Research site visits

1 st Visit	Introduction of myself	22 April 2023	To introduce myself, to disseminate participant consent letters to sign, and to distribute lecturers' narrative reflection schedules.
2 nd Visit	Narrative semi-structured interviews	28 April 2023	Participants tell their stories, provide narrative frames and interview guide as research instruments. Clarify certain experiences, probing, and prompting for elaboration, where necessary.
3 rd Visit	Data confirmation	05 April 2023	To verify the data generated, and to correlate information with the aim of the study.
4 th Visit	Thesis delivery, and appreciation	10 April 2023	To express gratitude to the research participants for their contributions to the study. Each participant was questioned twice: once in a semi-structured format and once in a focus-group setting.



Figure 4.1: 'Impangele' TVET College (pseudonym)

4.9 NARRATIVE ANALYSIS

In a qualitative study, data is presented in textual format by utilising a discursive approach (Lester, Cho, & Lochmiller, 2020). Studying participants' narratives of their learning journeys is increasingly seen as central to this study which involves their thinking, culture, and behaviour (Cortazzi, 2014). This study was a heuristic effort to describe a range of contemporary approaches based on the oral and written reflections of the participants' personal experiences. Narratives do not mirror but reflect the past, and hence they are useful in research because storytellers interpret the past rather than reproduce it as if it were the 'truth' of the shifting links between the past, present, and future (Eriksen, 2019). According to Sahito and Vaisanen (2018), narrative analysis depicts the human and personal dimensions of experiences while providing insight into the relationship between individuals' experiences and cultural contexts. Narratives offer a way to re-imagine our lives, re-orient organisations, and unite a range of groups.

To analyse data on the learning journeys of lecturers who taught students with visual impairment, inductive reasoning was employed, in addition to the researcher working repetitively back and forth with the data until a comprehensive set of themes emerged (Creswell & Poth, 2017). The process of data analysis proceeded as the researcher classified, analysed, organised, reflected on, and evaluated the emerging themes to finally report on the findings (Braun et al., 2019; Noswell et al., 2017). In this process the researcher focused on both the oral and written narratives of selected lecturers' personal experiences and insights into the teaching of students with visual

impairment. The narrative analysis that leads to interpreting stories as the unit of analysis is frequently reinforced by the participant's concentration on a distinct aspect of the story (Enis 2011). Narrative analysis sees narratives as a creative way of exploring and explaining reality that is organized and bound by time. When evaluating individual narratives, the researcher analyses the personal and cultural resources that participants use to form their narratives, including interpersonal narratives. Therefore, I used narrative analysis to dissect how research participants construct stories from their own personal experiences. This approach focuses on setting, characterisation, and employment as essential components of the narrative which promotes its interpretation which leads to structured conversation.

4.10 TRUSTWORTHINESS

Trustworthiness was given high priority because a qualitative study methodology was employed that needed to focus on validity and reliability (Cooper, 2010, p. 120). A combination of narrative interviews, narrative focus-group interviews, and written narrative reflection was therefore used to triangulate the data possible, and to ensure the reliability of the results. Moreover, in qualitative research, the concepts of credibility and transferability are used to describe various aspects of reliability (Cooper, 2010). Also, trustworthiness of the results was achieved through member-checking which also strengthened triangulation. This involved referring the data back to the participants to check the accuracy of the transcriptions. This was done during, and after the data generation process to ascertain whether the data met consistency requirements (Frost, 2010). Also, to enhance triangulation and the trustworthiness of the study, the researcher used different data generation techniques; namely, narrative interviews, narrative focus-group discussions, and written narrative reflections.

4.10.1 Credibility

Credibility refers to assurance of how accurately and authentically the data analysis process addressed the study's topic in line with the aim, objectives, and research questions. Credibility thus relies on the strategy and procedures that are utilised to generate data (Ochieng et al., 2018, p. 13). Frost (2010) supports the idea that choosing participants with a range of experiences improves the chances that the study's questions will be answered from a variety of perspectives. The credibility of a research project is thus established by how authentic and precise the phenomenon under study was interrogated (Wium & Louw, 2018, p. 1). Therefore, to achieve credibility in this current study, an audio-recording device (two different cell phones) was utilised

to avoid the loss of data. Both the interviews and group discussions were audio-recorded and repeatedly checked so that the transcriptions were accurate and reliable.

4.10.2 Dependability

According to Saunders et al. (2016), dependability in qualitative research is defined by consistency, whereas variability is related with source. The key assumption in qualitative research is that the social world is always in the process of construction; hence the interview content of the participants' narratives was verified by triangulating the data with those elicited through focus-group discussions. Furthermore, rapport was established with the participants, particularly during the initial stages of the interviews and discussions, and the researcher encouraged honesty on the part of the participants by assuring them that there were no correct or incorrect answers to the questions posed. The researcher kept a reflective notebook during the investigation to document aspects that could impact the study, such as the researcher's feelings, opinions, perceptions, and thoughts (Korstjens & Moser, 2018; Noble & Smith, 2015). To avoid bias, there was continual communication with other academics and colleagues (Noble & Smith, 2015). The researcher additionally ensured that the research questions were clear and unambiguous (Saunders et al., 2016).

To adhere to the dependability principle of the study, critical questions were explained to the participants. Additionally, ethical clearance was requested from the university to conduct the study, and the signed consent of the selected participants was obtained. Lumadi and Matlala (2019) define dependability as a component of trustworthiness that may be created by ensuring consistency in procedures across participants throughout time using diverse data gathering methods. The researcher conducted narrative interviews and focus group discussions based on an open-ended questionnaire schedule. To ensure dependability, all participants were asked the identical questions, in the same order.

4.10.3 Confirmability

Confirmability refers to the extent to which the findings were derived from the participants' perspectives rather than those of the researcher (Kornbluh, 2015), whereas confidentiality means not disclosing information obtained during a research project in other settings, such as informal conversations (Lumadi & Matlala, 2019). For instance, in this study the protection of confidentiality was achieved by limiting the persons who had access to the audio-recorded material. Only the researcher and the supervisor had access to all materials including transcriptions

– all would be destroyed as per the university’s stipulations. To maintain confirmability, all audio-recorded information and transcriptions were consistently referred to so that the participants’ journeys remained central in the data evaluation process (Ramsook, 2018).

4.10.4 Transferability

Transferability is the alternative to external validity or generalisability, which means that the findings and conclusions of a study may apply to a broader population and settings (Bertram & Christiansen, 2014). This study which engaged a relatively limited population (from one college), purposively selected a small sample of six participants. The findings may therefore not be generalised to similar contexts unless they share common features. The results may therefore be beneficial to other lecturers who teach students with visual impairments even though they were not involved in this study.

4.11 ETHICAL CONSIDERATIONS

Researchers should pursue principles of ethical conduct when designing and conducting studies that elicit data from human subjects (Kaewkungwal & Adams, 2019). This means that the ethical norms of confidentiality, anonymity, autonomy, informed consent, and non-maleficence must be adhered to (Yin, 2016). According to Bertram and Christiansen (2014), autonomy refers to respect for all the participants involved in the study. The researcher thus obtained the signed consent of the participants before the data collection process. The participants were also informed that their participation would be voluntary and that they had the right to withdraw from the study at any stage without being penalized in any way. Non-maleficence, according to Bertram and Christiansen (2014), means not to harm a participant or any other person, whether physically, emotionally, or socially during the study or as a result of it. This requirement was rigidly adhered to during this study. Moreover, Creswell and Poth (2017) advise that when the study’s findings are published, all participants’ identities should be protected. Pseudonyms were assigned to participants to protect their identities and information. The institution under study also remained anonymous by using a pseudonym due to the sensitive nature of the investigation.

Ethical clearance was obtained from the University of KwaZulu-Natal Ethics Committee. Also, a consent letter was sent to the college principal to request permission to conduct the study at the TVET college site. The participants were given consent forms to sign after reading and agreeing to all the finer details of the study. The researcher also ensured that participants were treated cordially, and that dignity was always respected. Before beginning the sample process, the

researcher emailed the campus manager a letter containing the gatekeeper's consent and requesting permission to visit the campus. The researcher was received warmly. The next step was to notify the Head of Department (DoE) that the researcher would be on campus and asking that she identify lecturers who would be willing to participate. A day later, the researcher disseminated letters to the selected lecturers to explain the purpose of the study (among other details) and to request their participation. The recruited lecturers were amenable and keen to participate. However, convenient sampling has its weaknesses, such as the withdrawal of participants who later expressed disinterest in the study. To overcome this drawback, the researcher recruited eight participants so that there would be extras to fill the places of those who might withdraw. The study was completed without undue hindrances.

4.12 LIMITATIONS OF THE STUDY

The limitations of a study are the shortcomings, influences, and conditions which potentially restrict the methodology and the conclusions of a study that cannot be controlled by the researcher (Simon & Goes, 2013). Every proposed study has some restrictions, and no study is perfectly executed. This study was conducted at an institution where the researcher had been employed for ten years, and familiarity with the lecturers and students may thus have influenced the way the participants responded. Furthermore, the type of questions posed may have been a constraint if participants were uncomfortable answering to them. This was resolved by reminding them of the ethical norms of secrecy and anonymity (Salkind, 2010). There was also the possibility that the voice recorder's battery would run out during the interviews and narrative focus-group discussions, which was addressed by using two audio recorders with rechargeable batteries.

Further, absenteeism, punctuality, and the withdrawal of participants during the study were disturbing threats that could not be controlled. This study also discovered that the lecturers were very conscious of their time and resented being interrupted during their lunch break. Moreover, they were also obliged to attend subject meetings and other academic events at short notice. Some were overcommitted because they lectured during morning and afternoon sessions. To overcome this limitation, I repeatedly promised them that their feedback would be invaluable and that I was willing to be adaptable. Finally, for privacy and to avoid disruptions, the researcher met with participants in the college boardroom, where the interviews would not be interrupted.

4.13 SUMMARY OF THE CHAPTER

The chapter summarized the body of work on narratives and described a specific technique for narrative analysis (Oppermann, 2023). This chapter also discussed the methodologies utilized to investigate the learning experiences of lecturers who taught students with visual impairments at a specific TVET college. The chapter began by describing what is meant by research technique, and then justified the interpretative research paradigm used. The qualitative research approach and its relevance to the research were discussed, while the appropriateness of the research design was explained. The research setting was briefly referred to, followed by a discussion on the sampling techniques. The profiling of the research participants was presented in text and in tabular form. Moreover, the data generation tools; namely, narrative interviews, narrative focus-group interviews, and written narrative reflections were discussed, followed by a discussion on narrative analysis. In applying a narrative method of inquiry, narrative interviewing techniques were used. Lastly, all ethical considerations were outlined and adhered to. The next chapter (five) discusses the study's data presentation, analysis, and interpretation which focused on lecturer's learning journeys in teaching students with visual impairment.

CHAPTER FIVE

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

5.1 INTRODUCTION

This chapter presents a narrative analysis of raw data from the research sites about lecturers' learning journeys while instructing students with visual impairments. As stated in the previous chapter (4), the narrative inquiry approach was employed to gather data to address the research questions of this study by focusing on how college lecturers shaped their teaching approaches when teaching students with visual impairments, as well as their reflections of teaching students with visual impairments.

The participant-narratives and the narrative analysis are presented in this chapter. A key component of narrative inquiry is the aspect of people living to communicate their stories with others (Clandinin, 2022). Clandinin and Rosiek (2021) maintain that regular people talk about their experiences for the duration of their lives. As a story inquirer, the researcher holds the view that stories are essential tools for reflecting on both the past and the present ways they employed when teaching students with visual impairment. As such, the narratives presented in this chapter were elicited through narrative interviews.

The following reasons were forwarded for the use of a narrative analysis approach:

- To understand how participants, create stories by using their own life experiences;
- To acquire a deeper insight into the narratives that people use to describe their identities, experiences, and beliefs;
- By focusing on the story's individuals share with others in a particular context in order to better interpret human experiences and motivations; and
- To focus on how lecturers, adapt methods to teach students with visual impairment, and how lecturers have coped with teaching students with visual impairment.

Smith (2016, pp. 201-208) describes seven types of narrative analysis: thematic, rhetorical, structural, international, personal, performance, and dialogical. In this study, the researcher employed thematic and personal narrative analysis approaches as these were closely aligned to the research context and the research questions. Specifically, the thematic narrative analysis approaches allowed the researcher to identify emerging themes from lecturers' stories. In other

words, thematic narrative analysis searches for emergent themes in data presented in the form of participants' oral responses and written stories. Through the process of personal narrative analysis, the information presented here was gathered through one-on-one narrative interviews and reflective narratives written by the lecturers. The emphasis was on understanding how the lecturers interpreted their daily life experiences (Bergen et al., 2022). Stories of participants (Simon, Siphon, Bhuti, Lucky, Themba, and Mbalenhle) were told in descending age order. The presentation of results utilised the verbatim transcriptions of participants' responses. Table 5.1 below outlines the themes and categories emanating from the collected data:

Table 5.1: Initial themes and categories

Theme	Category
<p>1. Lecturers' narrative when teaching students with visual impairment</p> <p>2. Adaptive materials and teaching strategies on lecturers' learning journeys</p>	<ul style="list-style-type: none"> • Challenges • Teaching aids and resources • Training • Attitudes • Multi-sensory strategy • Audio-learning strategy • Storytelling strategy • Demonstration strategy • Provide accommodations and adjustments for students with visual impairment. • Audiotaped, brailled, or electronically structured lecture notes. • Provide audiotaped, brailled, or electronically structured lecture notes. • Provide spoken descriptions of visual aids. • Created raised-line drawings and haptic models for graphic materials.

<p>3. Reflections on entering the field of VI, and personal learning journeys</p>	<p>Provide Braille lab signs, equipment, and aural warning indications.</p>
---	---

5.2 PRESENTATION OF RESULTS

5.2.1 Lecturers' Narratives in Teaching Students with Visual Impairment

Lecturers' learning and growth are increasingly acknowledged as including more than only subject matter knowledge, pedagogical content knowledge, teaching and learning philosophies, and the ability to apply them all (Beijaard, 2019). Learning to teach is an identity-forming process; many other factors influence lecturers' perceptions of and behaviors in the classroom, and these should be included in lecturers' professional learning platforms. Learning from your past experiences indicates that before you start something new, you should reflect, comprehend, and adapt or change your previous experiences as past thinking influences your current thinking. New learning journeys are developed and implemented to help people develop the skills and awareness they need to overcome specific challenges and to improve current situations. An important pedagogical skill for lecturers to adopt is enhancing their capacity to promote problem-solving skills (Zebehazy, Correa-Torres & Botsford, 2022). Participants felt that students with visual impairment must be treated fairly and equally. These learning journeys were shared and based on a framework encompassing the following:

- Challenges
- Teaching aids and resources
- Training
- Attitudes

5.2.1.1 Challenges

The narrative interview data elicited from all the participants (except Simon) indicated that there were many challenges that they faced in teaching students with visual impairment. The participants pointed out that despite the difficulties encountered by students with visual impairment, a significant number of them attend inclusive institutions. This was in line with Baykald, Corlu and Yabaş's (2023) study which made the same observation. These regular educational environments frequently experienced teaching-learning challenges for both students with visual impairment and their sighted peers.

This research sample identified a lack of resources as the most significant difficulty; they do not have enough resources to deal with teaching kids with visual impairment. Read (2023) revealed that lecturers in mainstream classes did not support the inclusion of VI students in their classrooms. In the excerpts below, the participants (lecturers) presented their challenges when teaching students with visual impairments:

Simon: *I have realised that they take longer to understand since they cannot see because the type of subjects or courses, we offer are half vocational and half oral. When it comes to where we should do the practical by using the charts and other vocational training aids in class or outside the class it becomes difficult for them to copy information since they cannot see. Some of the centres and companies that we normally take students to for training and work-based experience during school holidays refuse to accept them because they see them as high risks. They need people without visual impairment or full sighted students- so it difficult to place them.*

Sipho: *The first and biggest challenge is the lack of resources; we do not have sufficient resources when it comes to teaching students with visual impairment. The resource challenge is beyond my control because it is the decision needed to be taken by the institution's management. The other challenge is their sensitivity to some terms which you cannot utilise while teaching them. Always try to put yourself in their shoes, and be friendly and open to them with every aspect of life. Understand their minds through one-on-one conversations, if necessary.*

Bhuti: *The buildings had no proper signage to help other students, and be informed on how to assist or treat students who are visually impaired. Before the classrooms did not have ramps, even student themselves did not have supportive devices - that made things more difficult including not being able to capture the lessons of the day. The challenge of e-textbooks is real, since the college*

was only familiar with issuing the hardcopy. They seem discriminated against since they did not have resources to assist them.

Lucky: *In terms of the resources, we reported the matter to the specific office and they try to get some assistive devices for them like laptops and recorders. But what I will do personally is to sit with them and talk to them on what is their need. I learned a lot from them, as one once said that the only person who could understand his situation was the person who had the same disability. I encourage them to interact and participate by also asking questions where they do not understand.*

Themba: *Infrastructure and buildings - specially built infrastructure to serve the purposes of students with visual impairment is one of the challenges. My class is upstairs so it is a challenge for students who are visually impaired to reach my classroom when using long steps. My class ends up being delayed because I will have to wait for them to be in the class and make sure they get their supportive devices. The installation of JAWS software will assist as the computer speaks and tells on the operation of the computer. The pace, because now we have absorbed the inclusive education system where we teach ordinary students together with students with visual impairments. The pace gets to be a factor that is why we have extra classes.*

Mbalenhle: *The lack of resources was also more challenging; they rely on listening because as they cannot write. The challenges of relying to scribes during assessment since some of scribes are those who had done the same course and one cannot tell if they are giving them answers. Scribes are usually the interns serving the college; I believe they are hired by the college, not by the department. The department needs to try and find a device to assist so that they can write their assessment for themselves because it is possible other colleges like in Gauteng make use of certain devices. The issue of scribes is not worrying.*

This suggests that the college lacks sufficient resources to help students with visual impairments learn. According to the facts presented above, pupils with visual impairments were supported by unqualified scribes who acted as shadow workers. Furthermore, the investigation revealed that students with visual impairments lacked assistance technologies for learning and assessment. For teaching and learning to be active there should be the necessary resources in place. Baiardi et al. (2022) describe resources as tools that improve and support lecturers in their preparation and implementation of the lesson. According to Martyrium et al. (2023), resources could be divided into three types: hardware (HW), software (SW), and ideological ware 24 (IW). Further, the term ware refers to consciousness, thus implying that both the lecturer and the student should be aware

that resources utilised are to advance effective teaching and learning in the classroom. According to Teane and Gombe (2022), integrating cutting-edge technical resources in the classroom helps lecturers create new lectures that promote students' academic progress. Because teaching materials are vital tools for learning, they should be distinguished from assistive devices such as computers with JAWS, recorded materials, reading machines, speaking machines, hand-held magnifiers, braille text, talking calculators, sound signification, auditory equivalents of visualization, instruments with auditory (and not visual) readings, touch and voice-based interfaces, touch, and large print as standard equipment for the teaching of students.

5.2.1.2 Teaching aids and resources

Pursuant to the discussion on the lack of appropriate and adequate resources, some of the participants felt that students with visual impairment were probably not suited for some programmes, particularly those that require practical skills. The excerpts below express participants' views on this issue:

Simon: *The type of course that we offer to students requires high IQs, but the one that we teach has got a practical side or part of it must be practical. Some of the students with visual impairment find it very difficult to grasp or to participate in the practical part of the course, and some of the materials we use to educate them come in the form of objects that students some cannot really engage with. So, this is really a big challenge.*

Sipho: *Assistive devices play a major role in the method of teaching to capture attention of students. During the class I usually loudly pronounce some concepts for the benefit of students with visual impairment. I use resources that I have in hand, in trying to assist them to overcome their difficulties. I utilise supportive devices like recorders to replay what I have taught.*

Mbalenhle: *They need enough resources; they need assistive devices. They need more time and extra classes. When I started, they were still in N4 [entry level Report 191 N4 qualification], and I was teaching it for the first time. Since I knew nothing about it, I asked myself, how am I going to do that? I had no idea where to begin or how to approach them. They also need the training on how to communicate and interact with others without isolating themselves. As lecturers we need resources in order to deliver teaching and learning in an effective and efficient manner.*

Themba: *I teach both students with visual impairment and sighted students. I record videos that can be converted to mp3 which is an audio device that can be listened to at home or res. They make use of their recorders to record step-by step and detailed feedback of their questions.*

From the participant's responses (above), teaching aids and resources play a significant role in assisting students with visual impairment. Some of participants believed that the institution needs to conduct research on accommodating the staff and lecturers in the inclusive process, and allow them to express their views, experiences, and challenges regarding college life which would engender better solutions to uplift college standards. This requires gathering information, resources, and recruiting lecturers who are qualified to accommodate students with visual impairment. Lamentably, policies may be in place but they are not applied effectively. Most students with visual impairment are educated in the general science classroom; but few studies have determined whether appropriate accommodations and modifications are being made in such classrooms to meet the specialised needs of VI students (Casale-Giannola et al., 2023).

Generally, the participants were of the view that students with visual impairment could do virtually all the activities and tasks that sighted students could do. However, they often needed to learn to do them differently or use different tools or materials. For instance, students may need reading materials in braille rather than in print or may need to examine a live rabbit with her/his hands to understand what it is, rather than learning from a picture in a book. So, the participants held the view that major changes were needed with respect to resource provisioning to enable them navigate their learning journeys with joy and fulfilment. This must be accompanied by training to ensure that the lecturers were able to fully utilise the resources for teaching students with visual impairments. In this respect, lecturers must have the necessary skill to guide students adequately. The instructional arrangements made by the lecturers for students with visual impairment in lessons must address the difficulties which the students have, and suggestions should be offered for the effective and efficient implementation of lessons (Karakoç & Aslan, 2022).

5.2.1.3 Training

The second challenge faced by the participants was the paucity of formal training to enable them to properly and adequately meet the educational needs of students with visual impairment. Importantly, training (in- and pre-service) is a vital requirement to promote lecturers' professional development to perform their duties and responsibilities successfully. Such training would enable them to facilitate the quality teaching-learning of students with visual impairment. Thus, it was

important to first interrogate their (lecturers') teaching processes and quality regarding students with visual impairments. The need to do this arose from the narrative focus-group interviews and narrative reflections in line with the research purpose of exploring lecturers' learning journeys in teaching students with visual impairment. During the interview process common problems were evident; the difficulties the students faced in class, they were faced with one and the same challenges. It was worrying that a few participant-lecturers were not professionally qualified lecturers – this would hamper the quality of assisting students with visual impairment - hence training is imperative and should include engaging with technology in the teaching-learning process of students with visual impairment (Apriani et al., 2021). This is supported by all participants as articulated in the following extracts:

Simon: *I would not call it training; I will call it an orientation where they introduced and explained Inclusive Education. Something like induction.*

Sipho: *I was not trained on how to teach and deal student with visual impairment.*

Bhuti: *I did not receive any proper training relevant to the programme to date, but I did request from the management that they need to assist in terms of providing accurate training so that we will know the exact things we are expected to do in terms of teaching and learning.*

Lucky: *You cannot give what you do not have. Since you asked me to share about training, we got into the institution, but there has been no training at all. It's only inductions and workshops; as far as training is concerned there is nothing to share.*

Themba: *At the beginning there was a plan for training and those minor talks but there was no proper training. It was practical experience that shaped our strategy of teaching and learning. I equip myself by watching videos and take lessons online. I sympathise with them and try to put myself in their shoes in order to make my teaching strategy in lessons profitable.*

Mbalenhle: *I was so sympathetic and shocked at the time because it was my first time with the kind of students without training or resources to assist them.*

The above evidence demonstrated the challenges for those who teach students with visual impairment in terms of training. The participants grasped the notion of training, but they had no training in teaching pupils with visual impairments. They found themselves teaching students with visual impairments, even though they had not been qualified to do so. The college admitted these students without hiring lecturers with inclusive qualifications. However, they were obliged to

accommodate these students in their mainstream classrooms. Technical and Vocational Education and Training (TVET) colleges' relevant stakeholders must be willing and ready to accept change in the educational system, and thus must strive for excellence in the ever-changing technological environment – but ongoing training for staff is essential (Aina et al., 2022). The participants commented on the admission of students with visual impairment without canvassing the support of staff members especially in terms of them being trained to perform inclusive duties. By consulting staff in decision-making processes regarding training for inclusion, better solutions will emanate to achieve the vision and the mission of the institution. However, this aspect at the TVET has been neglected.

5.2.1.4 Attitudes

Although continuous support, ongoing training, resource provision, and better infrastructure can assist lecturers in implementing the inclusive education policy, lecturers' readiness and attitude remain critical in the learning journeys to teach students with visual impairment. Some participants (Bhuti, Themba and Mbalenhle) did not understand where they should start from since they were not trained for teaching students with visual impairment, but they tried to be positive and proactive to serve such students. Although constant assistance, ongoing training, resource provision, and improved infrastructure can help lecturers adopt inclusive education policies, lecturers' preparation and attitude remain crucial in the learning journeys of students with visual impairments. Some participants (Bhuti, Themba, and Mbalenhle) were unsure where to begin because they had not been trained to educate pupils with visual impairments, but they tried to be pleasant and proactive in serving these students. This is supported by participants' responses in the following extracts:

Simon: *I maintain a positive attitude whenever I teach them. I sympathise with them, but I treat them as ordinary students. What I do is I allocate more time to teach them. My attitude towards them is to regard them as ordinary students.*

Sipho: *It was my first time. I was scared as I got no experience. But my attitude now is different. I learnt to mind my language, and to use words that will not disturb them as I know they are sensitive and I do not want to hurt them emotionally.*

Bhuti: *At first it was difficult; I did not know how to interact with them. I had challenges but managed to find solutions as to how to interact with them as I am a people's person. They behave*

in a different manner. It depends on the situation that one is facing at the time, so I try to understand the situation and come up with a better solution without offending anyone.

Lucky: *Well, as I have just indicated earlier that we communicate as I have accepted them, my attitude is now good. But in the beginning, I was scared and I was not trained. I did not know where to start. I thought I will make a mistake by offending them and be reprimanded. Our relationship now is productive.*

Themba: *At the beginning I could not understand because it was first time. I was not trained to teach students with that kind of difficulty. As time went on, I started understanding and put myself into their shoes. I try to be helpful and as patient as possible, because I do not want them to encounter situations where I was too fast or not clear when asking questions. I have now developed the sense of patience. I have a positive attitude now. I also have learnt a lot from them.*

Mbalenhle: *My attitude was not good at first because I was frustrated with the way they responded. I was sympathetic with them. I have now developed love for them. So, before the start of the semester I conduct training sessions with them because I want the ordinary students to accommodate them and understand that they are equal. I create an atmosphere of freedom for them so that they are able to share their stories; but I end up finding their other difficulties.*

Lack of confidence, worry about the unfamiliar, a lack of adequate inclusion training, and a lack of skilled support workers all contribute to lecturers' negative attitudes about students with visual impairment. This implies that if lecturers were instructed on how to cope with students with various learning difficulties and abilities, their confidence would increase and their attitude would improve. As a result, Read's (2023) study revealed that lecturers in mainstream classes opposed the inclusion of students with visual impairments in their classrooms. Lecturers felt untrained and unprepared to participate in inclusive education. Some instructors stressed that such attitudes stemmed mostly from the lecturers' anxiety over the enormity of teaching students with physical limitations.

5.2.1.5 Synthesis

The participants' comments revealed that there were four requirements for teaching students with visual impairments: training opportunities, availability of teaching resources, college administration support and provisioning, and emotional support for students. Training opportunities were the most prominent, with six individuals citing them as vital to their career

development. They added that relevant training in IE would support them in teaching students with visual impairment. In this regard, assistive technology helps students with visual impairments in a variety of ways, including as a teaching-learning tool (Bouck et al., 2020). Also, assistive technology (AT) enables students with visual impairment to bridge the gap with their able peers (Atanga et al., 2020). This, however, necessitates lecturers to become acquainted, thoroughly trained, and skilled in the use of assistive technology. Themba stated that as a computer literacy lecturer, he had a challenge of applying the JAWS software that assists students. Whilst Lucky stated that it will support lecturers to ‘teach even much better’, training was a necessity in teaching students with visual impairment. Participants criticised TVET college management in delaying the delivery of necessities to teach students with visual impairments. Siphon added that they failed to hold workshops to explain how to operate technological resources to make learning easier for students with visual impairment. Bhuti stated that psychological support was also critical because lecturers experience stress from teaching students with visual impairment, thus there should be support and care to assist them to manage stress. Khan et al. (2023) confirms that the fruitful implementation of inclusive education is also dependent on suitable infrastructure and essential resources, adding that these could change lecturers’ attitude about including students with visual impairment in their classrooms. Themba specified that there is little he can do about the aspect of infrastructure because the college management could have moved him and his classes to the lower level of the college building to accommodate students with disabilities, but this did not happen. Consequently, he is accommodating and gives students with visual impairment extra time to reach his upper-level classroom, while others are assisted by sighted able students to and from the classroom.

5.2.2 Adaptive Materials and Teaching Strategies

The basics of teaching students with visual impairments emerged as a major challenge, in addition to lecturers not being familiar with the different approaches to teaching such students. This was aligned with the second objective of this research, which was directed towards understanding how lecturers’ learning journeys in teaching students with visual impairments were shaped in particular ways. Two further categories emerged from this theme: teaching strategy (or pedagogy) suitable for students with visual impairment, and accommodating students with visual impairment. These are discussed in the sub-sections below:

5.2.2.1 Appropriate methodologies

The classroom is a place where teaching and learning occurs in an environment in which a lecturer communicates knowledge through various methods concerning the task at hand. According to Tuttle and Carter (2022), computer-assisted instruction gives students with visual impairment immediate access to information and enables direct collaboration with sighted lecturers and peers. A lecturer chooses the relevant approach or combination of techniques that are most likely to fulfil the lesson's objectives with a certain set of students. According to the evidence gathered, two participants (Themba and Bhuti) applied the computer-assisted instruction method during lesson delivery as revealed in the following responses:

Themba: *The installation of JAWS software assists computer operation as tells us how to access apps on the computer.*

Bhuti: *I use more verbal lessons and make word notes for them because the computer can read the notes for them.*

The above responses emphasised the importance of computer-assisted instruction which focuses on students being actively engaged in educational activities during the lesson. This type of teaching and learning strategy permits the students to construct and reflect on their understanding of the lesson concepts and the lecturer's guidance. Students may be able to adjust the rate at which material is provided through computer-assisted instruction (Bewley, Crosland, & Fuller, 2023). A computer-assisted classroom environment provides all the instructions for the student to access, which motivates them to interact with the teaching-learning resources. Bhuti claimed that he uses computer-assisted instruction in teaching students; however, data from the first interviews revealed that he was not using any specific strategy to teach them because he did not want them to feel discriminated against, but he used more verbal lessons. Also, my interview with Mbalenhle contrasted with what she wrote in her narrative reflection notes; she said sometimes she drew on the palm of their hands or on their back, but this was not allowed by regulation. Also, participants listed specific teaching methods they employed to teach students with visual impairment. The following sub-sections outline the different teaching strategies:

5.2.2.2 Multi-sensory strategy

During the interview, two participants (Simon and Lucky) disclosed that the most dominant teaching strategy is the multi-sensory method, as enunciated in the extracts below:

Simon: *I use any environment we live in and design role play activities about it, and then I try to break it down so that they can understand what I am teaching.*

Lucky: *I sit with them and ask them what their need is. I learned a lot from them, as one once said that the only person who can understand the situation is the person who has the same disability. I encourage them to interact and participate by also asking questions when they do not understand the topic being taught.*

The above teaching-learning strategy focuses on students with visual impairments' use of their senses. Chen et al. (2023), in their research on teaching preliminary statistics to blind students, recommended the use of the 'hand-see' approach to communicate statistical formulas to these students. By the "hand-see" approach, Chen et al. (2023) meant it was about learning about the world through touch so that every student participates in most roles in teaching and learning situations. Simon stated that students were actively engaged lessons as they were able to name some objects even if they could not see them. This teaching strategy emphasises the student's individuality and the ability to grasp meaning and understanding. It confirms the transition from viewing students as empty shells that must be filled with knowledge. Instead, students now build their own knowledge and understanding, provided that the 'inclusive' lecturer provides them with the necessary guidance and support.

5.2.2.3 Audio-learning strategy

In addition to the multi-sensory strategy of teaching, half the number of the study participants from the research site (TVET college) utilised the audio-learning teaching strategy. According to Arandia, Garate, and Mabe (2022), lecturers should read aloud to help students absorb knowledge from the textbook and record the lesson on their recording devices. They agreed that the audio-learning strategy is commonly used to ensure that students always understand what is taught during lessons. This was evident in the following articulations:

Themba: *I record videos that can be converted to mp3 that can be listened to at home or res. They make use of their recorders to record step-by-step and detailed feedbacks regarding their questions on the lessons' topics.*

Sipho: *We utilise supportive devices like audio-recorders in order to replay what we have learned.*

Bhuti: *In assessment, the question papers come in the form of hardcopies or pdf, so the JAWS system cannot read the pdf. I will have to re-type the question paper and paste it on the word programme so that it can be easier for them to be part and parcel of classroom activities.*

Simon: *The strategy I use is to ask them questions about the environment they know and are familiar with; that is the perfect way of how I am teaching them.*

Lucky: *I use more of verbal lessons. I am very careful because I learnt that [students with VI] are very sensitive.*

The auditory learning method supports the use of words to create an image that interprets them. In other words, the spoken word generates meaning-laden imagery for a visually impaired student. The following response bears testimony to this:

Mbalenhle: *Before they go for formal assessments, I do proper revision. They are at college level but we provide classwork exercises and verbal class tests to assess their understanding because we want them to be successful. In formal assessment like exams, they are assisted by scribes.*

The above evidence reveals that all participants were applying the auditory learning strategy in their lessons. The auditory learning method supports the use of words to create an image that interprets them. As a result, it may be determined that spoken words produce pictures with critical significance for a student with a visual impairment. Participant Mbalenhle said that she always provided extra time for students with visual impairment to check if they understood what was taught; however, she has noticed that such students excelled in grasping information without even recording with their assistive devices.

5.2.2.4 Storytelling strategy

Lecturers' knowledge of schools and classrooms as personal and professional spaces, allows them to situate themselves as informed and knowing people (Bettini et al., 2022). When the lecturer narrates the story with diverse gestures, variations in moods, volume, and sound, narration as a strategy becomes more interesting to students with visual impairment. This implies that the lecturer must be well-versed in various techniques display various moods and feelings to impart knowledge and skills to VI students. Only one participant who used a narrative or storytelling strategy responded:

Mbalenhle: *I developed love for the students with visual impairment. Before the start of the semester I conduct training with them so that the sighted students can accommodate them and*

understand that they are equal and the same. I create an atmosphere of freedom for them so that they are able to share their stories.

Five of the participants (Simon, Siphon, Bhuti, Lucky and Themba) agreed that the narrative or storytelling strategy creates an interesting, vibrant, and conducive learning atmosphere. This implies that one of the best teaching strategies is storytelling as it creates a high level of motivation, engagement, creativity, peer cooperation, subject knowledge, and a better attention span.

5.2.2.5 Demonstration strategy

Participants (Simon and Themba) at the research site (TVET college) explicitly stated that as lecturers, they apply demonstration teaching strategies in educating both sighted and VI students as expressed in the following extracts:

Simon: *More demonstrations are done in class. Even the role-play that we do for students motivates them to understand the lesson. Students love touching an object when the lesson follows the demonstration format.*

Themba: *The way I teach sighted students can never be the same as the way I demonstrate when teaching students with visual impairment. I always make sure that I use more practical examples when dealing with them. I do not just generalise something, I go into detail and try to explain until they understand, even if they cannot see what I am talking about.*

Students with visual impairment can access audio-visual presentations and demonstrations by providing oral explanations. This method is effectively applicable in abstract lessons (e.g. presentations) where students need to practice with objects to conceptualise the whole process. This demonstration was seen as an effective strategy of teaching and learning because students normally use the available resources in daily life. During a demonstration lesson, students love touching objects when the lesson is in progress. The demonstration style is an important educational strategy in practical courses and for developing learners' procedural knowledge (McLain, 2021). As a result, the demonstration improves students' all-round achievement. In addition to improving their practical and investigative skills, students must also engage their innermost mental faculties the task at hand.

5.2.2.6 Synthesis

In pursuit of finding answers to the research question (How do lecturers' learning journeys shape VI students' learning?), the lecturers' learning journeys were characterised by several

interconnected practices such as lecturers' choice of the lesson-delivery method (pedagogy), and lecturers' role in enhancing the implementation of the IE policy. Teaching strategies such as learner-centred pedagogy (Multi-sensory strategy, audio learning strategy, narrative/storytelling, and demonstration) all emanated from responses elicited from the narrative interviews. But it is worth noting that not all the relevant teaching strategies were applied across all the lecturers and in the same classroom. For example, only two lecturers utilised the multi-sensory strategy of teaching. However, whilst participants Mbalenhle and Themba claimed that they used computer-assisted instruction, data from the narrative focus-group discussions revealed that their lessons involved storytelling – thus suggesting that they were confused about the various strategies of teaching. The data also revealed that the choice of the teaching strategy and learning resources depended on lecturers' teaching skills such as adaptability, appropriate pedagogy, communication skills, motivation skills, and classroom management skills. The use of the appropriate pedagogical skills and relevant teaching resources also makes a lecturer competent. However, a lecturer might know the type of teaching strategy that is appropriate, but inappropriate teaching skills may result in the inappropriate selection of learning resources. Furthermore, there is also interrelatedness between teaching methods, teaching skills, and lecturers providing additional support to the students with visual impairment within and without the college environment. Accordingly, a lecturer may be efficient in choosing a suitable teaching strategy and display competent teaching skills, but because of the presence of students with diverse abilities, the lecturer may need special support to ensure that he/she achieves set academic objectives. In sum, it is clear that lecturers learning journeys in teaching students with visual impairment involves an understanding of the interconnected practices ranging from selecting appropriate strategy, possessing suitable teaching skills, and providing extra support to drive IE to a different level.

5.2.3 Provide Accommodations and Adjustments for VI students

Students with visual impairments need to be accommodated in the IE classroom. They can be provided with the same curriculum as their sighted peers by employing methodologies, learning styles, and assistive technologies. Another crucial characteristic of a lecturer is his/her teaching method to accommodate students with visual impairments. Thus, inclusivity in education refers to the recognition and encouragement of all students to share and learn in the same environment, regardless of their abilities (Dumitru, 2023). The inadequate information that the participants provided regarding the accommodating of visually impaired students during teaching and learning somewhat hampered this investigation, as I wanted to know more about how to include VI students

in the lesson. According to the generated data, participants applied several ways to engage students which included the use of the audiotape, verbal description of visual aids, raised lines, drawings, tactile models, braille lab signs, and equipment labels, and auditory lab warning signs.

5.2.3.1 Audiotaped, Brailed, or Electronically Structured Lecture notes

The use of audiobooks improves student motivation because it makes it simpler for them to study anywhere, at any time (Sari et al., 2023). In support, all six participants at the research site (TVET college) mentioned that they adapt their lessons to accommodate students' abilities by considering knowledge content before choosing a topic and strategy for teaching, as articulated in the following extracts:

Simon: *I assist them by breaking down what is in the char, and try to use the environment so that can understand.*

Sipho: *When I teach, I try to use the strategy of imaginary pictures. There are concepts or terminologies that require some spelling and explanations that they know and understand. I try to contextualise what is in the textbook with them after pronunciation, because visually impaired students cannot see those terms.*

Bhuti: *In my class I do read and deliver more verbal lessons for them to make use of the recorders.*

Lucky: *I use recorders for them during the teaching and learning process as well as having some extra resources that will help them.*

Themba: *I make sure that I sit next to a student with visual impairment at the front of the class so that their recorders can easily capture the lesson of the day. Most of the time I stand in front of the class.*

Mbalenhle: *The method I have tried concerning class assessment is to voice-record myself reading the instructions for them so that when they are not in the class they will listen and attempt doing the same even though it takes a lot of time.*

Students with visual impairment can also access print information via audio-devices. Therefore, these tools can facilitate a student's access to information, but it is important to remember that reading books aloud does not necessarily lead to becoming literate. Since hearing is not a type of literacy, auditory skills should be used in conjunction with print or braille instruction. One participant mentioned that during the college year, she set in motion a series of accommodations

and adaptations that allowed students to fully participate in all lab and other class activities (Watson & Bell, 2022). Another participant mentioned that she tried to make them feel comfortable by storytelling but it was so challenging realised that teaching and learning is a lifelong learning journey because you learn as you practice.

5.2.3.2 Provide Spoken Descriptions of Visual aids

When a lecturer delivers a verbal presentation to students by providing visual content, the lecturer should try to verbally describe that subject matter so that everyone can access it, including students with visual impairment. According to Lavrenteva and Orland-Barak (2023), visual aids combine to assist students to grasp the meaning of images, provide motivation, and effect better learning experiences. Three participants stated that lecturers must choose the correct and applicable teaching strategies in line with the lesson aim and objectives to gainfully accommodate students and convey knowledge. In this regard, the participants articulated the following:

Simon: *They are provided with laptops and recording devices, but I do not think that is enough for them to study. We face challenges when teaching them so I will have to break content down into smaller units, and repeat it a number of times for them to be able to capture and understand the content in their textbook. What we normally do is apply the principle of ubuntu to not ignore their challenges. I also allow debates and presentations to accommodate them in class.*

Lucky: *I encourage them to interact and participate by also asking questions when they do not understand. But from time to time, we share information verbally in classrooms. What I try to do is to pay more attention to them so that they are not left behind.*

Mbalenhle: *I give extra classes because some are too shy to ask questions in front of others.*

Most people who are blind or are visually impaired started using conventional navigation aids such as white canes, guide dogs, a trained guide or a volunteer a long time ago (Kuriakose, Shrestha & Sandnes, 2022). But in educational settings, teaching strategies implemented in learning activities utilise visual aids and other assistive devices to stimulate conceptual understanding, which is aligned to the multi-sensory and audio-learning methods. The ability to be flexible helps in choosing and utilising the appropriate educational resources.

5.2.3.3 Created raised-line drawings and haptic models for graphic materials

Drawings by hand are becoming more popular as digital touch-screen devices proliferate; hence, sketch-based image retrieval has attracted much interest in the computer vision field (Zhang et al.,

2022) which presently plays a crucial part in text- and content-based picture retrieval. In line with this thinking, three participants at one research site commented that they adapt the lessons to accommodate students' abilities by considering suitable topics and strategies for teaching, as enunciated in the following excerpts:

Simon: *The methods I use differ when it comes to aspects such as charts, drawings, and demonstrations. I always try as much as I can to use my own creativity to try and inspire them to learn. Everything I draw I explain it before and after drawing. I also explain the structure to them to deeply integrate it into the lesson.*

Sipho: *I avoid using the words 'can you see' to ensure that they are accommodated, but when there is something that needs to be explained and drawn on the board, I always try to give them a clear picture of what is really going on; for example, if it is a three-column drawing, I would say this drawing has three columns with five rows, and then I try to explain further to give them a clear picture.*

Mbalenhle: *It was not easy at all at the beginning because in some lessons you must draw on the board, but now instead of writing or drawing on the board, I try to elaborate by painting a picture in their minds.*

A lecturer's capacity to adapt is crucial when planning or delivering a lesson. This is also synonymous with flexibility as they are interconnected. Depending on the situation in the classroom, it may sometimes become necessary to adapt to make last-minute changes which require a degree of flexibility, especially when teaching VI students who frequently utilise tactile materials such as tactile graphics, three dimensional models, and real-life objects (Phutane et al., 2022). This was confirmed by one participant who mentioned that they develop adaptation strategies while in the process of selecting learning materials and utilising them in lesson-delivery.

5.2.3.4 Provide Braille lab signs, equipment, and aural warning indications

There should be adequate resources in place to ensure the success of teaching and learning. Wangmo, Daker, and Lhadon (2023) define resources as tools that help lecturers prepare and implement classes more effectively. Surprisingly, some participants reported that there were no braille books on campus. According to Beyene, Mekonnen, and Giannoumis (2023), resources can be separated into three categories: ideological ware (IW), SW, and hardware (HW). Both the lecturer and the student should be aware of the resources available to help with good teaching and

learning in class. While some participants indicated that resources are available because they get them from the supplier, they were not enough, because three lecturers (Sipho, Bhuti and Themba) criticised the inadequate supply of resources at the TVET college. The following responses reveal their views:

Sipho: *We use resources that we have in hand when trying to assist them in their difficulties. We are improvising and use our creativity to do better for the students. Even if their recorders are broken, we are the one to do the follow-up.*

Bhuti: *The buildings had no proper signage to help other students to be informed on how to assist or treat students with visual impairment. Before the classrooms did not have ramps, and students did not have supportive devices. That made things more difficult and they were not able to capture the lessons of the day. I try to facilitate those students by explaining how and what is expected from them going forward.*

Themba: *For them it was a challenge to even get to class because of the unfriendly environment for students with visual impairment who had to contend with, among other, the absence of ramps on stairways. I allow them to be accompanied by their sighted colleagues to and from the classrooms.*

Inclusivity has an advantage in that sighted students read for visual impairments by using printed books since there were no braille books and since schools do not have computers with JAWS software. The sighted also assist during groupwork projects since they have access to supplementary reading materials (Mlambo, 2022). The evidence generated shows that the lack of resources and ‘specialised TLMs’ across the campus made lecturers’ learning journeys difficult in teaching students with visual impairment. To improve the situation there should be an active task-team that visits various TVET institutions where there is a fully functional Inclusive Learning system to benchmark. This includes repeating interventions for pupils with visual impairments and updating Internet Explorer policies. When benchmarking, one learns how to become an expert in an Inclusive Unit. One participant stated that in order not to segregate differently-abled students, much spatial and logistical arrangements (including accessing special resources) must be executed so that the students may move freely to effectively acquire the benefits of the lesson.

5.2.3.5 Synthesis

To find answers to the second research question, *how do lecturers' learning journeys shape their teaching of students with visual impairments in particular way?* The narratives identified both similar and different views. This process was characterised by several interconnected practices such as lecturers' choice of the teaching strategy (pedagogy) suitable for students with visual impairment which plays a substantial role in enhancing the implementation of quality lessons to attain best practice.

Teaching strategy such as computer-assistant instruction (multi-sensory, audio-learning, narrative/storytelling, and demonstration strategy) was evident from the narrative interviews; but not all the relevant teaching strategies were applied across all participants when teaching students with visual impairments. For example, only two lecturers utilized the multi-sensory strategy of teaching at the research site (TVET College). However, whilst participants Simon and Lucky claimed that they employed computer-assistant instruction pedagogy, data from narrative focus-group discussions revealed that they were using the storytelling strategy which implied that they lacked knowledge about the various strategies of teaching since they were not trained to teach students with visual impairments. The utilization of the appropriate teaching strategy and teaching resources also promotes lecturers' competence, but thorough training is imperative to achieve success when teaching students with visual impairment.

5.3 REFLECTIONS ON ENTERING THE FIELD OF VISION IMPAIRMENT DURING PERSONAL LEARNING JOURNEYS

A reflective narrative is a form of personal writing that enables individuals to reflect on past events and transitions in their lives. When people perceive 'familiar patterns' that correspond to past memories, it helps them understand their own history while and facilitating self-reflection of prior experiences (Haimson & Marathe, 2023). This implies that writing a reflective narrative provides individuals with opportunities to not only describe their experiences, but also to consider how they have transformed or developed. The third and final research question of this study was based on the narratives of participants' learning journeys in teaching students with visual impairment. The view that people live to tell their stories is central in narrative inquiry (Alvesson, 2020). Huang (2022) reiterates that humans, for as long as they live, converse about their life-stories. As a narrative inquirer, I also believe storytelling is a significant medium of reflecting on past and present experiences. Thus, the narratives presented in this study were generated from interviews

with participants who extracted their stories from in their written reflective narrative schedules. Lastly, the presentation of the results follows a narrative approach for the purpose of answering the third research question.

5.3.1 Lecturers' Educational Experiences

The educational backgrounds of the lecturers were as follows:

Simon: He is a 46-year-old male TVET college lecturer. He has taught students with vision impairments in an inclusive classroom for nine years (since 2015). Concerning his educational background, Simon reported as follows:

I've been teaching for almost 16 years, but I only have four years of expertise in teaching students with visual impairments. I began my career with a Diploma in Education, but I recently completed an Honours Degree in Inclusive Education, which included research on students with visual impairments that began in 2014. I am now pursuing a master's degree in Inclusive Education because I am passionate about educating individuals with visual impairments. I began teaching visually challenged students in 2015. This was at a time when the college was not ready, but legislation and change in regulations forced the college to admit students living with disabilities in general. At the time, we had several students with visual impairment at our college, so a few courses were put together to assist the lecturers to communicate with the students effectively. It was short course on how to communicate with, and be sensitive to, students with visual impairment in teaching them in class so that they do not struggle. Since then, I have been teaching students with visual impairment in my class, and the number has been increasing. That is my journey from 2015 until now.

Initially, it was a struggle communicating with students with visual impairment. I never had training and what made matters worse were learning deficits in their own basic education background. Most of the students come from poor academic backgrounds where they were not exposed to quality education even before they became blind, although some were born blind. They come with little knowledge given their background so it becomes difficult to cope at the college level. The challenge is making them to understand what you are talking about. If you are trying to teach somebody about a vehicle, for instance, or an operation inside a warehouse, the visually impaired students are disadvantaged. Trying to teach a student who has never seen anything in her/his life, or who has never been exposed to before at some point, is very difficult. I tried to paint a picture to the student, in addition to breaking down content, and illustrating examples for them

to click correctly into about what I am teaching. That is the challenge I face; it takes longer to prepare for a short lesson, and you lose a lot of time.

Sipho: He is a 39-year-old male TVET college lecturer. He has 14 years of teaching experience. He taught VI students in an inclusive environment for seven years. With respect to his educational background and experience, Sipho's account mirrored that of Simon:

At the time of this study, I was teaching four students with visual impairment in a class of sighted students. I hold a Diploma in Education as well as an Advanced Certificate in Technology Education from the University of South Africa (UNISA). I am a qualified lecturer to teach students with visual impairment. However, teaching students with visual impairments is a difficult assignment since, as a lecturer, I must comprehend their attitudes and behaviour. Furthermore, I must be aware of the phrases I use in class; yet, overall, it is an excellent experience. In addition, when I teach, I attempt to apply the method of imaginative images. Students with visual impairments cannot see some concepts or terminologies, so they must be spelled out after pronunciation.

My adventure with educating individuals with vision impairment began in 2016. It was frightening since I lacked the necessary expertise and capacity at the time because I had not been trained to teach and interact with kids with vision impairments.

I did not know the correct technique on how to interact with them. As time went by, I tried to interact with them and master communication techniques. I also mastered understanding their attitudes and tried to put myself in their shoes. Together we unearthed techniques on how to make the teaching and learning processes work. It was not an easy task because even when I put up a statement or question, I did not know if I was provoking a student. Now, as I am experienced to the task, I can interact with them in any relevant situation. My learning journey has been so good so far, but I keep learning day by day.

Bhuti: He is a 41-year-old male TVET college lecturer who has over 14 years of teaching experience.

His account follows:

I have taught students with visual impairment in an inclusive classroom for 12 years. At the time of the study, I was teaching three students with visual impairment in a class of sighted students. I have a professional qualification (Diploma in Education) and an Advanced Certificate in Public

Administration from the University of South Africa (UNISA). I am hoping to enroll for a master's degree soon. Prior to this qualification I completed a PGCE qualification in the teaching and learning field.

My experience at first was not a pleasant one. Having to deal with students with visual impairment, needs a trained, capacitated, facilitated lecturer in order to understand them. However, after I obtained my PGCE Certificate, I found it more convenient as inclusive education was part of my PGCE programme.

In 2016 when this programme was introduced, I was one of the lecturers who was identified due to the increased intake. At the beginning it was not easy, owing to the skills one did not have by that time or training that was never provided to me. It was a pilot programme as they wanted to ascertain if it was going to be successful or not. I undertook some research on my own and came up with methods on how to manage and teach students with visual impairment. I will state without hesitation that it was far from easy, but I managed and learned but I am still learning on this journey. The students themselves did not know how to assist me in terms of understanding their situation. As I have mentioned, one is still learning and doing research, but there is much room for improvement.

Learning journeys have to do with the ability to accumulate information and knowledge. It has never been easy for me, but I am an individual who is not lazy to read and do research. I made it a point that I spend some of my time in trying to discover strategies as to how can I understand students with visual impairment on its own, so that I will be able to come with better teaching methods in future. It has been a good and bad journey. The bad part is that there are so many challenges that we came across, and the good part is that I managed to emerge with strategies on how to deal with those challenges, not forgetting that we have this office that was established for students with disabilities. I try from time-to-time to consult with them in order to guide me on what is expected going forward. I can conclude by saying it not easy, and one is still learning, but I will never lose hope. I will be properly trained in the future to assist and teach students with visual impairment.

Lucky:

He is a 44-year-old male TVET college lecturer. He has seventeen years of teaching experience. He spent seven years teaching pupils with vision impairments in a different classroom. He was

not a teacher by profession, although he has degrees in Human Relations and Education (BEd Honours). He explained his background:

I taught visually handicapped children in a separate classroom. I am not a professional teacher, but I do have a degree in Human Relations and a BEd (Honours) from the University of KwaZulu-Natal. I've been a vocational college lecturer for seven years. It has been a challenging journey, requiring passion and dedication towards one's work. The wonderful part about teaching students with vision impairments is that the lecturer also learns from the students.

I started teaching students with visual impairment in 2016. It was not easy for me because it was my first-time teaching pupils with vision impairments without any prior training. I can call it trial-and-error but I think what helped was asking students themselves on how to help them concerning their needs which happens every time I meet new students with visual impairment. In terms of the journey, no one is currently trained to teach kids who are visually impaired. It has not been simple; I am learning via experience. When I educate students with visual impairments, I learn a lot because I get to encounter new things while walking with them. The more time I spend with them, the more I learn new things and thus feel comfortable around them. It seems to me that they also feel the same because when I deliver my lessons, I talk to them inclusively; I do not treat them differently but I always keep in my mind that they are visually impaired. As I have said it was scary in the beginning but now, I am enjoying myself teaching them.

It was challenging because I had to find my feet by using the correct approach to make them understand what I was explaining to them. It was not easy because you will explain something but still have a feeling that they did not understand so I keep asking myself if I have done it the right way as one who was not trained. I make sure at the same time I try to learn through experience. It felt like one was thrown in the deep end and asked to swim. But in that swimming, I had found my way to make sure that the purpose of teaching and learning was achieved.

It is quite frustrating and straining at times because one is lacking teaching aids to assist the students. I rely on my own research and experiences. Lack of training and experience was one of the contributing factors that make it more difficult for one to understand the students and find the proper method to be employed to make sure that we are on the same page.

We attend inductions and workshops, but as far as real training is concerned there is nothing to share. In terms of what should be done to better the situation I think there should be a properly constituted task-team that goes out to various institutions where there is a fully-fledged functional

Inclusive Learning environment to benchmark standards in all the areas that have to do with disability, which includes visual impairment. This team must report back to the college to draft a proper policy that will take into account barriers and provide solutions regarding students with disabilities. When trying to attain benchmarks I also learn; it will assist in uplifting the Inclusive Unit. As already indicated there has been no actual training that has been provided. It has just been a trial-and-error approach until one learnt how to deal with them. Although some workshops have been provided regarding students with visual impairment, they were not teaching-related, but merely on the basic induction of who the student with visual impairment is.

From what I have done and achieved this far, I do not think there is anything I would change, except for one thing: I believe, as lecturer teaching students with visual impairment, I need proper training. Sadly, this college gives very little attention to students with visual impairment. We must recognise them and make sure their needs are met at the right time, because they are not getting the support they deserve from the management of the institution.

Themba:

He is a 37-year-old male TVET college lecturer. He has 12 years of work experience. He taught students with visual impairment in an inclusive classroom for 11 years. Articulated the following:

I have worked for more than four years in a local industry. I am a teacher by inclination as I hold a BTech degree from the University of Zululand. I have been part of this division for almost 10 to 11 years when the Department was established on campus. I have taught both males and females of different age groups and cultural backgrounds. The journey was challenging but with determination I have made it - all whom I have taught passed to the next level. I have been teaching students with visual impairments for eleven years now. They were strictly Report 191 Business students. In terms of experience, it was one of the most difficult methods to learn and educate pupils with visual impairments because I was not trained for the role. Dealing with students who are different, I must adopt an approach on how I can assist them from the beginning. I have learnt a lot in terms how I structure my teaching and learning content, and how to deliver effective lessons. It has been a fruitful experience because I am committed to teaching differently-abled students.

At the beginning there was a plan of training those with limited IE skills, but there was no proper training. It has been practical experience that shaped my strategy of teaching and learning. I equip myself by watching videos and taking lessons online. I sympathise with them [students with visual

impairment] and try to put myself in their shoes in order to make my strategy lessons effective. For me, it is a lifelong learning - I learn every day. I grow day by day because even students with visual impairment are all not the same. I always try to balance strategy and content in the delivery of my lessons to accommodate every student. At the beginning I couldn't understand because it was my first time, and I hadn't been educated to teach students of this level. As time went on, I started understanding by putting myself in their shoes. I try to be positive and patient because I do not want them to encounter situations where I was insensitive to their needs. I have I have positive attitude now. I also have learnt a lot from them.

When I am reading aloud, I break down content or stories step-by-step for recording and clarity purposes. Then I explain the steps and move along with them so that they can make use of their assistive devices. One of the journeys that I have got to experience was to learn how to deal with another side of a human being that I have never experienced before. I end up feeling sympathetic for a person who is blind but that is not helpful but we never received any training on teaching students with visual impairment. As the computer lecturer I need to understand the software and devices that they use they use to access information. I had to switch from visual lessons to more verbal ones. I find that even the student themselves - those who are sighted - are nervous to approach students with visual impairment. I had to encourage them to form groups and build relationships among them to assist in enhancing everyone's performance.

Mbalenhle:

She is a 34-years-old TVET college lecturer. She has over 14 years teaching experience. She taught VI students in an inclusive classroom for nine years. She provided the following background about herself:

At the time of the study, I had only four students with visual impairments in a class of seeing students. I hold a professional diploma in education and an Honours degree in Mathematics from the University of South Africa (UNISA). For the past five years, I've been teaching and studying in Report 191 at a TVET college with a concentration on students with visual impairment. It's been a fantastic experience with some hard moments. It is true that God has got good plans for everyone by the way VI students express their eagerness to learn. They are so intelligent, and they are faster students who have good memories. I started teaching students with visual impairments in 2019; it has been five years of experience now.

It was not easy since I did not get training to deal with them, and that's when I realised that it was lifelong learning journey. At first, I thought they need to be treated differently but I discovered that they do not want this. As the time went on, I learned to treat them equally. I had to change my teaching methods because I wanted to accommodate them and avoid using some insensitive terms. I try to organise students who are close to them to accompany them from one classroom to another classroom. I build their relationships so that they can create study groups. I always provide extra time for students with visual impairments to check if they understood what was taught. What I have noticed is that they are so clever to the extent that they can grasp information without even recording with their assistive devices. I give extra classes because some are too shy to ask questions in front of others. I am the sympathetic type of person who enjoys working with VI students but cannot see them struggling; it is frustrating. That is why we need training and counselling to encourage us because it is not easy at all - but we love them.

My attitude was not good at first, because I was frustrated with the way students with visual impairment struggled. I was sympathetic towards them. I have developed a love for them so before the start of the semester I conduct training sessions with them because I want the sighted students to accommodate them and understand that they are equal and the same. I create an atmosphere of freedom so that they can share their stories but end up finding other difficulties. The announcements inside the college are pasted on walls and noticeboards but they do not accommodate them as they hear about the announcements from other students or a concerned lecturer. That is why I said earlier that they need someone who is specifically qualified to meet their needs. If they are facing challenges, I must take them to the office of the Inclusive and Diversity Unit because the protocol says that I must consult first with them. If the challenge pertains to their studies, I include the SRC structure. I cannot treat them equally and that is a fact. I never received proper training, so we try our best and go the extra mile.

By focusing on the challenge's lecturers faced in teaching students with visual impairment and how they navigated them, all the participants emphasised training to overcome such difficulties. These difficulties include:

- the lack of training;
- inadequate resources to teach students with visual impairment, especially during practical work;
- an absence of assistive devices for students with disabilities;

- time-constraints that delay curriculum coverage as the students with visual impairment tend to slow down the pace of teaching;
- an infrastructure not suited to accommodating IE students which made it difficult for students with visual impairment to navigate their way around campus and arrive for lessons on time; and
- the questionable role played by scribes contracted to assist students with visual impairment, especially during examinations. Below is what they had to say about the challenges:

Simon: *There are several challenges I have come across in teaching students with visual impairments. I have realised that they take longer to understand content since they cannot see, because the type of subjects or courses offered by college are half vocational and half oral. Every chapter or sub-chapter we teach them takes longer for them to grasp. So, I have got to go deeper and break down almost everything into discrete parts for them to understand to record on their devices. This makes time to prepare and deliver lessons much longer. I ended up using two or three periods.*

Simon: *One of the major challenges I faced related to assessment, especially where there was a practical activity, such as drawing a graph or a table that they needed to do themselves to get experience of what they do. It does not help if such an activity is done by the scribe on their behalf. At examination time, this is complicated by the fact that there is no audit of the correctness of what the student said, and what the scribe wrote; at least there should be a recorder that will go with the script on the formal assessments to check the accuracy of the activity.*

Unfortunately, concerning the aspect of assessment, the Department does not differentiate, so all students write the same assessments, whether they are visually impaired, partially, or not. The only difference is that the institution must organise scribes who help VI students by writing for them whatever they say in their answer books. That is the only strategy that caters for the students with visual impairment – as well as being given extra time. As we cannot tamper with anything from the Department, the scribes are employed by the college, and because it is a temporary arrangement. They do not write assessments every day. They write four or five assessments in a year.

The other challenge is that I am not trained to understand the operation of assistive devices they use, so it becomes difficult to assist them when they encounter difficulties in the use of these devices.

Further, there are also challenges related to outdoor activities, such as excursions to vocational and occupational sites – such as warehouses. When it comes to such activities, students with visual impairment are not allowed to go to some sites due to safety concerns. This also applies to restrictions related to work-based learning during school holidays, where some of these outside vocational sites do not accept visually impaired students. They need people without visual impairment or full sighted students, so it is difficult to place them. So, if there are assignments attached to these activities, these students are not able to do them.

Moreover, the demonstrations that I do in class, and the role-play that I enact for students to understand, becomes difficult for them to follow a role since they cannot see and they cannot capture it correctly. Even though I take time to try and explain to them, they understand but it is difficult for them to cope, which results in some to pass and therefore some failed.

As lecturers, there is the challenge of funding to obtain better resources to enhance our programmes. They are so many challenges that I face when teaching students with visual impairment but the lack of resources is the biggest challenge that I face. I do not have sufficient resources when it comes to teaching students with visual impairment. Mind you, I must have resources like the recorder, braille, magnifying glass, and many more. I must hasten to say that the resource challenge is beyond my control because the decisions need to be taken by the college management. Without enough resources how are you going to pass information or educate these students?

One other challenge I have encountered is the difficulty to demonstrate using graphs. It is very difficult to teach subjects like mathematics, accounting, and EBM because of their visual impairment.

Students with visual impairment are sensitive. During the teaching and learning process their attitude becomes the challenge so I must try harder. The challenge is their sensitivity, so there are some terms I cannot use while teaching them. I always try to put myself in their shoes to be friendly and open to them regarding every aspect of life. I try to understand their mindsets through one-on-one conversations, if necessary. I have learned that to teach them, you must also be an advisor and a nurse to them, because I remember one day one of the students with visual impairment had

some difficulties, so I had to transport him to the nearest clinic. These are the challenges I have come across on my journey.

Challenges concerning teaching students with visual impairment are even stipulated in the White Paper 6 of the Constitution that talks about Inclusive Education. There are just common challenges, like resources which is one of the bigger issues. Students with visual impairment need assistive devices that will help them to carry out the task of the day. Nonetheless, one key problem is educating, capacitating, and developing us as competent lecturers who educate students with visual impairments, let alone the little internal challenges that arise within the classroom when teaching them.

Training is required to improve the teaching and learning process. For me, any professor who teaches students with visual impairments should have appropriate training. I was not equipped to teach and deal with students who have vision impairments. However, in 2015, I found myself sitting with students with visual impairment and unsure how to treat them. I was in need of orientation or induction. I needed development and capacitation. There are minor training sessions but for me they do not serve the purpose. I observed and learned on the job. I was not aware of many things before since I was not trained for the task. I was frustrated teaching students with visual impairment.

I wouldn't say there was much training, but one day a college did ask someone [from Thuthukani Special School] to sit with lecturers for approximately 45 minutes and tell us exactly what these students' needs and desires are. It was like training to me; it was like she was lecturing in church, and I had no idea what to make of it. So, I'd say I didn't have appropriate training. I'm still looking for proper training to gain confidence in my job. Honestly, there are several challenges but the main one is the lack of resources. Students have been grumbling about the recording devices they generally use to capture what is stated in class. The issue of using a whiteboard is also a challenge, because I used to write on a whiteboard during my lessons. But now with visually impaired students, I see it as discrimination towards them because they cannot see. Up to now I am still trying to come up with better strategies and that is why I stopped using the whiteboard and began delivering more verbal lessons, in addition to making word notes for them so that the computer can read the notes for them.

Some did not have recording devices, while others struggled to study extra notes. Furthermore, they were not provided with braille-written study materials. There was also a lack of assistive

technology for computer-related subjects. Another challenge was to afford them suitable scribes when assignments were being done.

There are so many other challenges; one of them includes the environment. There are inadequate resources to cater for all students with visual impairment. The buildings have no proper signs to help other students stay informed on how to assist or treat students with visual impairment. Before the classrooms did not have ramps, and even student themselves did not have supportive devices that made things more difficult and not to be able to capture the lessons of the day. The challenge of textbooks arose since the college was only familiar with issuing hardcopies. They seem discriminated against since they did not have resources to assist them. Even the way they were supposed to be accommodated in the classroom was ignored. As the term says 'Inclusive Education' so I was obliged to include them in the process.

I did not know how to manage these students by not hurting their feelings. Maybe they did something wrong in the classroom, and I did not know the kind of support I was expected to provide for them. What helped me to understand them better was that I went and registered for a post-graduate certificate in education (PGCE) and there was a module which dealt with inclusive education. It provided a lot of insight, understanding and information on how to work with every student that is having this kind of difficulty.

Further, the non-supportive infrastructure meant that students with visual impairment living within the campus are always late as they queue to use the same bathrooms as the other students. The students with visual impairment are always late but the sighted ones are on time to begin with the day's academic tasks. I must arrange with other students to pick them up so they can reach their classes, otherwise there are delays. I must accommodate them. The College was built in 1983 but is not conducive for these students.

Mbalenhle:

Students with visual impairment are very sensitive and always feel discriminated against. They need more attention, recognition, and appreciation when I deliver the lesson. I assume that they do not understand everything, so I need to illustrate through diagrams and graphs. For them it was a challenge to even get to class because of the environment, and the absence of ramps on stairways and on doorsteps. It was not easy at all in the beginning because during some lessons you must draw on the board, but now instead of writing or drawing on the board you must try to elaborate and paint a picture in their minds. At times I must draw on the palm of their hands or

on their backs, which it is now outlawed. It was challenging because I did not get any training. The lack of resources was also more challenging; they rely on listening as they cannot write.

The other challenge was the reliance on scribes during assessment - one cannot tell if they are giving the students the answers. Students with visual impairment need assistive devices. They need more time and extra classes. The curriculum states how to treat them. Inclusive Education policy states that they need to be treated equally as others, but we should not shy away from their needs. As a lecturer I need resources to deliver lessons effectively, in addition to training on how to communicate and interact with such students without isolating them.

As far as challenges are concerned, the training support I received from the college consisted of attempts to bring people from outside to assist us, but they only went over the issues that we would have and how to overcome them when teaching students with vision impairment. They also advised us on how to improve the infrastructure to aid students with visual impairments, and that the college should make every effort to construct infrastructure impairment.

Participants stated that there were insufficient resources to teach students who have visual impairment as they need assistive technology to be on par with their sighted peers (Kisanga, 2022). Themba exposed the fact that the sharing of resources by students had caused endless problems. If each student had their own assistive device, then each would listen to their own recording, at their own pace, on their own computer. Students will therefore benefit from having their own materials. The lack of resources discourages Simon who claimed that he gets inspiration from seeing his National Certificate Vocational students put in so much effort. Therefore, lecturers feel inspired when their efforts are appreciated when instructing students, despite the lack of resources.

Simon believes that if students had access to adequate resources to aid in their learning, they would learn more quickly and produce better results. The study by Anyango and Okello (2023) suggests that lecturers who work with students with visual impairments should develop positive attitudes to improve the performance of such students, in addition to having teaching and learning materials that are relevant and appropriate for uplifting academic performance. Hence, the workload of lecturers will be reduced if students learn quickly with the aid of sufficient and relevant resources. Also, the availability of resources for students with visual impairment can relieve lecturers of the burden of having to explain concepts repetitively for the student to understand.

5.3.2 Assessment Strategy

On the topic of assessing students with visual impairment, the participants submitted the following:

Simon: *In terms of assessment, tasks are determined by the DHET with no adjustment and considerations to dextral alignment of any kind of student, whether they are visually impaired, partially, or not. Scribes assist with the assessment process for students with visual impairment. The lack of adjustment and consideration for students with visual impairment (e.g. duration, provision of devices, and supportive assistance) poses a challenge to the teaching of students with visual impairment.*

Sipho: *I use resources that I have at hand, in trying to assist them in overcoming their difficulties with respect to assessment. I utilise supportive devices like recorders in order to replay what we have learned. We are conduct three assessments. The candidate who is blind will be provided with a scribe who will read the question aloud for him/her. When it comes to the exams, I occasionally expand the font for them (the partially sighted students) so that they can complete the assessment successfully.*

Bhuti: *I always use oral visual assessments for them such as a presentation to discuss and take part in debates. I allow them to utilise any assistive device that will enable them to recall the information discussed. I also provide them with scribes due to a shortage of resources. In assessment situations the question papers come in the form of hardcopies or pdf, so the JAWS system cannot read the pdf. I have to re-type the question paper and put it on word programme so that it can be easier for them to be part and parcel of classrooms activities. In the class I also must read aloud and present more verbal lessons for them to make use of the recorders.*

Lucky: *There is no assessment that is tailored for the students with visual impairment. However, during the actual writing of the assessments they are provided with a scribe who reads the questions out, and then they write down the answers as given by the students. To be honest, I will be lying if I say there is any special strategy to teach them because I do not want them to feel discriminated. I do not want to use something completely unique as if I am segregating them. I present mainly verbal lessons. I am very careful because I learnt that they are very sensitive. What I try to do is pay more attention to them so that they are not left behind.*

Students complained that they were not given enough opportunity by the scribes to express themselves when they were orally answering the questions. There would therefore be a communication gap between the students and the scribe. The scribe would sometimes read the question and maybe misrepresent what it was asking. Then, because the scribe could not present the question clearly, the student with a visual impairment would not be able to respond correctly.

Themba: *During assessments they use scribes to read out the question papers and the students respond verbally. On the topic of teaching, I mentioned the challenges. In my college I have a situation where I do not have e-books so assessment becomes a problem. They rely more on me to read for them so that they can record the lesson. The method I have tried for class assessment is to voice-record myself reading the instructions for them so that when they are not on the class they listen and attempt in doing even though it takes a lot of time. They also make use of the JAWS system to navigate and use the computer even though there are some sections or areas where it cannot read or assist.*

I am not sure of the employment of scribes but they come from the Inclusive Education Unit. On training I do not know, as I do my training with them like I explained earlier. At some point when I started this journey justice was not there because I found that the scribes were clueless about the content. When the students with visual impairment give instructions and answers via the computer to the scribe, the scribe should be 'clueless'; that is why I involved them during extra classes. I feel justified that it was not there, but afterwards I saw some developments. One challenge that I had as a computer lecturer was JAWS, the software that assists students with visual impairment. I had to start using it and get familiar with it and check where it had gaps so I can try to cover them up during my lessons.

Mbalenhle: *There are no specific assessments that cater for them. They are assessed the same way as all students but they are having scribes to write on their behalf and read out the questions on question papers. Before they go for formal assessment, I do proper revision. They are on college level but I administer classwork exercises and verbal class tests to assess their understanding because we want them to be successful. In formal assessment like exams, they are assisted by scribes.*

I always assess them through scribes. These students prepare like everyone else and when assessment time comes. For instance, we hand them the question paper with all the questions, same like others; but in their case, there would be someone assisting them in a separate room

when answering questions. The scribe would read for the student and student will then answer the question verbally which the scribe will record in written form.

The scribe was recommended by all six participants as the best method of assessment for students with visual impairment. Each participant revealed an in-depth knowledge of the responsibilities and duties of a scribe. Themba and Mbalenhle appeared to be aware that formative and summative assessments are the two basic methods used to evaluate students. Their comments mentioned the summative examination at the end of a semester and the tests that are given on an ongoing basis in class (formative assessment). Students in teacher-preparation programmes should receive the skills they need to raise the calibre of their future practice (Caadas, 2023). Knowledge of various assessment types helps lecturers schedule assessments on time, especially for students with vision impairment because the scribe's service needs to be arranged on time. According to Mbalenhle, it was necessary to prepare a separate room where the students will be assessed with the assistance of scribes. This implies that in addition to the question paper and answer sheet, the venue and scribes are necessary for the student with visual impairment to be assessed.

Sipho chose large print font for students who were partially sighted while everyone else used scribes. Large print font as an assessment technique gives them the independence to write for themselves, saving the lecturer from having to find a scribe, including a different location. According to Adongo (2023), lecturers used a range of methods to make the curriculum accessible to students who have visual impairment, including creating braille versions of handouts, using large fonts, and creating tactile maps and diagrams. Therefore, it may be concluded that a large print question paper was necessary to accommodate students who are partially sighted to write during examinations. Three participants out of four made it clear that just two assessment methods, human reader and large print font, were useful to them. The human reader was only used for summative and formative assessments for students who are completely blind, whereas large print was only used for students who are partially sighted. Although the scribe helped them, the lecturers admitted that utilising scribes presented certain difficulties, including linguistic and semantic issues.

5.3.3 Training Provided by the College

When questioned on how participants experienced teaching students with visual impairment, they reported as follows:

Simon: *When this thing first started, it seemed as though we would be equipped with the necessary training to be able to handle these specific students. However, absolutely no training was given. We give it our all. The way it was presented is the problem. Given how far you had to walk, we will help you along the route to find you. And it never happened. To put it another way, we were promised training, but it took a long time before anything was accomplished. There was no training available when we began. UNISA is currently hosting a three-day workshop on inclusive education. I have never had any training opportunity in accessing it. Despite not having any prior experience, you try to utilise your own judgement. I am not used to instructing students with visual impairment. We have often requested [from management] training, workshops, or other forms of empowerment that can be of assistance to us.*

The journey that I have travelled with the students is not a very long journey because they do a year course. If I absorb the first group, they will do levels 2, 3 and 4 - so it is the same group. Hence, I have a short journey with them, but during our journey I have learnt some sensitivity about how to manage them, and the type of questions they pose. Through this journey I have also learned their level of understanding and intelligence, what they know, and what they do not know.

My input regarding changes and improvement refers to the career guidance department that should try to encourage students with visual impairment not enroll in courses that are vocational because some are learning this for the first time, so it becomes difficult to cope.

Overall, on reflecting, I would say that some training was facilitated along the way about handling students with visual impairment such as how to interact and treat them, and generally about people living with disabilities. I would not call it proper training, though; I will call it an orientation where they explained what inclusive education is. It was something like an induction in that there was no proper training received from our college. I only apply a little knowledge that I have obtained from my previous qualification, otherwise it is not an easy journey to teach students with visual impairment without any training. I concede that even though I did not get thorough training, internal arrangements were made to assist us to understand students with visual impairment' difficulties.

Sipho: *I try to accommodate them in my class with the assistance of other students who bring them to class and then sit next to them and listen to what I am saying while I am lecturing. It is mostly guesswork as I am not sure if I am doing it correctly or not; but usually, I send them to the office for disabled students within the campus, although I am not sure what they say to them, but*

most of the time they come motivated. Some do not come motivated so I keep sending them to the Unit. I am scared that I might do something wrong that I might regret tomorrow. I also hold extra classes to help visually impaired students so that I can check if the lesson was a successful one, and to resolve their enquiries.

Training is needed in order to improve teaching and learning. We need orientation and induction. We need development and capacitation. There are minor training sessions but for me they do not serve the purpose. For me every lecturer who is teaching students with visual impairment should get proper training.

Bhuti: *One of the things that I think needs to be changed is the provision of necessary skills. Have programmes that are going to unpack the most important things so that when we are delivering lessons it will be easier for them to go and consult and apply those skills that we practised in the programme or seminar. Everything should happen at the same venue, and they need to be equipped with necessary resources for them to be able to do things on their own.*

These perceptions about changes in teaching students with visual impairment go against the popular belief among lecturers that students with visual impairment must be registered for theory subjects, not vocational subjects. The content-based teaching that lecturers employ to teach certain topics to increase students' understanding of various educational courses is referred to as pedagogical content knowledge (Kaya et al., 2022). Even though the central theme of the discussion was about changes in the utilisation of resources, four participants (Lucky, Siphon, Themba and Mbalenhle) agreed that only proper training was needed to improve lecturers' quality of teaching concerning students with visual impairment.

Lucky's reflections are explained below:

In my teaching, I start by stating the facts, I have this challenge in my institution of not applying the policies as per the challenges my students are facing. Currently I do not have a policy that accommodates students with visual impairment. I say this because the formal assessments are written in black and white hardcopy with the help of Scribes. So, to me the fact that we must hire Scribes is some sort of discrimination, which I see as not being a good thing. I have this system that I have created that I need to understand each student and their challenges and assist in those spaces. I do not totally rely on those assessments which are done with the assistance of the Scribes because for me they are not fair. So, I also make use of the verbal assessment where I ask questions and see their response. I also allow debates and presentations.

I mention all these things of not being ready for this idea of admitting the students with visual impairment. The college needs to do the research and accommodate the staff and lecturers in the process and allow them to air their views and experiences and challenges they have been facing ever since. For that they should be able to come with better solutions to make sure that whatever that the college wishes to achieve is achieved. Even the people that are responsible they are putting aside the lecturing staff. The people from the management they are not hands-on as far as the students with visual impairment are concerned. I do not even think the college is even doing the research as where or how far the intake of Inclusive students goes. They need to gather information, resources and hire lecturer that is qualified to accommodate them. The policies may be there but they are not applying them.

In terms of the resources, we reported the matter to the specific office and they tried to get some assistive devices like laptops and recorders. But what I do is that I sit with them and talk about their needs. I learned a lot from them. One said that the only person who could understand his situation was the person who has the same disability. I encourage them to interact and participate by also asking questions when they do not understand sections of content. I do not think there is anything else I can do as a lecturer; we are lucky to have the Inclusive Education Unit. I communicate and refer students to them and they take over and assist. I think to a certain extent that the Disability Unit is assisting and playing a role in catering for students with visual impairment, especially concerning their challenges. One must be careful when dealing with students with visual impairment as they easily feel discriminated against, especially when they are not given the attention that expect. One must try and strike a balance between them and those who are sighted. The lack of specific training has also been a challenge - we had to learn through experience.

Although I teach them at the same venue together with sighted students there are aspects that differ; for example, when I conduct assessments it becomes a challenge because obviously, they cannot be in the same venue. In the beginning I was not sure if it was the right way to assess. I would get some students from other programmes to assist with the writing of assessment until such time the college management intervened and arranged scribes who assist with assessments both formal tests and assignments. Because they are not sighted, they need assistance. Also, I cannot issue them with books because they can read through electronic devices. Fortunately, I was able to contact some people to assist and eventually it was arranged - those electronic books were made available to them.

From what I have done and achieved so far, I do not think there is anything I would change except for one thing; I believe we as lecturers teaching students with visual impairment, need proper training.

Themba: *Training is needed to develop the quality of teaching and learning for students with visual impairment. Training should encompass lesson delivery, software operation, and IE because we need to overcome challenges. The software aspect plays a crucial part for them to follow-up on what we have taught them. Training of staff will sensitise them on the way of speaking to such students by using non-offending terminology. Training can change the way we deliver our day-to-day tasks.*

Sadly, no formal training was offered. So, we relied on recordings which were key because students with visual impairment learnt better through listening. I can record sessions short-cut on the computer keyboard and during one-on-one sessions. Even the programme JAWS which they introduced was not linked to any form of training. The College Unit co-ordinator must look closer to help lecturers and students by providing training and workshops. Basic application of the JAWS programmes, among others, requires much-needed training.

To be honest there is nothing I can do about the challenge of infrastructure because the college management is slow to realise the importance of a disability-friendly environment. I just be patient with the students and give them extra time. I came up with the strategy of encouraging them to bring their supportive devices to class, so that they can be able to assist themselves by using the recorder to assist them with revision. I make sure that when I deliver lessons I do it carefully and slowly so that they can be able to record and capture the day's lesson.

Mbalenhle: *I have never had any training concerning students with visual impairment. Despite not having any prior experience, I try to utilise my own judgement. I am not used to teaching the visually impaired. There has been no training that has been conducted at this TVET campus. I deliver lessons by using my best strategy and giving them more time even during assessments. I was merely shown how to operate the equipment in the classroom. The key to successfully integrating students with visual impairment is to ensure that the lecturers have the necessary training to do so.*

The participants confirmed that they had not received training before teaching students with visual impairment. Simon noted that although they had been promised training, he regrets that it did not materialise. The programme titled 'Inclusive Education Workshop' did not specifically address

approaches to be adopted by TVET lecturers in teaching students with visual impairment, but rather covered inclusive education in general. As a result, the urgency for a training workshop to address problems regarding teaching students with visual impairment remains.

In Mbalenhle's case, in contrast to the other participants, she took on the role of a change agent by speaking with management and demanding training for both herself and other lecturers. Because she saw workshops and seminars vital to be empowered to deal with VI students, she engaged in dialogues with management on training issues. Themba and Linda stated that they try their best to use their own creativity even though they have not had any training. Their claim implied that they were managing students with visual impairment on their own initiatives. According to Watermeyer et al. (2023), training lecturers to facilitate VI students' learning should focus on practical skills like curriculum adaptation, assistive technology, and changing the negative mindsets of lecturers regarding disability.

Therefore, it may be concluded that lecturers who are not trained to teach students with visual impairment use their own judgement, which may have major repercussions such as transgressing sensitive barriers. It requires training to be skilled while working with students who have visual impairment, and to desist from trial-and-error techniques.

5.3.4 Adherence to Policies for Teaching VI Students

The policy from the DHET (not from the college) that stipulates the students with visual impairment have the same right to education as any other normal student. They are admitted to the college, and they become our students like all other students. The college adheres to the regulations legislated by Government that must be adhered to; if students with visual impairment qualify for admission to the institution then they must be accommodated. The college is also supported through third parties and sponsors that help with assisting students with visual impairment by providing materials such as supportive devices for students to cope with their academic college pursuits.

According to policy, students with visual impairment must be encouraged to use appropriate and suitable assistive devices to decrease the degree of poor sight, especially for those who are partially sighted. Moreover, clear instruction to students with visual impairment motivates them to engage with study material and increase the quality of their oral activities.

Lecturers were asked what the TVET curriculum promoted through inclusive education, and how they implemented the inclusive education policy when teaching students with visual impairment. Their comments were as follows:

Simon: *I have two students this current academic year who have visual impairment. They come with recording devices that they use during my lesson. The college still has a long way to go when it comes to providing proper inclusive education for students with visual impairment and other disabilities to access education in TVET colleges. Also, the college still needs to develop policies to implement to accommodate such students to access education in TVET colleges. I feel the college has not been able to provide all the needs like infrastructure and internal training. I believe the college can still do more in order to develop lecturers to effectively teach such students in order for lecturers to know exactly as to how to deliver lessons to students with visual impairment. Lastly, students sometimes miss writing their assessments because of the unavailability of scribes.*

Sipho: *The White Paper 6 recognises and protects individuals who are living with disability. The college has implemented some policies which are not sufficient. For example, when we are moving around, we have signs and ramps; I believe that is a policy itself. Every student inside the campus is fully aware of other students with visual impairment. The college can do more in drafting and implementation policies to protect, recognise and assist students with visual impairment.*

Even in my background I was not exposed to such disabilities, but what I have learnt is that everyone must have a room. The White Paper 6 states that everyone shall be treated equally regardless of their disability or colour of their skin. To me, visual impairment means everybody must be included in teaching and learning institutions. Every student shall receive the same opportunity as any other student, which is what the visual impairment means to me. I believe at management level there is an office of Inclusive Education that enforces policies that makes us to see the needs of students better. As Mbalenhle stated, even the official at the Office for Disability themselves had no clue of the right channels to approach. I think it is much harder to manage and look after such a Unit without any background of working in disability sectors and without any proper formal training. It not the same as before, but there is still much to do.

Bhuti: *There are number of policies that exist on paper, but not in practice. I start with the Constitution which enshrines the Bill of Rights. One of them specifies that everyone needs to be treated with dignity irrespective of gender, race, and disability. In the formal assessment activities where they are taken to a separate venue - that is discrimination in terms of Inclusive and*

Diversity. That policy should have a positive impact but I find students complaining about the marks that are not the true reflection of the student's performance. Also, there are many common errors in grammar and spelling when scribes write down students with visual impairments' responses during assessments. This policy of the college to hire scribes to assist is a disadvantage. The policies are there, but they are not explicit on how the student should be treated. In my view, the college needs to revise the policies and consult with the students to understand their views when hiring trained staff.

The College itself does not have internal policies in place which makes things difficult for us. Doing research on my own is one of the things that assisted me a lot in aspects of policymaking. The policies may be there, but they are not applying them. I can mention some policies such as the Constitution of the Republic which guarantees the fundamental right to education. The White Paper 6 on Special Needs Education stipulates that all learners, with or without disability deserve reaching their learning potential to the fullest, but the college did not apply even one of the policies.

There are measures that have a negative impact on students with disabilities, such as inadequate infrastructure, which contradicts the White Paper 6 recommendations. While it appears to be a fantastic idea on paper, putting it into action becomes difficult. The college still has to improve its infrastructure; some students believe they are being excluded from certain college activities, such as sports. Some notices on noticeboards are not visible to those who cannot read them, and no action is taken to notify or share this information with them. In the policymaking process the students should be involved when the policy is being drafted. The social learning approach speaks more about how lecturers interact with students, and also this encourages students to work together to reach common goals.

Lucky: *There are no prescribed policies that one must abide by when dealing with students with visual impairments - not in my college. We one must ensure that they are treated as humanely by as possible by ensuring equal treatment with the rest of the students. I have not seen any policy. If there is a policy, it is informal. There is a Unit of Inclusive Learning or office that is responsible for the affairs of disabled students, like arranging scribes for them during assessment sessions. I am not aware of any on trainees or interns of the institution being used as scribes to assist students with visual impairment. They are not employed by the Department. I was not trained. I'm on the side of the scribes because I am in a similar situation as I never had proper training, neither did*

I use scribes. I remember one of the students did have a complaint when a scribe read the question but some struggled to make-sense of the question. As a result, the students with visual impairment ended up struggling to frame the correct answer. The questions were not read correctly by the scribes.

Themba: *The person who is responsible for managing the Inclusive Learning Department on campus has never shared any policy with me, so I relied mostly on students to prepare lessons to be taught, and how best to teach students with visual impairment. The only policy statement was that students with visual impairment must attend classes with other sighted students at the same time. So, I planned to meet with them after hours to give them close attention, and help them with their laptops. I have never heard of any policy pertaining to students with visual impairment. There were no policies that were shared to us, except those during inductions. We learn as we go.*

Mbalenhle: *I was so sympathetic and shocked at the same time because it was my first time with this kind of students, and I had no training or resources to assist. There was no policy to guide us - there was nothing to assist. I tried to make them feel comfortable and tell them stories but it was so challenging to the point that I realised that teaching and learning is a lifelong journey because you learn as you go. The beginning of this journey was a challenge. I recommend that there must be some policies that can make them feel recognised, including buildings that are conducive and with ramps, and resources etc. I think the curriculum department needs to introduce policies pertaining to students with visual impairment. Unfortunately, I never came across any policy. I managed by using my own strategies. But as lecturers we must use this Act called PAJA which is the law that guides us as administrators such that our actions must be lawful, and we must treat all fairly and equally.*

It became clear that lecturers were unfamiliar with the inclusive education policies outlined in the TVET curriculum, including how they should be implemented in TVET colleges. Because they lack reference in terms of a policy that guides them on how to execute the curriculum, lecturers are apt to make mistakes if they are unaware of what the curriculum says. All participants had a more than 4-year experience in teaching students with visual impairment; however, due to a change in policy by the Minister of Education they found themselves teaching students with visual impairment. According to Siphon, the TVET curriculum does not address diversity; there is a gap that must be closed. To ensure that lecturers understand the *why* and *how* of inclusive education, teaching colleges must design courses to equip them for inclusive teaching (Chhetri, Spina, &

Carrington, 2023). Even though lecturers claimed that the TVET curriculum has no information on inclusive education, they predicted how the policy would benefit them if it existed.

Sipho proposed that the White Paper 6 should be amended and implemented rather than only being theorised about. Sipho also recommended policymakers to consider those who may be impacted by their decisions - in this case, students with disabilities. The participants' responses emphasised that there is a critical need for a TVET curriculum that addresses the inclusion and diversity of all students in terms of race, gender, and disability. The policy and the curriculum should also attempt to address and eliminate most of the difficulties TVET lecturers currently face.

5.4.5 Synthesis

The above narratives pointed to several lecturers' learning journeys in teaching students with visual impairment. However, the lack of lecturers' training was seen as a severe hindrance to lecturers' progress in effectively teaching students with visual impairment.

Additionally, the lack of educational resources was one of the major obstacles in teaching students with visual impairment. Inadequate facilities can reduce lecturers' job-satisfaction, which leads to the use of inappropriate pedagogies as a compensatory strategy. This lack of facilities limits students' ability to participate fully in activities. Participating in activities, including those considered as being meaningful, has the potential to enhance individuals' quality of life (Tierney et al., 2023). It was noted that all participants did not receive any training in teaching students with visual impairment which led to shortcomings in understanding policies and the slow-pace of implementing inclusive teaching strategies. When asked to outline the inclusive policy, most lecturers were puzzled. Others indicated that there was no policy in the college. Evidently, professional curricula were designed without considering practical demands. Hence, modifying TVET curricula is a matter of urgency.

5.5 CHAPTER SUMMARY

This chapter presented the data that emerged from the lecturers' reflections of teaching students with visual impairments. The lecturers' learning journeys were presented analysed and interpreted through the lens of the Learning Journey Theory. Each participant's narrative included personal and professional experiences. In developing participants' narratives, I used the narrative system. Moreover, the chapter presented the themes that emerged from participants' re-storied narratives. The lecturers elaborated their feelings, reflections, thinking, and actual teaching of

students with visual impairment. Therefore, data presentation of results was based on the research questions. The next chapter (6) presents the discussion of findings, conclusions, recommendations, and suggestions for future research.

CHAPTER SIX

DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

6.1 INTRODUCTION

The previous chapter five presented the narrative analysis which centred on three research questions which emerged from the data elicited from narrative interviews, narrative focus-group-discussions, and lecturer's reflections; all within the parameters of the Learning Journey Theory. The learning journey, according to Goh (2022), is meant to increase lecturers' understanding of change across time as a component of workplace learning. Interpreting the learning journey theory within this study, involves the lecturers as major agents in teaching students with visual impairments.

This chapter six expands on the research report by offering the key conclusions drawn from the research findings in accordance with the aim, objectives, and research questions. It was determined that the primary goal of the study was met when the learning journeys of TVET college lecturers in educating students with visual impairment were extensively investigated to generate the desired results. Furthermore, the implications of this study's findings and conclusions were meant to provide quality assurance elements to improve teaching-learning situations at TVET institutions, particularly those that impede the advancement of visually impaired students.

The study used a qualitative research methodology to investigate lecturers' learning journeys in educating students with visual impairment at one specific research site. As noted in Chapters One and Two, the research on lecturers' learning experiences when educating students with visual impairment is restricted because most sources are Eurocentric. To achieve the goal of this study, data was obtained from primary sources to address the three (3) main research questions:

- What entails the lecturer's learning journeys of teaching students with visual impairment?
- How do lecturers' learning journeys shape students with visual impairment learning?
- Why are lecturers' learning journeys of teaching students with visual impairments shaped in particular ways?

This chapter focused on the study's findings, conclusions, and implications.

6.2 DISCUSSION OF FINDINGS

One of the significant stages of the research process is the investigator's ability to describe and discuss the authenticity, relevance, and uniqueness of the study's findings in line with the research problem in order to provide fresh insights gained from dissecting the phenomenon under investigation. Since this discussion pursued the comparative discussion approach, the narratives were generated in chapter five (5) to address the research questions included in chapter one. There were three prominent themes that emerged from the analysis of lecturers' learning journeys of teaching students with visual impairment: lecturers' learning journeys of teaching students with visual impairment, how the college lecturers' learning journeys shaped their teaching approaches involving students with visual impairment, and college lecturers' narrative reflections of teaching students with visual impairment.

6.2.1 Lecturer's Learning Journeys in Teaching Students with Visual Impairment

The findings of this study revealed that teaching students with visual impairment required learning from past experiences. As such, reflections lead to new journeys and knowledge which could possibly be implemented to help people develop skills and awareness to circumvent challenges to improve their daily situations. In this regard, lecturers' learning and development encompasses more than mere subject knowledge, pedagogical content knowledge, philosophies of teaching and learning, and methodology (Young & Malone, 2023). Learning journeys are intended to be shared to enhance people's lives in various areas; in the TVET context the following sub-themes are areas where urgent attention is required:

6.2.1.1 Teaching materials and resources

This study revealed that all participants experienced many challenges when teaching students with visual impairments. Despite the difficulty's students with visual impairment encounter, a significant number of of them still attend general schools (Baykald, Corlu, & Yabaş, 2023). However, mainstream educational environments frequently present challenges for both students with visual impairment and their sighted peers, particularly during teaching and learning situations. The primary problem was a lack of resources, particularly when teaching pupils with visual impairments. Read (2023) revealed that lecturers in normal classes opposed the inclusion of students with vision impairments in their classrooms. This mindset contradicts the philosophy of inclusive education.

Simon (a participant) revealed that students with visual impairment took longer to understand concepts since they could not see. This was because the subjects or courses they offer were half vocational and half oral. When lecturers do practical work in class or labs by using the charts and other teaching aids in class or outside the class, it becomes difficult for students with visual impairment to grasp the lesson since they cannot see. Some of the industries that lecturers normally take students to so that they can gain work-experience, cannot accommodate them because they are high-risk. They need people without visual impairment or full sighted students, so it difficult to place them.

To make teaching and learning effective, the required resources must be in place. Budiarti et al. (2022) define resources as tools that help lecturers prepare and implement classes. According to Marjanovic-Shane, Kullenberg, and Gradovski (2023), resources are classified into three types: hardware (HW), software (SW), and ideological ware. According to Teane and Gombwe (2022), using cutting-edge technical resources in the classroom helps lecturers give creative courses that promote student development. Students with visual impairments, in particular, rely on technologies such as computers equipped with JAWS software for real-world learning.

6.2.1.2 Appropriate teaching skills

According to the findings of this study, students with visual impairment require the following resources as standard equipment for teaching and learning: computers with speech (JAWS), recorded materials, reading machines, speaking machines, hand-held magnifiers, braille text, talking calculators, sound sonification, auditory equivalents of visualisation, instruments with auditory (rather than visual) readings, touch and voice-based interfaces, and large print materials. These resources need to be managed effectively as some require special skills to operate. According to Makalela (2023), the challenges in TVET colleges are reminiscent of the apartheid era; TVET colleges still have some challenges related to the provision of resources, which make it difficult for students to perform optimally in their studies. As a result, students with visual impairments become mere spectators, which is contrary to government policy that stipulates students must have access to all necessary resources (DoE, 2007).

Teaching aids or resources play a vital role in promoting students with visual impairment' all-round scholastic performance. Some participants believe that the college needs to conduct research to investigate how to accommodate lecturers' quest to discuss their views and experiences to find solutions to challenges they face on a daily basis. They need to gather information, provide

resources, and hire staff who are qualified to accommodate students with visual impairment. Most students with visual impairments are accommodated in the general science classroom, but few studies have been conducted to determine whether appropriate modifications are made in these classrooms to meet the special needs of these students (Taneja-Johansson, Singal, & Samson, 2023). This study's finding indicates that TVET colleges need up-to-date infrastructure and a revision of learning programme to support effective teaching and learning.

The above findings indicate that before you embark on something new, you should reflect on your previous experiences as events of the past influences your current thinking which can improve challenging situations. This notion is supported by Anggrella, Izzati and Sudrajat (2023), who agree that teachers must be thoroughly equipped to develop effective lesson plans that will meet the needs of students with visual impairment.

6.2.1.3 Lack of appropriate training

This study's findings revealed that there should be training for lecturers. In all countries, lecturers' training is the foundation of teaching and learning (Sánchez-García, 2023). Participants emphasised the need to learn how to approach a specific topic in teaching students with visual impairment. The participants recognized the value of training; however, they did not receive any training in teaching kids with vision impairment. The relevant stakeholders in technical and vocational education and training (TVET) colleges must be willing to accept change in order to strengthen the educational system and achieve excellence in this ever-changing technological environment (Aina et al., 2022). This study exposed the fact that lecturers were not ready to facilitate students with visual impairment. Through relevant research the TVET will unearth solutions to ensure that quality is achieved when facilitating students with visual impairment.

The lecturers involved in this research were not all professionally qualified, as they possessed general teaching qualifications. Lecturers must also engage with technology in the teaching and learning process to assist students with visual impairment with more practical experiences. These findings also corroborate Banegas, Corrales, and Poole's (2020) revelation that mere teaching qualifications did not prove helpful during practical activities in inclusive education. Moreover, findings proved that lecturers were ignorant about braille, which is an essential support tool for teaching students with visual impairment.

Additionally, participants (lecturers) confirmed that since they were employed at the TVET college, there was no training and workshops, apart from a three-day training session in March

2017 which was just an ‘induction’. Shoaib et al. (2023) maintain that providing lecturers with training enables them to acquire new skills and knowledge to transfer into their practice. Hence, TVET colleges should organise ongoing specialised training workshops to help capacitate lecturers with content knowledge and strategies to teach students with visual impairment. Finally, Rice and Smith (2023) discovered that lecturers with prior practical experience and training in special needs education understood diverse students better and prepared and conducted more effective lectures.

6.2.1.4 Negativity towards students with visual impairment

This study discovered that ongoing assistance, training, resources, and infrastructure are crucial to assisting lecturers in implementing the inclusive education policy; nevertheless, lecturers' readiness and negative attitudes impede educating students with visual impairment. Some volunteers (Bhuti, Themba, and Mbalenhle) were unsure where to begin because they had not been trained to educate pupils with visual impairments. Various research on lecturers' attitudes toward students with visual impairments in standard classes revealed differing perspectives. According to studies conducted by Karakoç and Aslan (2022) and Odame et al. (2021), professors in mainstream colleges are dismissive of students with visual impairments because they are unprepared to welcome them into their courses. Others do not support inclusive education in general.

According to the findings of this study, instructors' lack of confidence and competence contributed to their negative attitudes. This means that if professors were instructed on how to cope with students with varying learning skills, they would have more confidence and a better attitude. Some lecturers noted that such views stem mostly from the nervousness they face when dealing with students with visual impairment. Specifically, one participant (Mbalenhle) expressed negativity towards students with visual impairment. She stated that poor assessment processes and unfamiliar content resulted in low self-confidence that led to giving up on teaching students with visual impairment.

Furthermore, findings indicated that lecturer-turnover brings confusion as students fail to adapt to the teaching style of a new lecturer. Lastly, agree that lecturers' attitude towards students with visual impairment changes is influenced by diverse cultural elements as it is difficult for lecturers to understand the habits of different cultures when teaching and learning for students with visual impairment.

6.2.1.5 Unconducive classroom atmosphere

Findings from this study indicated that the college placed visually impaired students in ‘unfriendly’ classroom spaces, for example, the lecturer's ability to oversee abnormally large numbers of students with a range of abilities was a serious barrier. Improper classroom seating, and burdensome lecturer-workloads exacerbated the situation. Further, it was difficult for visually challenged students to get to lessons while they were upstairs - arrangements for moving to ground level classrooms were not in the plans of management. Hence, delays in lesson-delivery affected lecturer-student relationship, and negatively impacted the quality of teaching and learning.

The way a student with visual impairment perceives and understands his/her environment, how they develop cognitively and emotionally, and how they engage with the school environment are all influenced by their sensory development (Flavian, 2024). If the lecturer is inclusively inclined, then sufficient exposure to engaging students in learning activities will be encouraged; they will be prepared to learn independently and reach their goals. Moreover, an inclusive lecturer exploits students' interests to engage them in a variety of activities by allowing them to learn at their own pace.

Additionally, results pointed to a variety of methods of teaching to motivate students to learn successfully at their own speed. Question-and-answer strategies were employed by lecturers to motivate their students to learn. Installing JAWS software, according to participants, would let the computer talk and explain how to operate it. Moreover, inclusive education (IE) which involves teaching both sighted and visually impaired students together is labor-intensive; therefore, offer extra classes are offered to ease the complexity of teaching sighted and partially-sighted TVET students.

Lamentably, the study revealed that buildings on campus did not have proper signage (for peer helpers) to help students with visual impairment to navigate their paths across the campus. The stairways did not have ramps, and the lack of supportive devices exacerbated an already dire situation for IE students who were unable to capture the lessons of the day. Students with visual impairment seemed discriminated against since they did not have resources to assist them. According to Rule et al. (2023), lecturers require tactile graphics, audio-converted texts, and large-print materials for science activities. This need for adaptive resources, materials, and equipment requires extra funding for their procurement. Through adapting classroom walls, cubes, and varied notebooks (among others) into the learning environment, IE takes on a holistic approach.

The proficiency of lecturers and their ability to effectively manage classes are crucial in the implementation of inclusive education (Nantwi, Essel, & Osei-Poku., 2023). The study found that when instructors lack appropriate inclusive classroom practices, students who have special needs may see the classroom as being hostile and unwelcoming. In order to maximise students' learning opportunities, differentiation offers a framework for adapting students' learning, interests, and readiness levels.

6.2.2 Synthesis

This study's findings exposed four necessities when teaching students with visual impairments: training opportunities, teaching materials, institutional assistance, and emotional support. Firstly, training opportunities were prioritised as an urgent need - all six participants indicated its critical importance in teaching students with visual impairment. Secondly, assistive technology was needed for students with visual impairment as a teaching-learning tool (Bouck et al., 2020). This, however, necessitates all lecturers to become well-trained and skilled in the use of technology. Participant (Themba) stated that as a computer lecturer he has a challenge of understanding the JAWS software that assists teaching-learning processes for IE students. Participants identified TVET college management as the responsible agency in delivering all requirements to teach students with visual impairments, however this was rarely done on time. Participant (Bhuti) remarked that psychological services on campus are vital since lecturers become anxious when educating students with vision impairment, necessitating prompt therapy. Moreover, poor infrastructure impeded the proficiency of teaching-learning processes. In this context, Khan et al. (2023) emphasized the importance of providing sufficient infrastructure and essential resources as non-negotiables, adding that these components could influence lecturers' views toward students with visual impairment. In sum, TVET management must be proactive in providing the necessary resources to raise the quality of students with visual impairments' performance.

6.3 TEACHING AND LEARNING METHODOLOGIES TO SUPPORT VI STUDENTS

This study unearthed that all lecturers were not employing a variety of teaching strategies when teaching students with visual impairment. Opoku, Adamu and Daniel (2023) suggest that teachers should create new activities and develop creative teaching strategies to suit diverse learners. Additionally, Brooks-Young (2020) advise that lecturers should act professionally, should always be aware of the alignment between teaching practice and curriculum coverage by reflecting on

their teaching strategies. The Learning Journey Theory was the lens to evaluate teaching strategies in teaching students with visual impairment.

6.3.1 Multi-sensory Strategy

This study discovered that during the narrative interviews, two participants (Simon and Lucky) disclosed that the most dominant teaching strategy was the multi-sensory approach. Chen et al. (2023), in their research on teaching preliminary statistics to blind students, they advocated using the 'hand-see' method to communicate statistical formulas to students with visual impairment. Participant Simon stated that students actively engaged their tactile senses in the lesson as they were able to name some objects even though they could not see them. The multi-sensory strategy allows students with visual impairment to build their own knowledge and understanding, provided that the inclusive lecturer avails the necessary guidance and support.

6.3.2 Audio-based Learning

This study's findings confirmed that all six of study participants shared similar teaching strategies. According to Arandia, Garate and Mabe (2022), lecturers should read aloud to help students absorb knowledge from the textbook and record the lesson on their recording devices. They agreed that the audio-learning strategy was commonly used to ensure that students always follow and understand what is happening during lessons. They normally used audio-learning to assist students with visual impairment. They record videos that can be converted to mp3 that can be listened to at home or res. They make use of their recorders to record step-by-step proceedings, and detailed feedback to their questions. Even in an assessment situation, the question papers are in hardcopy or pdf; so, the JAWS software cannot read the pdf. Therefore, they have to re-type the question paper and put it on the word programme so that it can be easier for them to be interactive during classroom activities.

The use of words to describe a picture that gives clues to meanings of words or sentences is supported by the auditory learning method (White et al., 2020). It may be construed that spoken words create visuals to enhance meaning for a student with visual impairment. Mbalenhle advised that extra time should be provided for students with visual impairment, in addition to checking if they understood what they have learnt.

6.3.3 Storytelling Strategy

This study found that lecturers narrated stories by demonstrating a variety of gestures, variations in moods, volume, and sound. This vibrant and dramatic form of narration as a technique becomes more interesting to students with visual impairment. As a result, the lecturer must be prolific in employing various storytelling strategies for eliciting various moods and feelings. Mbalenhle indicated that through this strategy she has developed a love for students with visual impairment. An atmosphere of freedom motivated students with visual impairment to share their stories with lecturers and peers.

Five of the participants (Simon, Siphon, Bhuti, Lucky and Themba) agreed that the narrative or storytelling strategy created a conducive learning atmosphere. Reading and visualising events in stories helped students to understand concepts better. Importantly, visual displays that aid in scenario creation improve students with visual impairments' reading experience (Edirisinghe, Podari, & Cheok, 2022). It became evident that one of the best teaching strategies was storytelling because it creates a high level of motivation and engagement, an increase in creativity, peer cooperation, a deeper knowledge of the subject, and a longer attention span.

6.3.4 Demonstration Strategy

This study revealed that participants (Simon and Themba) stated that as lecturers, they applied the demonstration teaching strategy in educating both sighted and students with visual impairment. They revealed that demonstrations and role-play are beneficial to students with visual impairment who love touching an object when the lesson was in progress.

Students with visual impairment can access audio-visual presentations and demonstrations through lecturers' explanations. This method is effectively applicable in abstract lessons (e.g. presentation) where students need to practice with objects to conceptualise the whole process. Demonstration was seen as an effective strategy of teaching and learning because students were accustomed to such resources which they used in daily life. Demonstration can be used to improve student achievement by identifying problems, defining them, planning, and implementation. In addition to improving their practical and investigative skills, students exercise their mental faculties in practical work (Themba).

6.3.5 Synthesis

The study found that for an inclusive lecturer to be competent in teaching students with visual impairment, he/she must be mindful of the interplay of the various teaching strategies, teaching skills, and modern practices that are suitable to fulfil the needs of diverse students. It is worth acknowledging that there is no one-size-fits-all set of teaching skills. Teaching students with visual impairment is a diverse occupation with a set of established principles, skills, values, interventions, and strategies that lecturers must possess and implement to successfully teach in an inclusive environment.

Generally, the most effective strategy was audio-based pedagogies such as activity-based lessons, brainstorming, jig-saw puzzles, participatory learning, games, fishbowl, and group-collaboration – these assist all lecturers who manage students from various backgrounds, abilities and interests who have miscellaneous educational needs; however, there is no exclusive method for teaching students with or without disabilities (UNESCO, 2014).

Further, inclusive lecturers have to change their past perceptions to adapt to inclusive principles and strategies when teaching VI students. As such, the lecturer must be capable of adapting lessons by using a wide range of techniques to meet students with visual impairment' needs rather than utilising a particular strategy in teaching. Hence, lecturers must combine numerous teaching skills (communication, motivation, adaptability, and classroom management skills) to engage the students productively. Lecturers should display a reflective mindset and a positive attitude rather to be effective in their teaching practice (UNESCO, 2014). Lecturers must acknowledge that all students have the right to attend a mainstream college, so they must examine the college settings to consider improvements that will benefit all students. Lecturers' understanding of students with visual impairment promotes students to develop socially, psychologically, and academically, thus paving the way for a better future. Students who are motivated by a sense of belonging regard college staff as approachable and helpful, and thus they become gainfully engaged in the learning process. With the passing of time, students with visual impairment will become assimilated in communities to use their interests, knowledge, skills, and abilities to change society for the better.

6.4 ATTENDING TO THE NEEDS OF VISUALLY IMPAIRED STUDENTS

This study recommends that students with visual impairment need to be accommodated in classroom spaces that are adapted to meet their needs so that they can be taught the same curriculum as their sighted peers by lecturers using innovative methodologies and assistive

technologies. Thus, inclusivity in education refers to the recognition and encouragement of all students to share and learn in the same environment, regardless of their abilities (Dumitru, 2023). This study also found that lecturers had inadequate information to accommodate students with visual impairments during teaching and learning time. Results indicated that participants applied common strategies to engage students which included audiotaping, visual verbal description of visual aids, raised lines, drawings, tactile models, braille, lab signs, equipment labels, and auditory lab warning signs.

6.4.1 Notes for Classes that have been Audio-recorded

The study found that the use of audiobooks improves students' motivation because it makes it simpler for them to study anywhere, at any time (Sari et al., 2023). All six participants agreed and commented that they adapt the lessons to accommodate students' abilities by considering available current knowledge before choosing a topic and a method of teaching.

This study revealed that students with visual impairment can access print text and information via auditory devices, but auditory skills should be used in conjunction with print or braille instruction. Audio-recording sets in motion a series of adaptations that allow students to fully participate in all class activities (Watson & Bell, 2022).

6.4.2 Visual Aids Explained Verbally

This study revealed that when a lecturer delivers an oral presentation to students, they should try to verbalise the subject matter by not using visual aids such as pictures and charts so that students with visual impairment can access the lesson. Three participants stated that lecturers must choose the correct and applicable teaching strategies that accommodate students to easily gain knowledge and skills.

Further, participants advised that applying the principle of ubuntu improves teaching and learning because it fosters debates and presentations that are inclusive. Students with visual impairment should be encouraged to interact and participate in lessons by asking questions for clarity, and sharing information (verbally) in classrooms which ensures that they are not left behind. This study indicated that learning activities which utilise visual aids help to imbibe conceptual understanding which is aligned to the multi-sensory and audio-learning strategies. Therefore, a flexible approach by lecturers helps in choosing and utilising the appropriate educational resources.

6.4.3 Textured Models and Raised-line Drawings of Visual Materials

This study disclosed that drawings made by hand were becoming as popular as digital touch-screen devices which allow sketch-based image retrieval (Zhang et al., 2022). In agreement, three participants indicated that they adapted their lessons to accommodate students' abilities by carefully considering ideas before choosing a topic and a strategy of teaching.

Moreover, the research findings indicated that methods used differ when it comes to aspect, charts, drawing, and demonstrations as lecturers used their own creativity to interact with students with visual impairments. Participant (Sipho) indicated that sympathy should be a factor when using language to teach students with visual impairment - words like *can you see* should be avoided. Also, when drawing on the board, the lecturer should simultaneously verbalise it to create a clear picture of the chart, graph, and diagram, among others.

This study found that a lecturer's capacity to adapt was among the most crucial characteristics that should be demonstrated - this is synonymous with flexibility. For instance, depending on the situation in the classroom, it may sometimes be required to make last-minute adjustments. The adaptation element is mainly evident in the process of selecting learning materials and utilising them flexibly in lesson-delivery to accommodate students with visual impairment.

6.4.4 Notices on Walls that are Vocally Announced

This research found that for teaching and learning to be interactive, there should be necessary resources in place. Some participants indicated that there were no braille books on campus which hampered the progress of students with visual impairment. Resources are critical components that support lecturers as they plan and conduct their lessons. It is lamentable that the poor provision of resources affects the quality of education at TVET campuses.

Since TVET colleges do not have braille books and computers with JAWS software, inclusivity has an advantage in that sighted students read for the VI via printed books. The sighted also assist during groupwork tasks since they have access to supplementary reading materials (Mlambo, 2022). The results show that the lack of college resources made lecturers' learning journeys difficult in teaching students with visual impairment. It was recommended that a task-team be formed to visit other similar TVET colleges that are successful to benchmark their operations so that 'failing' campuses can gain knowledge on how to achieve best practice especially in dealing with students with visual impairment. Lastly, much spatial and logistical arrangements (including

accessing ‘special’ resources) must be executed so that the students may move freely to sustain inclusion.

6.4.5 Synthesis

Specialised electronic software applications which are normally learnt during training sessions are currently undergoing rapid development. This study revealed that the presentation process was characterised by several interconnected practices such as lecturers’ choice of the teaching strategy suitable for students with visual impairment.

Teaching strategies such as computer-assistant instruction (multi-sensory, audio-learning, storytelling, and demonstration strategy) were evident from the narrative interviews. But not all relevant teaching strategies were applied when teaching students with visual impairments. Two lecturers utilised the multi-sensory strategy of teaching, whilst others applied computer-assistant instruction pedagogy and storytelling – suggesting that they were diffident about the various strategies of teaching as they were not trained to teach students with visual impairment. In sum, inclusion education involves consistent practices ranging from selecting the appropriate approach to providing extra support that will move the standard of TVET education to a higher level.

6.5 CONCLUSIONS EMANATING FROM THE FINDINGS

The study focused on TVET college lecturers' learning journeys while educating students with visual impairments at one campus in the North Coast Region of KZN, RSA. It was determined that lecturers require continual training and support in order to improve the quality of teaching-learning experiences by modifying their teaching tactics. Lecturers will be able to expand their knowledge and skills to meet the requirements of students with visual impairment through partnership with more experienced lecturers, support from college administration, and assistance from lecturer aides. Lecturers who enjoyed teaching students with visual impairment will find it rewarding to educate varied groups of students.

The learning journey is founded on the belief that all individuals who attend educational institutions must be granted equal education, quality teaching and learning, accommodation in appropriate settings, sound principles of teaching students with visual impairment, a dedicated staff, cordial relationships, and collaboration. In addition, humanistic principles, flexible practice, compassionate teaching, and healthy teacher beliefs motivate the need to change for a better educational standard that meets best practice.

This study has determined that for the college to accelerate progress regarding the provision of quality education when teaching students with visual impairment, the attitudes and behaviour of staff toward the diversity should be revisited lest government intervenes to rectify the situation. Further, the irrelevancy of college programmes, unwieldy student enrolment, and insufficient educational resources are detrimental to the image of a TVET college which is at risk of being put under administration as there is a plethora of transgressions that hinder teaching students with visual impairment. The need for detailed information regarding lecturers' management of students with visual impairments are absent; hence, the college management should endeavour to design guides that capacitate lecturers to empower themselves to understand IE and to deliver lessons to all students in a manner that the sighted and visually impaired can benefit from quality education despite the obstacles. Lastly, Francisco et al. (2023) emphasised that integrating knowledge of classroom practice with lecturers' perspectives regarding students with visual impairment will promote teaching-learning to reach levels of excellence.

6.6 LECTURERS' REFLECTIONS ON TEACHING STUDENTS WITH (VI)

This section analyses the reflective narratives in the form of stories narrated by six lecturers. The story narratives enabled me to capture each lecturer's learning journey in their teaching of students with visual impairments. The analysis of narratives involves identifying and classifying themes stemming from the constructed re-storied narratives through written lecturers' reflective narrative processes (Mosleh et al., 2023). I selected these themes in order to give a more detailed account of the emerging themes' meanings.

The purpose of narratives is to listen and record the feelings, opinions, and views of the participants' journeys. The utilisation of analysis of narratives enabled me to deconstruct the narratives by connecting them to teaching students with visual impairment in order to refine the emerging themes. I used this approach as a strategy to elicit first-hand information from lecturers who are at the forefront of teaching students with visual impairment. The analysis of narratives was categorised under the following sub-topics: lecturers' educational background and experience in teaching students with visual impairment, assessment, training, and policy interpretation. These narratives provided a comprehensive description of lecturers, both personally and professionally. Participants reflected on the following aspects such as educational background, experiences, assessment, training, and policy matters:

6.6.1 Educational Qualifications and Practical Experiences

On the aspect of educational background, Simon holds a Diploma in Education and had recently graduated with an Honours Degree in Inclusive Education through a TVET project which focused on students with visual impairment. He is currently earning a master's degree in inclusive education. He has four years of expertise teaching pupils with vision impairments.

The college facilitated a short course for teaching students with visual impairments which enabled us to accommodate and manage students with visual impairment. Success for students who have impairment throughout and beyond their school years depends on qualified teachers providing high-quality instruction (Schles & Chastain, 2023). To date, the training received contributed to improved skills, knowledge, and experience in teaching students with visual impairment. This implies that Simon's learning journey started with strife, trials and tribulations, as well as errors, until he acquired basic training. Infants, young children, and students with visual impairments should have the right to early and effective visual intervention programmes given the importance of vision in the early stages of brain development.

Academically, Siphon holds a Diploma in Education as well as an Advanced Certificate in Technology Education. Siphon lacks professional skills and methodology in teaching students with visual impairment. He has 7-years' experience in teaching. Analytically, Siphon faces a lack of capacity as a result of inadequate training in managing students with visual impairment. Siphon, finds it difficult to facilitate students due to the lack of proper resources like the audio-recorder, braille, and magnifying glass amongst others.

Bhuti has a professional qualification (Diploma in Education) and an Advanced Certificate in Public Administration. He taught students with visual impairment in an inclusive classroom for 12 years. He wants to pursue a master's degree in the future. Bhuti said that his prior qualification, a PGCE qualification, contributed immensely in teaching students with visual impairment. His was not a smooth learning journey as he was not trained to understand students with visual impairment. After Bhuti obtained the PGCE, he found inclusive education easier to facilitate (Canessa, 2023). He conducted self-research and emerged with innovative methods on how to manage and teach students with visual impairment. He spoke about several challenges but the main one was the lack of resources. According to Tipán et al. (2023), developing teaching and learning strategies and utilising relevant resources for those who are visually impaired is a top priority. However, there is a paucity of didactic materials for teachers to aid them in the teaching-

learning process, especially when it comes to reading and writing for students with visual impairment. Students also complained about the provision of recording devices that they normally used to capture whatever was discussed in the classrooms. He mentioned that scribes were incompetent when assignments and exams were conducted. Moreover, the buildings had no proper signage to help other students to stay informed on how to assist or treat students with visual impairment. Classrooms did not have ramps, and students did not have supportive devices. The management of the college did not allow him to raise these concerns about students with visual impairment. Bhuti blamed the lacking of training and experience as the main contributory factor that made life at the TVET college more difficult especially regarding students with visual impairment.

Qualified and motivated lecturers who encourage students to experience a feeling of accomplishment and success are necessary in order to raise the standard of TVET education – a better recruitment policy and process is necessary (Meece, 2023). The interesting thing about teaching students with visual impairment was that it was not only the students that learn from the lecturer, but the lecturer also learns from students. What Bhuti was doing at the time was based on trial-and-error, but he realised that asking students on how they can be helped in terms of their needs, proved to be advantageous. He reported the issue of the lack of resources to the relevant office, but with little success.

Themba had a work experience of 11 years teaching students with visual impairment in an inclusive classroom. He had worked for more than 4 years in a local industry. He holds a BTech degree. He was not trained for the task of teaching students with visual impairment. His practical experience shaped his strategy of teaching and learning VI students. One of the journeys entailed learning how to deal with human beings who have never experienced clear sight before. He was one as the computer lecturers who needed to understand the operation of software and assistive devices to improve his professional growth as well as to help VI students.

Infrastructure and buildings are also challenging. A class upstairs for students who are visual impaired is difficult to access for students with visual impairment. This delays his lessons because he must wait for them to be in the class to ensure they get their supportive devices. The college management could have moved him to the lower level but it did not happen. At some point when he started this journey justice did not prevail. The scribes were also clueless of the lesson content.

Moreover, as a computer lecturer the challenge of understanding the JAWS software was a challenge as he received no training to operate it.

Mbalenhle has a professional qualification (Diploma in Education) and an Honours degree in Mathematics. She did not receive training in teaching students with visual impairment so she treated students with visual impairment differently. Mbalenhle organised sighted students who were close to students with visual impairment to accompany them to and from the classrooms. She gave them extra classes because some were too shy to ask questions in front of others. She said teaching is a lifelong calling. That is why she needs training and a psychologist to encourage her because the journey is not easy, but she loves her profession. She created an atmosphere of freedom for them so that they can share their stories but ended up finding other difficulties. The announcements were posted on walls and noticeboards so they did not accommodate students with visual impairment who heard the announcements from other students or from a concerned lecturer. Illustrating diagrams and graphs was another challenge; they rely on listening as they cannot write. Scribes were hired by the college but their competence and reliability were questionable.

6.6.2 Techniques for Assessment

There are many safety concerns, especially in workshops, for vocational subjects which do not consider students with visual impairment. Elli, Bedny, and Landau (2021) explain that VI students should be allowed to touch an object since this allows them to 'see' what their classmates see.

To Simon, this is a very big challenge because he had to find extra time for assessment which sidelined students with visual impairment. The lack of facilities created a demand for small learning groups which helped him to master approaches and gain interest in teaching students with visual impairment. Concepts or terminologies need to be correctly explained, spelt and written (Critten et al., 2023). This implies that in a spelling and writing activity, students with visual impairment may not grasp such tasks. These compromises learning objectives as well as desired outcomes.

Bhuti always used oral visual assessments for students with visual impairment such as presentations which included discussions and debates. Oral communication is required for what is written on the board or presented on the overhead projector, particularly charts and diagrams (Cheema, Tariq, & Pires (2023). Instruction for students with special educational needs can be supported through a wide variety of digital media to enhance teaching and learning (Cheema, Tariq, & Pires, 2023). For example, assistive devices will enable them to recall information

discussed in class. Bhuti provides them with scribes due to a shortage of resources. Based on a thorough examination of the available open source and for-profit technologies, they were able to identify the best software tools, which they advocate colleges to employ in order to help students with visual impairment (Bakken, Putta, & Uskov, 2021). During assessments the question papers come in the form of hardcopies or pdf, so the JAWS system cannot read the pdf – as a result student with visual impairment may be marginalised from classroom assessment activities.

Bhuti added that his institution was not applying prescribed policies. Currently there is no policy that accommodates students with visual impairment. He mentioned that the college was not ready for admitting students with visual impairment. The college needs to do research to examine its feasibility to accommodate lecturers who will be responsible for facilitating students with visual impairment.

Since there is no specific method that is tailored for students with visual impairment, lecturers should read aloud to help students absorb knowledge from the textbook and to record the lesson on their recording devices. However, during the actual writing of the assessments they are provided with a scribe who reads the questions out and then writes down the answers given by the students – but this system lends itself to competency and trust issues. All instructional activities, particularly those for IE, must be adapted to students' unique characteristics, learning styles, and skills (Taole, 2020). Bhuti said that there was not special strategy to teach students with visual impairment, but he did not want them to feel discriminated against, so he decided to use more of the verbal lesson technique.

Many scholars recommend another teaching method such the auditory learning method (Rahayu, Suryani, & Zainiyati, 2020). The use of words to generate a picture that interprets the words is supported by the auditory learning method (White, et al., 2020). Bhuti relies mainly on reading to students with visual impairment so that they can record it for later use. He voice-records himself reading the instructions for them so that when they are not in class they can listen and attempt prescribed tasks. He utilises the JAWS system on the computer even though there are some areas where it cannot read or assist.

According to Judd (2020), lecturers teaching students with visual impairment should take extra care to articulate clearly pronunciation, spelling, and the meanings of words and sentences to accommodate these students. For these students, it is essential to clarify terminology, especially when it comes to graphs. Before formal assessments, thorough revision is essential. Extra class

activities and verbal class tests to assess their understanding of content, leads to successful outcomes.

6.6.3 Training Received from the College

Simon uses outdated methods of teaching to students with visual impairment as a result of, among others, the lack of training and exposure. Simon stated some students with visual impairments have laptops and other devices to use; unfortunately, lecturers were not trained in the use of supportive devices and thus were not able to assist. This calls for lecturers to be exposed to preparation programmes facilitated by experts to acquire techniques, resources, and tools in computer studies to better assist students with visual impairments (Griffin-Shirley). Colleges offer induction or orientation for both lecturers and students at the commencement of a new semester. During induction sessions, many topics and issues are explained on an introductory level with no follow-ups of formal training. This means that lecturers will have to use information received from induction to manage and administer complex issues like teaching students with visual impairment.

Training is needed in order to improve IE teaching and learning processes. To enhance the effectiveness and productivity of lecturers, training and professional development are vital necessities to afford lecturers to become familiar with a variety of skills, knowledge, attitudes, and behaviours (Gcezengana et al., 2022). Opportunities for training at TVET colleges are virtually non-existent or do not meet the needs of lecturers who facilitate students with visual impairment. Bhuti has not received any training to date - it is quite frustrating and straining because lacking teaching skills and knowledge to assist the students with visual impairment is detrimental to best practice. Bhuti relied on his own researches and individual experiences. The lack of training and was one of the contributing factors that made it more difficult for him to understand students with visual impairment, especially finding the proper method to employ to enhance teaching and learning.

Lucky also did not receive any training in teaching students with visual impairment. It has just been a trial-and-error approach until he learnt somewhat how to deal with them. Porter (2022) identified proper training, support, and resources as necessary instruments to assist lecturers in implementing the inclusive policy. Although some workshops have been provided on how to facilitate students with visual impairment, they were not pedagogic-related, but merely basic induction to identify students with visual impairment. Lucky laments that the college is not paying

attention to students with visual impairment' needs which contradicts the policy of inclusive education.

Themba also did not receive training in teaching students with visual impairment. Training on the delivery of lessons and the application of software are crucial. The manner of speaking and use of terminology without offending them are essential. Lecturers should build compassionate and harmonious relationships with students with visual impairment in order to address their different needs (Watermeyer et al., 2021). Recordings are helpful as such students grasp knowledge better through listening. There is the urgent need for the college Inclusive Unit and its co-ordinator to look closely in helping lecturers and students by providing ongoing training and workshops to capacitate them with knowledge and skills, including computer operations.

Mbalenhle also did not receive any training (including the operation of technologies) regarding students with visual impairment. She delivered lessons by using her best strategy, and giving them more time even during assessments.

6.6.4 Policies to Support Students with Visual Impairment (VI)

DHET issued a detailed policy on students with visual impairment. It made significant progress towards improving education and training opportunities for people with disabilities by including them in mainstream programmes (Corby et al., 2022). Instruction to students with visual impairment is dependent on the use visual aids, audio-recording devices, appropriate lightening, clear communication, increased oral activities, and allow them more time to complete their tasks.

Unfortunately, there is still no college policy or procedures for teaching students with visual impairments. This implies that lecturers may exercise their own discretion when instructing students with vision impairments. As a result, there appears to be no consistency, both in theory and in practice. This creates a complicated teaching and learning environment for both instructors and students with visual impairment. The DoE's White Paper 6 recognises and protects individuals who are living with disability. However, there is a genuine risk that people with disabilities may be excluded from the advantages of the Government's National Development Plans (NDP) in the absence of TVET policies to promote inclusion. Although the college has structured some minor policies, they are inadequate which implies that support for students with visual impairment in an inclusive environment is a distant possibility. In order to provide special education services to students with impairment, families and schools must make serious decisions (Kauffman, Burke, & Anastasiou, 2023). This is required by law that applies to the education of individuals with

impairment. However, colleges need to do more to facilitate the policy on the ground. This may be done through providing assistive devices, training lecturers, and providing an enabling infrastructure with relevant resources – but funding is a problem.

There are number of policies that exist on paper but not in practice. The *Constitution* (RSA, 1996) which contains the Bill of Rights specifies that everyone must be treated with dignity irrespective of gender, race, and disability. Informal assessment activities, they are taken to separate venues which implies discrimination in terms of inclusion and diversity. Students complain about the marks that are not the true reflection of their performance – hence the need for a policy on enquiries about assessment results. Moreover, the policy of the college to hire scribes to assist has a negative impact regarding trust and communication issues.

The college itself does not have policies in place for students with visual impairment. Governmental policies carry the responsibility to ensure that all students, with or without disability, receive quality education. The umbrella policy of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) stipulates the rights of individuals with disabilities, and inclusive policies are essential to achieving these rights (Lang et al., 2019). Despite international policies, the college still needs internal policies in place regarding infrastructure, curricula, notices, discipline, assessment, professional development, and evaluation of teachers, among others.

In the absence of a structured and comprehensive formal college policy, all college activities become informal. The Unit of Inclusive Learning should become more visible in the affairs of students with visual impairment. For instance, scribes also need proper training in assisting students with visual impairment as some of them struggle to make-sense of the exam question. The manager responsible for the Inclusive Learning Unit on campus has never shared any policy with lecturers as he operated on an ad hoc policy. The only ‘policy’ was that students with visual impairment must attend classes with other sighted students in the same venue.

Since there was no policy that guides lecturers, some tell students with visual impairment’ stories as a strategy to commence and maintain interest in the lesson. Lastly, and according to Asongu et al., (2021), lecturers should be equipped with information and abilities necessary to effectively implement inclusive education.

6.6.5 Synthesis

The above narratives described several lecturers' learning journeys to teaching students with visual impairments; however, the lack of lecturers' training in teaching students with visual impairment was seen as the chief hindrance to the lecturers' progress in teaching students with visual impairments.

Additionally, the lack of resources was one of the major obstacles in teaching students with visual impairment; specifically, the lack of teaching materials in the classroom, poor infrastructure, and poor facilities, among others. These deficiencies limit students' ability to participate fully in activities, in addition to reducing lecturers' job-satisfaction which leads to the use of inappropriate pedagogies as a compensatory strategy. To ensure the Inclusion programmes success, Government, local authorities, and TVET management must urgently attend to infrastructure, teaching-learning resources, human resources, lecturer-training, in-service training, and professional development programmes.

It was noted that all participants did not receive any training in teaching students with visual impairment which hampered the understanding of national policies and execution of inclusive teaching strategies. When asked to outline the inclusive policy, most lecturers were at sea. Others indicated that there was no policy available at the college. Hence, modifying the curriculum to suit IE principles is urgently required. Lastly, ongoing professional development workshops must be provided to all lecturers to enhance the teaching-learning of students with visual impairment.

6.7 RECOMMENDATIONS

This study found compelling evidence regarding lecturers' learning journeys in teaching students with visual impairments. Thus, to provide students with excellent, non-discriminatory education, and anti-exclusion practices, the study offers the following suggestions:

6.7.1 Curriculum Support for Students with Visual Impairment

The lecturers who took part in this study all revealed that they followed the standard curriculum of TVET colleges, which did not give adequate support to lecturers and students on how to adjust teaching-learning activities for students with visual impairment. Despite the fact that special education students have unique requirements, the curriculum was used in the classroom for all pupils. Lecturers were expected to change the curriculum at their own discretion, with little direction from college administration. Individual Education Plans (IEPs) were used at the college,

but only for academically weak students, not students with visual impairment. As a result, I advocate that an enlarged core curriculum be developed in collaboration with the DHET to incorporate skills such as mobility training, social skills, and braille abilities, as proposed by Lee and Hock (2023). This program can also be used in universities that welcome students with vision impairments and other disabilities. This curriculum can also be used to lead university programmes that teach students about diversity. This would also ensure that professors at mainstream colleges are aware of the provisions for students with visual impairments.

6.7.2 Advancement through Tertiary Training

This study concludes that prolonged and comprehensive training would assist lecturers to professionally develop through Government efforts to provide pre- and in-service training. As a result, the Government must work collaboratively with universities and other educational institutions to prioritise lecturers' training in curricula matters including theoretical knowledge and practical skills.

Moreover, teacher-training courses did not sufficiently prepare practicing lecturers (and teacher-trainees) for the reality of teaching students with visual impairment. The research also revealed that lecturers lacked knowledge of braille, which is necessary when teaching students with visual impairments. Universities that offer IE programs should incorporate basic practical braille training to assist TVET students with visual impairments. When conducted correctly and methodically, the training will provide the lecturer with the necessary teaching tools, such as appropriate and creative teaching practices that will promote effective teaching-learning activities.

6.7.3 On-going Training, Workshops, and Availability of Resources

Some lecturers mentioned that they learnt through experience, but that they would like to enroll in more courses on instructing students with visual impairment. The findings revealed that the college occasionally assumed teachers were good at teaching students with visual impairment just because they had a teaching certification.

My recommendation refers to TVET college staff and management collaborating to structure staff-support training programmes to boost the quality of teaching-learning, especially related to inclusivity. Colleges should also give regular opportunities for lecturers to evaluate their teaching skills and expertise (Hadidi & George, 2023). Because the classroom environment is constantly

changing to meet the demands of students, lecturers must be prepared to face new issues with innovative techniques.

In this regard, the college can also initiate internal training sessions with staff who are currently teaching students with visual impairments, which can have a significant impact on teaching and learning standards and improve student performance. In other words, in-service training sessions might be scheduled on a regular basis to provide lecturers with innovative methods for teaching students with visual impairments. Furthermore, teaching-learning would improve if the Minister of Higher Education lowered the high lecturer-student ratio by hiring more professors and boosting resource allocation so that lecturers may support students by focusing on their unique issues. In addition, parents should receive training on how to support their visually impaired children. The Government should provide support to lecturers to conduct research regarding inclusive education. Physical facilities which also protect the safety of lecturers and students should encourage them to extra spend time in education spaces (e.g. the library and computer labs) to conduct research, and for students to supplement the content of classroom lessons.

6.7.4 Designing Standardised Physical Structures

Many variables should be considered when designing physical facilities. First, plan and build a suitable number of structures such as big classroom blocks that can accommodate the required number of students to allow the free mobility of all students, particularly those with visual impairments. It is vital for all students to access libraries, labs, hostels, storage areas, hand-rails, cupboards, and catering outlets, among others. They should provide appropriate spacing and access for people who use assistive equipment like canes and walkers. Upstairs facilities cannot accommodate students with visual impairment. Also, the higher enrolment of students with various needs, requires bigger and better facilities, like disability-friendly cloakrooms. Sanitation facilities should be clean, safe, simple to use, and private. Toilets should have covers, washbasins, sufficient toilet paper, sanitizers, soap, towels, an appropriate ventilation system, as well as being regularly cleaned and maintained. Furthermore, if hostel facilities are available, all laws and regulations governing such a facility must be stringently followed. Recreational facilities, such as well-designed playgrounds, a football pitch, a merry-go-round, and indoor games (such as Ludo and chess etc.), should also be offered. Recreational activities will expose students to experiences outside of their families and academic contexts that will help them develop holistically.

6.7.5 Maintaining a Positive Attitude towards Students with Visual Impairments

Lecturers must recognise all students' individual differences, particularly the potential of students with visual impairments. Lecturers must be inspired by their own conviction that each student is unique and capable of learning. Negative attitudes toward visual impairment inhibit those (both lecturers and students) who are eager to promote learning opportunities. Lecturers' negative attitudes affect the bond between lecturers, challenged learners, as well as their able peers. Fortunately, lecturers' positive mindsets and expertise of managing students with special needs play a critical role in shaping all students' social, intellectual, and cognitive skills (Alsarawi & Sukonthaman, 2023).

6.7.6 Updating Policies to Better Support Students with Visual Impairment

To achieve the policy objectives for students with visual impairments, it is critical to acknowledge and appreciate the student's right to education through practice, policies, and legislation. Educationists, policymakers, and college managers should continue to consider lecturers' learning journeys as being grounded in students' right to education, by shifting the focus away from the disability deficit perspective that promotes discrimination, segregation, and exclusion which jeopardizes the goal of education for all. Parents, communities, lecturers, institutions, and the Government must collaborate, coordinate, and build a clear and consistent understanding of lecturers' teaching-learning functions - this should be counted as a national programme that contributes to the country's economic progress emanating from the empowerment of all students.

6.7.7 Providing Sufficient Quality Educational Resources

Lecturers must be supplied with the tools they require such as teaching resources, and data about students with diversities such as economic backgrounds, disabilities, preparation on how to adequately teach students particularly those with Special Education Needs, training in adjusting educational content, and use of materials. All aspects of Inclusion should be covered in training sessions as well as in the study materials for lecturers. This process necessitates rigorous staff-training and ongoing professional development to adequately prepare lecturers for Inclusion. Again, to reduce the challenges impeding lecturers' learning journeys, the college must assist students with visual impairment financially, materially, and by creating proper funding channels. Additionally, TVET colleges and campuses can seek help from other stakeholders and NGOs to obtain supplementary support and resources. The provision of physical facilities is aligned to the promotion of pedagogical content intelligence, supervision of the practice, knowledge of critical

pedagogical tasks, freedom of choice, and the engagement of teachers in continuous reflection. Physical facilities also protect the safety of teachers and students while encouraging them to spend time in educational spaces.

6.7.8 Synthesis

Underpinned by the Learning Journey Theory (LJT), this study explored TVET college lecturers' learning journeys when teaching students with visual impairments. To get an understanding of the topic, previous literature was reviewed. The researcher selected to conduct a single case study investigation at a TVET college campus in KZN's North Coast Region, RSA. Six TVET college lecturers were interviewed to acquire a comprehensive understanding of their learning journeys (experiences) as college lecturers. The lecturers were also interviewed as a focus group in the campus boardroom concerning their teaching of students with visual impairments. Further, lecturers' reflection narrative which involved lecturers' stories triangulated the findings extracted from the interviews.

In conclusion, this study found that lecturers needed greater support and training to teach students with visual impairments. The lecturers stated that they were not trained to teach pupils with vision impairments. The lecturers acknowledged that they would have benefited from more hands-on teaching experience with students with vision impairments during their teacher-training days. The curriculum did not adequately help instructors in adapting their teaching for students with visual impairment, revealing a lack of information. There was virtually little help from the college administration, therefore lecturers had difficulties throughout their learning journey.

6.8 SUGGESTIONS FOR FURTHER RESEARCH

The researcher admits that since this was a case study of a single college, the findings are unique to that institution and cannot be generalised. The researcher advises that a similar study be conducted and expanded to other TVET colleges by utilising various data gathering methods so that the findings would have the potential to be generalised to a larger population.

Although the current study contributes to lecturers' understanding of how to teach students with visual impairments in academic settings, it is advised that it be replicated in other contexts with additional participants. It is necessary to obtain a second, but larger sample that includes college management, and sighted as well as students with visual impairment in order to obtain a more comprehensive understanding of how lecturers' learning journeys are experienced at TVET

colleges. By embarking on such studies, it will be possible to fill a critical gap in college administration's understanding of students with visual impairments. Moreover, by examining societal attitudes, behaviours, beliefs, and how they affect the instruction of students with visual impairment can assist in policy revisions that can add to the body of knowledge already in the literature.

Studies on TVET colleges will benefit greatly from evaluating the teaching of students with visual impairment including methods of teaching, attitudes, assessments, policies, and modifying learning procedures. To learn more about how lecturers teach students with visual impairments, there should be more studies on this topic that examine situational concerns on a bigger scale. Future studies must concentrate on exploring the phenomenon of learning journeys including the offering of feasible solutions. The college management and other stakeholders must be informed of the learning experiences of their lecturers concerning teaching students with visual impairment so that the new knowledge can emerge to improve the teaching-learning processes and support for lecturers' practice.

To advance our knowledge in teaching students with visual impairments, further study is needed. This is due to the discrepancy between recent discoveries and earlier findings. The results of the current study confirmed what other studies had found to be uncertain about the specific education of students with visual impairment. Although some of the study's participants gained knowledge and experience while lecturing at the college, they should take more courses on teaching students with visual impairment, which may lead to new discoveries because they will now be armed with IE knowledge and skills to deal with the challenges that they faced when they were untrained.

The learning experiences of lecturers who facilitate students with visual impairment differ from those who are sighted. Hence, academics and education specialists need to conduct more research on the subject of teaching students with visual impairment. This knowledge will possibly eradicate barriers such as unfavorable cultural assumptions, disparate religious practices, unsavory lifestyles, and language gaps that encourage exclusion. This will impact the perspectives of stakeholders and influence instructional strategies. In particular, extensive research is needed to identify and alter the negative attitudes that have long dominated views about the education of students with visual impairments in some parts of South Africa.

CHAPTER SEVEN

SUMMARY OF FINDINGS, THE STUDY'S CONTRIBUTION, AND CONCLUSION TO THE STUDY

7.1 INTRODUCTION

The previous chapter six discussed the data analysis and the results, in addition to the recommendations and conclusions which emanated from the narratives of the participants. It was necessary to conclude the study by going through the study's goals that served as the foundation for this exploration. Also included was my reflection on my role as an important 'participant' in participants' learning journeys. Basically, a review of the study's findings, suggested recommendations for practice, summaries of each chapter, and a conclusion to the study are provided.

7.2 SUMMARY OF THE FINDINGS

The results which emanated from the data analysis were detailed in chapter six (6). In this section, main conclusions address the primary research question. The following themes were explored to unearth the findings:

- Lecturers' perspectives on teaching students with visual impairment;
- Adaptive resources and instructional methodologies for these students;
- Personal reflections on entering the field of visual impairment and learning journeys.

7.2.1 Lecturers' Narratives on Teaching Students with Visual Impairments

The study sample's paralyzing obstacle was a lack of resources, notably insufficient resources to teach students with visual impairments. There should be enough resources available for teaching and learning to be effective. According to Budiarti et al. (2022), resources are instruments that help lecturers prepare and implement classes. Martyrium et al. (2023) argue that both the lecturer and the student should use available resources to promote better teaching and learning in the classroom. Teane and Gombwe (2022) explain that using cutting-edge technical tools in teaching and learning enables lecturers to provide creative classes that promote student development.

The teaching materials used in class are important tools for learning. As previously stated, students with visual impairment require devices for their real learning, such as computers with JAWS, recorded materials, reading machines, speaking machines, hand-held magnifiers, Braille text,

talking calculators, sound signification, auditory equivalents of visualization, instruments with auditory (rather than visual) readings, touch and voice-based interfaces, touch and large print as standard equipment. However, they frequently required operational abilities to make the best use of various tools or materials. For example, pupils may require braille reading materials rather of print, or they may need to study a live rabbit with their hands to comprehend what it is, rather than learning from a picture in a book. As a result, the participants agreed that significant adjustments in resource provisioning were required to properly navigate their learning journeys with joy and fulfilment. This must be ensured by regular training so that lecturers can effectively utilize the resources available for teaching students with visual impairments.

However, the participants reported that children with visual impairments were 'helped' by unqualified and unethical scribes. Furthermore, the lack of assistive technologies for learning and evaluation activities slowed the progression of TVET curricula.

7.2.2 Adaptive Materials and Creative Teaching Strategies

A classroom is a space where teaching-learning occurs - a lecturer communicates knowledge or gives training regarding learning activities. Since inclusion affirms the value of each student which implies that students with a range of competencies exist, and are equally significant. Because of this dimension, individuals with visual impairments may respond differently to a single teaching-learning method. Therefore, according to policy stipulations, lecturers are obliged to identify each student's unique characteristics and then implement the most appropriate teaching strategy to guarantee quality performance. A lecturer should choose a relevant approach or combination of techniques that are most likely to accomplish the lesson's objectives with a certain set of students. This was made proven when one of the study participants stated that before planning a lecture for his class, he reflected on the identifiable differences among the students.

Since the integration of teaching-learning into inclusive classrooms is challenging for 'untrained' lecturers, they must employ several eclectic methods of teaching and learning to benefit as many learners as possible. Such teaching strategies (singly or eclectically) include multi-sensory, audio-learning, storytelling, and demonstration strategies. Also, participants listed specific teaching methods to facilitate students with visual impairment. Two participants disclosed that the most popular teaching strategy was the multi-sensory method which focused on students' senses. The 'hand see' approach promoted learning about the world through touch (Chen et al., 2023). This teaching strategy emphasises a student's individuality and the ability to dissect meaning and

understanding. It migrates from the traditional view of students to the modern trend of them being creative and innovative as students now build their own knowledge and understanding provided that the inclusive lecturer provides them with the necessary guidance and support.

According to Arandia, Garate and Mabe (2022), lecturers should read aloud to help students gain knowledge from textbook, and easily record lessons on their recording devices. They agreed that the audio-learning strategy is popular since students always understand what is transpiring during such lessons. The use of words to generate understanding is supported by the auditory-learning method (White et al., 2020) since spoken words create visuals to foster essential meaning for a student with visual impairment.

When the lecturer narrates the story with diverse gestures, and variations in tones, volume, and sound, narration becomes more interesting to students with visual impairment. As a result, the lecturer must be conversant in various strategies for eliciting various moods and feelings. Furthermore, as they are encouraged by the imagery element of teaching and learning materials, learning strategies like the demonstrative strategy are advantageous for instructing students with visual impairment.

The lesson had to be practical and realistic, which meant that skills like reading, writing, motivation, flexibility, and communication were essential. Such skills were regularly used in the teaching process to pique students' curiosity and inspire their interest in improving their theoretical and practical knowledge understandings. As a result, the demonstration method can be used to improve student-achievement by identifying problems, defining problems, planning, and implementing action. In addition to improving their practical and investigative skills, students must exert the mental effort that goes into what they are doing. The lecturer can improve students' performance by determining which teaching method(s) works best and how to implement it in inclusive settings.

7.2.3 Reflections on Entering the Field of VI, and Personal Learning Journeys

When people perceive 'familiar patterns' that correspond to their memories and help them understand their history, it can prompt memories and facilitate self-reflection on prior experiences (Haimson & Marathe, 2023). This implies that writing a reflective narrative gives individuals the opportunities to not only describe their experiences, but to also consider how they have changed or grown as a result of them. As a narrative inquirer, I also believe stories are vital for reflecting

on past and present experiences. All six respondents narrated some challenges related to their teaching of students with visual impairments.

The participants confirmed that they had not received any training prior to teaching students with visual impairment. Simon mentioned that although they had been promised training, he regretted that it failed to materialise. Some programmes meant to capacitate lecturers did not assist in teaching students with visual impairment. It takes training for lecturers to be comfortable working with students who have visual impairment such that lecturers cease using trial-and-error techniques in IE classrooms.

It became obvious that lecturers were unfamiliar with inclusive education policies that are embedded in the TVET curriculum and how they should be implemented in TVET colleges. Consequently, lecturers are liable to go ‘off-track’ concerning what the curriculum entails. According to one participant, the TVET curriculum does not address diversity; there is a gap, so he suggested that something be done to close this gap. To ensure that lecturers understand the why and how of inclusive education, teaching colleges must establish courses to equip them for inclusive teaching (Chhetri, Spina & Carrington, 2023). Even though lecturers claimed the TVET curriculum has no information on inclusive education, they predicted how the policy would benefit them if it existed. Teaching students with visual impairment continues to face challenges due to negative practices, attitudes, and ways of thinking that are common in certain nations. A source of inspiration for lecturers to promote the principles of teaching students with impairment through innovative practical teaching techniques is also necessary to instil interest in all students – this will involve ongoing, intensive, relevant training and professional development workshops, and other relevant material assistance.

7.3 ADDITIONAL KNOWLEDGE AND PRACTICE

The study exposed lecturers' narratives on teaching students with visual impairments in colleges which aided in closing the knowledge inclusion gap in college. The information generated from this study will provide high-quality and successful teaching services to support TVET programmes.

7.3.1 Demonstration as a Practical Knowledge Technique

The teaching method known as the demonstration technique was found to eradicate discriminatory practices directed against the underprivileged. Students who are inclusively integrated learn

(through practical examples) acquire knowledge together. This is a result of students' keen observation, practice, and social interaction skills, which allow them to absorb knowledge from their peers. Students with visual impairment are taught through hands-on experimentation by using a variety of tools and resources, which they then apply to difficult and real-world situations by drawing on prior knowledge. Hence, students learn to solve problems which will be useful in the future. Moreover, students raised in multilingual classroom environments find it simpler to grasp new concepts because they can relate to the diverse linguistic patterns that are present in a range of social contexts. To make studying easier, such students can also translate information from various dialects into the ones they understand the best. Some of these students become multilingual or bilingual in the future.

Additionally, by including students in a variety of curricular activities, they are stimulated both mentally and physically to engage in the learning process which helps them to recall subject material. Also, students gain knowledge when they apply strategies for learning including audio-learning, multi-sensory learning, narrative/storytelling, and demonstrative strategies to engage in conceptual thinking. With supervision and guidance, students with varying abilities can learn independently with the assistance of lecturers who are aware of and sensitive to the needs of students with visual impairment. Through the comprehension of scientific language, this approach to learning through first-hand experience is also used to help students memorise and comprehend the subject they are studying.

In elaboration, findings in this study confirm that the demonstration technique improves students' academic performance and behaviours; even role-play by lecturers facilitates understanding as students love touching an object when the lesson is being demonstrated. Therefore, teaching students with visual impairment provides an optimal environment for promoting scientific education, especially in elementary schools where instructors enable students to enhance their conceptual knowledge and comprehension to address problems that are specifically associated with their arithmetic computations. Students acquire knowledge and skills quicker and effectively when they try to understand real-life, perceive actual objects, or grasp problem situations rather than anything unrealistic or imaginary. Moreover, science classrooms are adapted into engaging and enjoyable learning environments when students experiment with TLRs through groupwork and demonstration. To create a 'fun' classroom environment, lecturers and students must both interact as this is crucial for better all-round performance. For example, if the lecturer wants to effectively instruct the class on the specifics of managing money, focus should be on money

categorisation, thus students might be asked to gather different values of money, which leads to the lecturer ensuring that every student becomes an integral part of most of the roles in teaching and learning situations.

7.3.2 Providing for Students with Visual Impairment

Students with visual impairment need to be accommodated in the classroom. They can be presented with the same curriculum as their sighted peers by using methodologies, learning styles, and assistive technologies. Another crucial characteristic of a lecturer is the teaching method to integrate students with visual impairment. In other words, inclusivity in education refers to the recognition and encouragement of all students to share and learn in the same environment, regardless of their abilities (Dumitru, 2023). According to the generated data, participants applied several similar strategies to engage students included audiotaping, visual verbal description of visual aids, raised lines, drawings, tactile models, braille lab signs, and lab warning signs, among others. Specifically, the use of audiobooks improves student motivation because it makes it simpler for them to study anywhere, at any time (Sari et al., 2023). All six participants unanimously agreed to adapt lessons to accommodate students' abilities by considering knowledge content before choosing a topic and a teaching strategy.

The evidence generated proves that the lack of college resources and 'specialized TLMs' across the site made lecturers learning journeys difficult when teaching students with visual impairment. In terms of what should be done to resolve the situation, there should be a properly structured team to observe various TVET institutions where there is a qualitative fully inclusive learning system to benchmark in all the areas of TVET management and teaching to eradicate incapacity, policy issues, infrastructure matters, and training, among others. These will support the goal of educating students to develop socially, emotionally, academically, and physically.

7.3.3 The Challenge of Selecting a Teaching Methodology

The inclusive lecturer's challenge is the ability to determine and combine multiple inclusion pedagogies to fulfil students' individual needs that focuses on their background, learning patterns, and abilities. For lecturer's learning journeys to be successful, all students should have equal access to quality education, and colleges should prioritise the provision of learning spaces and facilities that adhere to universal design principles. In other words, inclusion teaching ultimately means selecting creative methods of instruction that appeal to the majority of students that empower the marginalised to build a more varied and inclusive society.

Further, and according to Tuttle and Carter (2022), computer-assisted instruction gives students with visual impairment immediate access to information while enabling direct collaboration among sighted lecturers and peers. The lecturer's responsibility is to select, create, and modify different teaching strategies to meet the needs of each student to achieve academic success. The difficulty in this situation is that the method must be determined by inherent diverse students' skills. Thus rigid teaching pedagogical styles are not beneficial because teaching methods must be flexible and based on real-life experiences to help diverse students make-sense of the content being delivered by the lecturer. This implies that lecturers should have a deep conceptual knowledge of the IE policy to stay up-to-date on inclusive classroom practices. In addition to using adaptive teaching strategies that focus on increasing overall class success, lecturers should consider students' prior accomplishments, intellectual functioning, and interests to accommodate individual needs and differences (differentiated learning). This will ensure that 'no student is left behind'.

To elaborate, teachers need to embrace the eclectic approach and incorporate a variety of pedagogies (audio-learning, multi-sensory instruction, and demonstration) to successfully and interactively engage students. While relying on technical skills and knowledge of instructional strategies, lecturers will need to adopt the philosophy reflective thinking and inclusive attitudes (UNESCO, 2014) if they want to be successful in the profession. This implies that if lecturers think that every student has the right to an equal and quality education, and is capable of learning, then teaching in the classroom may be of a better-quality, and possibly fulfilled.

7.3.4 Lecturer Responsibilities in Teaching Students with Visual Impairment

Inclusive lecturers have a variety of responsibilities since they have other duties to do in addition to teaching. Among others, the job-description entails teaching the subject and offering extra assistance such as counselling students during college hours and providing training on how to use and maintain assistive technology. Furthermore, lecturers could acquire braille skills (among others) to ensure that students with visual impairment are gainfully occupied in educational processes. The social, cognitive, and emotional modification of students is greatly enhanced when lecturers display genuine respect and affection towards individuals with disability. Moreover, using effective assessment tools, timeous feedback on students' semester performance to the college management, students' families, and students themselves, including offering remedial interventions to reduce common mistakes and misconceptions are all crucial components of an inclusive lecturer's job description.

In addition, for the partially-sighted, the large-print font assessment technique gives them the independence to write for themselves, saving the lecturer from engaging a scribe and providing a different location. According to Adongo (2023), lecturers used a range of methods to present curriculum to students who have visual impairment, including creating braille versions of handouts, using large fonts, and creating tactile maps and diagrams. Therefore, it may be assumed that a large-print question paper was necessary to accommodate students who were partially-sighted during an examination. The participants affirmed that just two assessment methods, the human reader and large-print font, were mainly effective to escalate the performance of VI students.

Another technique was to adapt teaching methods so that all students, regardless of ability, might benefit. Different skills levels of students are evident in the classroom; some learn quickly, while others are slow-paced. Also, each student's understanding of various courses differs from one another: some students learn quantitative topics far quicker than their classmates, while others may be exceptionally gifted in language. In these cases, the instructor should recognise the students' shortcomings and offer assistance by adapting the lesson plan to meet each student's needs. To assist students to fully benefit from the class content, lecturers may offer coping mechanisms and cues but in a quiet space, in addition to preparing teaching materials specifically designed to meet the needs of students with impairment.

7.3.5 Educational Achievement is Lacking among Student with Visual Impairment

The IE teaching concept for students with visual impairment is recommended for encouraging students to flourish intellectually, socially, emotionally, and physically. They gradually pick up pertinent knowledge for later application through cooperative learning, positive social interactions, and exposure to imaginatively and creatively developed educational activities. It is assumed that accommodating all students in one classroom to study helps everyone in the class, even the inclusive lecturers, peer sighted students, and those who cannot see well. However, surveyed participants in other studies reported that certain students' academic development is hampered when individuals with visual impairment are integrated into the regular educational settings (Salend, 1999).

Certain segments of the public believe that the duties of inclusive lecturers in the classroom are increased since these students require extra time and special attention. While it is admirable that students with vision impairment attend regular classes, the lecturer is left with an additional

workload. Teaching in inclusive classrooms can be very difficult, especially when there are more students enrolled than the recommended norm, given the time-constraints. The results show that the inclusive lecturer offers extra support in the form of counselling students after college hours, instructing students on how to use and maintain assistive technology, and offering assistance with writing assignments. Lastly, participants maintained that facilitating students with visual impairment requires more effort by repeating lectures which slowed down the learning rate of sighted students. In sum, results indicated that teaching students with visual impairment is a difficult and demanding undertaking.

7.3.6 Modifying College Policies to Accommodate VI Students

The IE policy is disseminated by the DHET, not from the college, which implies that a student with visual impairment has the same right to education as any other normal student. When they are admitted to the college, they become students like all other students. It is critical to understand, that the IE policy is extensive and stringent. Therefore, the DHET should be aware that the policy has an overload of requirements to cater for all students, regardless of diversity, to receive high-quality education, particularly those with special needs and visual impairment. As a result, inputs from the DHET, District Directorate, and mainstream colleges are imperative to review the present policy to design a realistic and practical one so that teaching students with visual impairment should be smooth, given the many current restraints. This requires urgent policy adaptation, reformation, support, a decrease in content and lesson plans to guide novice lecturers to present better inclusive lessons to enhance academic performance.

Therefore, the most proactive re-structuring should be content reduction, and to revise out-of-date mainstream approaches to transition towards frameworks that are focused on uniting the sighted with those who are challenged. Ultimately, the goal of inclusive education reform is to enhance both higher education and society at large. Therefore, to effectively and efficiently raise student achievement, all stakeholders must ensure that the necessary resources, teaching strategies, a realistic and practical curriculum, and sound infrastructure are of the highest quality.

To make sure that college reform is prioritized, implemented, accessible, and sustainable, inclusion must become a reality so that all lecturers and college management may contribute to best practice.

7.4 THE STUDY'S CONTRIBUTIONS

This study focused on lecturers' learning experiences when teaching students with visual impairments. According to the findings, continuous support, ongoing training, adequate relevant resources, and improved infrastructure can help lecturers effectively implement the inclusive education policy, while advancing lecturer readiness and developing positive attitudes remain critical when engaging students with visual impairments. Since this study provides new insights on the subject where knowledge gaps have been noted in the literature, it promotes possible research in this field while highlighting that the importance and integrity of research depend on its theoretical, methodological, and practical underpinnings.

7.4.1 Contribution to Theory

The exploratory nature of this study significantly contributed to research by utilising the interpretive paradigm and the Learning Journey Theory (LJT) to better understand lecturers' perceptions and experiences when teaching students with visual impairments. Importantly, the stipulations of policy that direct lecturers when teaching by applying the principles of inclusion and Ubuntu are demanding but contribute to theory. Even though it is challenging to fully comprehend any situation without first devoting sufficient time to the field of study, our present understandings gained from topic analysis are adequate when addressing significant events. But occasionally, because some experiences are confusing and unexpected, we confront unpredictable events in life, which leads us to reflect the applicability of the current knowledge- base. The learning journey approach was crucial in unearthing answers to our questions about what lecturers' learning journeys comprise of, and how we could support them. Thus, the study suggests that to address injustices committed against people of colour, lecturers should work together to 'revolutionize' students' traditional and inflexible ways of thinking.

Consequently, Individuals must first comprehend hierarchical systems, evaluate them critically, and assess their attitudes toward students with visual impairment before they can begin the process of learning at a TVET institution. The establishment of this essential degree of information and comprehension is the prerequisite for the commencement of any learning journey. Accordingly, this study offers suggestions that lecturers and universities can use to eliminate outdated mindsets by being proactive and aware of current trends in thought and behaviour to engender perspectives on diversity. To change traditional thinking, the researcher challenged typecasts, biases, and inequities that are present in the educational system in this study. The results of this study also

supported the idea that, to engender change, outdated and prejudiced beliefs that obstruct forward-thinking modern discourses on inclusion must be challenged for their myopic views.

This study provides new knowledge, skills, and thinking by highlighting the importance of the learning journey theory and the interpretive paradigm by enlightening lecturers in particular, to comprehend and interpret the various teaching strategies (multi-sensory, audio-learning, narrative/storytelling, and demonstration strategy) used to celebrate each student's potential in an inclusive classroom. Furthermore, by applying the LJT, lecturers were conscientised to carefully consider the advantages of working with students who have visual impairment at the TVET colleges. This possibly eliminated any barriers and negative attitudes that might impede the programme's ability to teach students with visual impairment.

7.4.2 Contribution to Methodology

By adapting theories and concepts from other fields to fit the TVET college context, a methodological contribution was instilled. Certain investigative theories and procedures used in other economies should be evaluated because of their involvement in the education of students with visual impairments. Nevertheless, international frameworks in this study assisted to construct and comprehend case studies in a single KwaZulu-Natal TVET college.

Furthermore, the current study's methodological contribution is related to its narrative inquiry research approach. Also, the study's findings were trustworthy because of the research design which employed data-gathering instruments including narrative focus-group discussions, narrative interviews, and reflective narratives; the combined use of these three instruments promoted a more incisive comprehension and interpretation of the data. Lastly, the different data collection techniques improved the results' legitimacy and the principle of triangulation.

7.4.3 Contribution to Preparation

An important insight into lecturers' roles in teaching students with visual impairments was one of the key contributions that resulted from the use of the one-case study approach. Accommodations for students with visual impairments are necessary, as the case study demonstrated. In other words, lecturers should concentrate on teaching students with visual impairment which are anchored on students' right to quality education, rather than a archaic mindset that is fossilised in discrimination, segregation, and exclusion that undermines the aim of education for all.

All lecturers, TVET colleges, and the Government must acknowledge and become responsive to the current learning journeys that lecturers undertake when teaching students with visual impairment to collaborate in developing a common non-discriminatory practice. An additional practical benefit of this research is that inclusive lecturers will be able to identify the unique learning style of each student and use that information to help them select learning resources and teaching methods that value individuality. To offer innovative lessons, they must engage audio-recorders, JAWS, clear oral communication, and become familiar on how to operate assistive devices. Importantly, lecturers need to realize that they are the primary implementers of the policy and the curriculum since their comprehension, interpretation, and application of learning innovative methods are the first steps toward a higher-level of success. Comprehending pedagogical practices in education necessitates quality education and ongoing in-service training that prioritises practice more than theory. Therefore, lecturers need to be aware that their responsibilities do not end in the classroom; in order to develop students' engagement needs and skills, they also need to create a cohesive cordial bond with them. This assists SEN and students with visual impairment gaining from extra attention in order to improve their participatory skills. Since various learning styles require different approaches to enhance instruction, adaptation becomes imperative. In addition to astute leadership in the classroom and to adopt a conducive yet lively inclusive learning environment, lecturers are essential agents in the education of students with visual impairment.

Furthermore, this study advances imperatives that the learning process requires sufficient time, training, and resources for driving the IE processes. Thus, educational authorities including the DHET, the Education Ministry, and college management must obtain funding to provide an inclusive, rich environment in order for lecturers to effectively teach students with visual impairment. Modifying the syllabus to better meet the information-delivery demands of visually impaired students should be prioritised to involve innovative teaching methods. Moreover, revisions and cutting down on content-overload, instructional processes, assessment, environmental aspects, and practices should be flexible to accommodate all learners to progress to attain high standards of academic performance.

Curriculum revisions make colleges more inclusive to all students, guaranteeing that no student is disadvantaged or excluded. However, they are not intended to reduce the value of the subject matter. In addition, enhancing lecturers' learning journeys in teaching students with visual impairment requires the provision of resources such as spacious buildings, sufficient learning materials, competent lecturers, and a proactive and responsive college management team. Lastly,

to enable the smooth access of students with visual impairment, current college policies must be adapted to include ongoing in-service training and a general positive attitude by all role-players.

7.5 MY DOCTORAL LEARNING JOURNEY

I learnt many lessons during my doctoral research journey including how the project originated and how I handled its complexity. My initial theory centred on lecturers' learning journeys of teaching students with visual impairment. Following my first meeting with my supervisor and co-supervisor on February 2021, books and articles on research were recommended; for example, Van Schaik's *Addressing Barriers to Learning* (2016) which enabled me to focus on my intended study's initial theme. The teaching methods in sighted students and students with visual impairment presented several inconsistencies, which I discovered while perusing current literature. For instance, I found it concerning that certain lecturers still use gestures and sign language when teaching students with visual impairment.

Hence, I embarked on researching how lecturers teach students with visual impairment. This covered topics like how lecturers interpret the curriculum, and how they approach teaching students with visual impairment in terms of pedagogy, training, assessment, and policies. I created a clear plan at the outset of my study and was certain that if I stuck to it, I would be able to achieve my objectives. For instance, I planned to turn in all of my chapters by July 2023, according to my research plan. Everything changed when my car was broken into and my laptop, USBs, and other possessions were taken. I was further disadvantaged when conducting my research when I discovered that the housebreakers had stolen my costly audio-recorder and printer. While I was generating data during these frustrating times, I developed the ability to show empathy to study participants who were going through challenging circumstances.

Through my interactions with the participants in my field of research, I developed a connection with them and gained knowledge about data-generating methods that I applied in my studies, such as narrative interviews, narrative focus-group interviews, and written narrative reflections. The frameworks that supported my study helped with data generation, analysis, and interpretation. Further, I was enlightened by the learning journey theory, the theory of change, interpretative paradigm, and thematic narrative analysis, which was indicated in my PhD proposal. The analysis revealed from participants' responses that both negative and positive attitudes toward teaching students with visual impairment were evident. Furthermore, there existed conceptual confusion since several educators involved in the study maintained the belief that teaching students with

visual impairment was equivalent to teaching sighted students. I also realised that inclusive education may succeed if lecturers modify their pedagogy to tailor the requirements of their students rather than trying to mould them into a one-size-fits-all category especially concerning their teaching methods.

Many assume that pursuing a PhD is a challenging endeavour. I realised when the journey was concluded that many years were needed to complete it if all conditions were not ideal. If you have strong support, tenacity, and unwavering focus, you might complete your doctorate faster than planned and enjoy your journey more. Now that my doctoral programme has come to an end, I can reflect on the experiences and the many lessons I learned. It also gives me the opportunity to express my gratitude to significant others such as my supervisor who was of immense help and support during this academic journey. Nevertheless, the path to a PhD may not be as simple as one may imagine as there were unanticipated difficulties that left one exhausted, and at times helpless. Therefore, it all comes down to having a strong sense of will, enthusiasm, persistence, and resilience to meet your goals. Researching something you are enthusiastic about makes it less of a chore and more enjoyable because you are pursuing a passion.

As a parent, and being a student, allowed me to spend time resolving family issues without feeling pressured. For example, I reported those people who had stolen everything from my car, but my supervisor said that I must stay strong. I felt secure knowing that was support from all sides should I find myself in a difficult circumstance when conducting my academic study.

The real possibility of obtaining a PhD qualification has created a transitional area where a new identity can emerge. It was an extremely taxing, tiresome, and occasionally depressing journey that called for a great deal of drive, perseverance, and divine presence. I am proud that I have at last created a piece of work that will add to the body of knowledge, despite the arduous and time-consuming process.

7.6 SUMMARY OF THE CHAPTER

The study's main conclusions were covered in this chapter (7). It was emphasised that the definition of visual impairment must also consider the barriers that impede their learning. To celebrate individuality in the classroom, inclusion requires lecturers to combine best practice in pedagogy which aligns to instruction through practical skills. It also revealed that lecturers were burdened with duties beyond teaching, monitoring, marking, and grading; they needed to devote extra time and work to VI students (remediation, feedback, re-teaching, and revision for

assessments etc.). The research's theoretical, methodological, and practical recommendations were also emphasised in this chapter. It is anticipated that the conclusions and suggestions will enlighten lecturers to use their knowledge and skills learnt along their journey to uplift the quality of teaching students with visual impairment.

7.7 CONCLUSION TO THE STUDY

This research study aimed to explore lecturers' learning journeys in teaching students with visual impairments. In addressing the main research aim in line with the aim, objectives and research questions of the study, narrative interviews, narrative focus-group discussions, and written reflection narratives were centred on lecturers' understanding of learning journeys, and how such understanding shaped their teaching of students with visual impairments. The main limitation was that the study was conducted by including only lecturers as participants. To expand the subject of learning journeys, future research should include a diverse sample of college participants. It was suggested that universities and TVET colleges collaborate expeditiously to eradicate discriminatory and conservative practices to chart a trajectory that is inclusive of teaching and accommodating all students, with or without visual impairment in regular classrooms. According to the research's findings, lecturers' experiences teaching students with visual impairments should improve, particularly for those students from underprivileged backgrounds and those who have experienced marginalisation due to their impairment. It is envisaged that this study engenders a high level of enhancement in teaching VI students at TVET colleges, otherwise we will be failing as a country to deliver Inclusive Education agendas to assist those with disabilities in our education system.

REFERENCES

- Abdollahipour, R., Land, W. M., Cereser, A., & Chiviawsky, S. (2020). External relative to internal attentional focus enhances motor performance and learning in visually impaired individuals. *Disability and rehabilitation*, 42(18), 2621-2630.
- Abdurrahman, A., Sari, N., Maulana, H., Rahman, B., Umami, R., & Jermittiparsert, K. (2019). Multi-level scaffolding: A novel approach of physics teacher development programme for promoting content knowledge mastery. *International Journal of Innovation, Creativity and Change*, 7(8), 71-72.
- Abualrejal, H. M. E., Shtawi, H. O., Hassan, M. G., Alqudah, A. Z., & Alamrani, A. A. (2021). Assistive Technology and Its Impact on Educational Achievement for Visually Impaired Students at SKPK Princess Elizabeth. *International Conference on Emerging Technologies and Intelligent Systems*, 322, 873–883.
- Adiputra, S. (2019). Perceptions of inclusion education by parents of elementary school-aged children in Lampung, Indonesia. *International Journal of Instruction*, 12(1), 199–212.
- Adongo, J. O. (2023). The inclusion of students with visual impairment in tertiary institutions: a case study of teachers' training college at Machakos. *Doctoral Dissertation. University of Nairobi, Nairobi (Kenya)*.
- Aina, A. Y., & Ogegbo, A. A. (2022). Investigating TVET college educators' experiences while transitioning from the traditional classroom to the virtual classroom during the COVID-19 pandemic. *Perspectives in Education*, 40(1), 129-142.
- Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Nordic Journal of Studies in Educational Policy*, 6(1), 7-16.
- Ainscow, M., Slee, R., & Best, M. (2019). The Salamanca statement: 25 years on. *International Journal of inclusive education*, 23(7-8), 671-676.
- Akamatsu, R., Tonsho, N., Saiki, M., & Komatsu, M. (2022). Restaurant managers' readiness to maintain people's healthy weight and minimise food waste in Japan. *BMC public health*, 22(1), 1-9.
- Akiba, M., Murata, A., Howard, C. C., & Wilkinson, B. (2019). Lesson study design features for supporting collaborative teacher learning. *Teaching and Teacher Education*, 77, 352-365.

- Aktaruzzaman, M., Shamim, M., & Clement, C. K. (2011). Trends and issues to integrate ICT in teaching learning for the future world of education. *International Journal of Engineering & Technology*, 11(3), 114-119.
- Akyar, B. C., & Tuncer, N. (2022). Exploring the relationships between early childhood in-service teachers 'classroom management and self-regulation skills. *European Journal of Alternative Education Studies*, 7(1),2-3.
- Alesech, J., & Nayar, S. (2021). Teacher strategies for promoting acceptance and belonging in the classroom: A New Zealand study. *International Journal of Inclusive Education*, 25(10), 1140-1156.
- Alharahsheh, H., & Pius, A. (2020). A review of key paradigms: Positivism vs interpretivism. *Global Academic Journal of Humanities and Social Sciences*, 2(3), 39–43.
- Allais, S. (2022). Skills for industrialisation in sub-Saharan African countries: why is systemic reform of technical and vocational systems so persistently unsuccessful? *Journal of Vocational Educational training and Training*, 47(3), 475-493.
- Allais, S., & Wedekind, V. (2020). Targets, TVET and transformation. In *Grading Goal Four* (322-338). Brill.
- Almeida, A. M. H. (2022). The New Ways to Communicate Your Research: Webinars and Beyond. In *Essential Writing, Communication and Narrative Skills for Medical Scientists Before and After the COVID Era* (pp. 113-123). Springer.
- Alnahdi, G. (2014). Assistive technology in special education and the universal design for learning. *Turkish Online Journal of Educational Technology*, 13(2), 18-23.
- Alsarawi, A., & Sukonthaman, R. (2023). Preservice teachers' attitudes, knowledge, and self-efficacy of inclusive teaching practices. *International Journal of Disability, Development and Education*, 70(5), 705-721.
- Alvesson, M. (2020). "Upbeat leadership: A recipe for or against "successful" leadership studies." *The Leadership Quarterly*, 31(6): 101439.
- An, G., Omodaka, K., Hashimoto, K., Tsuda, S., Shiga, Y., Takada, & Nakazawa, T. (2019). Glaucoma diagnosis with machine learning based on optical coherence tomography and color fundus images. *Journal of Healthcare Engineering*, 2019, 1-10.

- Andayani, U., Siregar, B., Sandri, W. E., Muchtar, M., Syahputra, M., Fahmi, F., & Nasution, T. (2019). Identification of Retinoblastoma Using Backpropagation Neural Network. *Journal of Physics*, 1235, 1-7.
- Anderson, C. L., & Anderson, K. M. (2022). Technology for Gifted Students: Designing Learning Opportunities for Students with Disabilities. In *Research Anthology on Physical and Intellectual Disabilities in an Inclusive Society* (pp. 306-326). IGI Global.
- Anderson, R. C., Katz-Buonincontro, J., Boussetot, T., Mattson, D., Beard, N., Land, J., & Livie, M. (2022). How am I a creative teacher? Beliefs, values, and affect for integrating creativity in the classroom. *Teaching and Teacher Education*, 110, 103583.
- Andrikov, D., & Kurbanov, S. (2022). Development of a Linear Model of Diabetes Mellitus with a PID Controller and a Method for Automatic Adjustment of the PID Controller. In *Intelligent Sustainable Systems*, (pp. 43-49). Springer.
- Anggrella, D. P., Izzati, L. R., & Sudrajat, A. K. (2023). Improving the quality of learning through lesson plan preparation workshops for an independent learning model. *Journal of Community Service and Empowerment*, 4(1), 162-171.
- Anyango, R. N., & Okello, L. M. (2023). Influence of the attitude of teachers on academic performance of visually impaired learners in primary schools of Rongo sub-county, Kenya. *European Journal of Special Education Research*, 9(2).
- Antunes, C., Neto, I., Correia, F., Paiva, A., & Nicolau, H. (2022). Inclusive'R'Stories: An Inclusive Storytelling Activity with an Emotional Robot. Proceedings of the 2022 ACM/IEEE International Conference on Human-Robot Interaction, Universidad de Lisboa.
- Apirana, E., Inderawati, R., Arianti, A., Wati, S., & Hakim, I. N. (2021). Implementing E-learning Training toward English Virtual Lecturers: The Process, Perspectives, Challenges and Solutions. *International Journal of Emerging Technologies in Learning*, 16(4), 241-245.
- Arandia, N., Garate, J. I., & Mabe, J. (2022). Embedded Sensor Systems in Medical Devices: Requisites and Challenges Ahead. *Sensors*, 22(24), 9917.
- Arslantas, T. K., & Gul, A. (2022). Digital literacy skills of university students with visual impairment: A mixed-methods analysis. *Education and Information Technologies*, 47(6), 1-21.

- Asirit, L.B.L., Hua, J.H., & Mendoza, L. (2022). A closer look at neophyte teachers' instructional competence: A phenomenological study. *International Research Journal of Science, Technology, Education, and Management*, 2(2), 1-1
- Aspers, P., & Corte, U. (2019). What is qualitative in qualitative research? *Qualitative Sociology*, 42, 139-160.
- Atanga, C., Jones, B. A., Krueger, L. E., & Lu, S. (2020). Teachers of students with learning disabilities: Assistive technology knowledge, perceptions, interests, and barriers. *Journal of Special Education Technology*, 35(4), 236-248.
- Atowa, U. C., Hansraj, R., & Wajuihian, S. O. (2019). Visual problems: a review of prevalence studies on visual impairment in school-age children. *International Journal of Ophthalmology*, 12(6), 1037.
- Attaway, A. I. A., & Ambarek, M. S. (2020). University-wide implementation of problem-based learning. *Libyan International Medical University Journal*, 5(1), 19.
- Atukunda, J., & Maja, M. M. (2022). Computer Practice Module Lecturers' Experiences of Internal Continuous Assessment at Technical Vocational Education and Training Colleges. *International Journal of Educational Methodology*, 8(1), 151-162.
- Awaah, F., Kombat, C. L., & Ekwam, E. O. (2022). Perspective Chapter: New Active Learning Models in Africa. *Active Learning-Research and Practice for STEAM and Social Sciences Education*, 139. IntechOpen.
- Awang-Hashim, R., Kaur, A., & Valdez, N. P. (2019). Strategizing inclusivity in teaching diverse learners in higher education. *Malaysian Journal of Learning and Instruction*, 16(1), 105-128.
- Azizi, Z. M., Azizi, N. S. M., Abidin, N. Z., & Mannakkara, S. (2019). Making sense of energy-saving behaviour: a theoretical framework on strategies for behaviour change intervention. *Procedia Computer Science*, 158(7), 725-734.
- Baker, L. (2020). Releasing students from the cognitive straitjacket of visual-auditory kinaesthetic learning styles. *Impact*, 3(10), 57-60.
- Baker, M. J., Nightingale, E., & Bills, S. (2021). An Editing Process for Blind or Visually Impaired Editors. *IEEE Transactions on Professional Communication*, 64(3), 275-287.

- Bakken, J. P., Putta, P., & Uskov, V. L. (2021). Smart Universities: *Assistive Technologies for Students with Visual Impairments*. In *Smart Education and e-Learning 2021* (pp. 453-473). Springer.
- Bakračević, K., Zorjan, S., Tement, S., Christie, L., & Musil, B. (2022). Emotions in our lives: the evaluation of a user-centered training course» living e-Motions «in the context of recovery of people with mental health challenges. *Mental Health Review Journal*, 27(2), 137-145.
- Ballen, C. J. (2020). Enhancing diversity in college science with active learning. In *Active learning in college science* (pp. 873-887). Springer.
- Ballen, C. J., Blum, J. E., Brownell, S., Hebert, S., Hewlett., ... & Slemmons, K. E. (2017). A call to develop course-based undergraduate research experiences (CUREs) for non-majors' courses. *American Sociology and Cell Biology Life Sciences Education*, 16(2), 1931-7913.
- Baloyi, O. B., Ann Jarvis, M., & Mtshali, N. G. (2022). A report of a South African university's management of undergraduate nursing students' teaching and learning following the COVID-19 interruptions. *Health SA Gesondheid*, 27, 1816.
- Bantihun, A., Gonete, K. A., Getie, A. A., & Atnafu, A. (2020). Child Night Blindness and Bitot's Spots are Public Health Problems in Lay Armachiho District, Central Gondar Zone, Northwest Ethiopia, 2019: A Community-Based Cross-Sectional Study. *International Journal of Pediatrics*, 2020, 1-11.
- Banegas, D. L., Corrales, K., & Poole, P. (2020). Can engaging L2 teachers as material designers contribute to their professional development? Findings from Colombia. *System*, 91, 102265.
- Barkhuizen, G., & S. Consoli (2021). Pushing the edge in narrative inquiry. *Elsevier*, 102: 102656.
- Barradell, S., Barrie, S., & Peseta, T. (2018). Ways of thinking and practicing: Highlighting the complexities of higher education curriculum. *Innovations in Education and Teaching International*, 55(3), 266-275.
- Basu, K., Basu, T., Buckmire, R., & Lal, N. (2019). Predictive models of student college commitment decisions using machine learning. *Data*, 4(2), 65.
- Bathelt, J., De Haan, M., & Dale, N. J. (2019). Adaptive behaviour and quality of life in school-age children with congenital visual disorders and different levels of visual impairment. *Research in developmental disabilities*, 85(1), 154-162.

- Batty, L., & Reilly, K. (2022). Understanding barriers to participation within undergraduate STEM laboratories: towards development of an inclusive curriculum. *Journal of Biological Education*, 56(2), 1-23.
- Baykaldı, G., Corlu, M. S., & Yabaş, D. (2024). An investigation into high school mathematics teachers and inclusive education for students with visual impairments. *British Journal of Visual Impairment*, 42(1), 124-134.
- Behzadnia, B., Alizadeh, E., Haerens, L., & Aghdasi, M. T. (2022). Changes in students' goal pursuits and motivational regulations toward healthy behaviour's during the pandemic: A Self-Determination Theory perspective. *Psychology of Sport and Exercise*, 59. 102131.
- Beingolea, J. R., Zea-Vargas, M. A., Huallpa, R., Vilca, X., Bolivar, R., & Rendulich, J. (2021). Assistive Devices: Technology Development for the Visually Impaired. *Designs*, 5(4), 75.
- Benbellal, A. (2019). Type a, or type b, that is the question: a critical examination of product-oriented and process-oriented syllabuses in foreign language learning and teaching. *Algeria Associate Editors*, 2(2), 121-137.
- Bender, S., & Peppler, K. (2019). Connected learning ecologies as an emerging opportunity through Cosplay. *Communisier Media Education Research Journal*, 27(1), 1-13.
- Berghs, M., Atkin, K., Hatton, C., & Thomas, C. (2019). Do disabled people need a stronger social model: a social model of human rights? *Disability & Society*, 34(7-8), 1034-1039.
- Berkvens, J., Van den Akker, J., & Brugman, M. (2014). Addressing the quality challenge: Reflections on the post-2015 UNESCO education agenda. *Netherlands National Commission for UNESCO*, 5(2), 18-28.
- Bertram, C., & Christiansen, I. (2014). *Understanding research: An introduction to reading research*. Van Schaik Publishers.
- Bettini, E., Lillis, J., Stark, K., Brunsting, N. C., & Mathews, H. M. (2022). Special educators' experiences of interpersonal interactions while serving students with emotional/behavioural disorders. *Remedial and Special Education*, 43(2), 98-113.
- Bestard-Bou, J., & Arias-Badia, B. (2022). Access services for the blind and partially sighted: A social and legal framework for the promotion of audio description. In *Routledge Handbook of Audio Description* (pp. 27-37). Routledge.

- Bewley, K. A., Crosland, K., & Fuller, A. (2023). Using Computer-Assisted Instruction to Decrease Transition Times for Students with Autism Spectrum Disorder. *Focus on Autism and Other Developmental Disabilities*, 38(1), 45-55.
- Beijaard, D. (2019). Teacher learning as identity learning: models, practices, and topics. *Teachers and Teaching*, 25(1), 1-6.
- Beyene, W. M., Mekonnen, AT, & Giannoumis, G.A. (2023). Inclusion, access, and accessibility of educational resources in higher education institutions: exploring the Ethiopian context. *International Journal of Inclusive Education*, 27(1), 18-34.
- Beyene, W. M., Mekonnen, A. T., & Giannoumis, G. A. (2020). Inclusion, access, and accessibility of educational resources in higher education institutions: exploring the Ethiopian context. *International Journal of Inclusive Education*, 26(9), 1-17.
- Bhanushali, D. K. (2007). Changing face of disability movement: From charity to empowerment. Available at SSRN 965999.
- Bian, C. L., Wang, D. L., Liu, S. Y., Lu, W. G., & Dong, J. Y. (2019). Adaptive learning path recommendation based on graph theory and an improved immune algorithm. *KSII Transactions on Internet and Information Systems*, 13(5), 2277-2298.
- Bidarkar, M. K., & Tekwani, K. (2022). Impact of HRM practices on the performance of the teachers. *International journal of economic perspectives*, 16(11), 45-55.
- Blume, C., N. & Wurrfel, N. (2018). Using Technologies for Foreign Language Learning in Inclusive Settings. *Fremdsprachen Lehren und Lernen*, 47(2).
- Bohan, C., McDowell, C., & Smyth, S. (2022). Does the Immediacy of Feedback Matter in Game-Based Classroom Management? Analysis of the Caught Being Good Game with Adolescent Students. *Journal of Positive Behaviour Interventions*, 24(3), 1-14.
- Bonsaksen, T., Brunes, A., & Heir, T. (2022). Post-traumatic stress disorder in people with visual impairment compared with the general population. *International Journal of Environmental Research and Public Health*, 19(2), 619.
- Bossewitch, J., Brown, L. X., Gooding, P. M., Harris, L., Horton, J., Katterl, S., ... & Vasquez Encalada, A. (2022). *Digital Futures in Mind: Reflecting on Technological Experiments in Mental Health & Crisis Support*. SSRN 4215994.

- Botham, R. (2020). How do women with a history of SEED-AN experience navigating their lives away from and beyond their illness? A narrative inquiry studies. [Online]. <https://eprints.mdx.ac.uk/31790/>
- Bouwman, M., Runhaar, P., Wesselink, R., & Mulder, M. (2019). Stimulating teachers' team performance through team-oriented HR practices: The roles of affective team commitment and information processing. *International Journal of Human Resource Management*, 30(5), 856–878.
- Boveda, M., & Aronson, B. A. (2019). Special education preservice teachers, intersectional diversity, and the privileging of emerging professional identities. *Remedial and Special Education*, 40(4), 248-260.
- Bovill, C. (2019). A co-creation of learning and teaching typology: What kind of co-creation are you planning or doing? *International Journal for Students as Partners*, 3(2), 91-98.
- Brand, M. (2021). *Exploring the curriculum implementation experiences of TVET college lecturers*. Master's Dissertation, Stellenbosch University, Stellenbosch (RSA).
- Braun, V., Clarke, V., & Hayfield, N. (2019). “A starting point for your journey, not a map”: Nikki Hayfield in conversation with Virginia Braun and Victoria Clarke about thematic analysis. *Qualitative Research in Psychology*, 19(2), 1-22.
- Brodrick, E. A. (2021). *Light and dark adaptation in the eye of the fiddler crab: mechanisms to cope with extreme fluctuations in brightness*. [Online]. <https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.824139>.
- Brooks-Young, S. (2020). *The Media-savvy Middle School Classroom: Strategies for Teaching Against Disinformation*. CRC Press.
- Brunes, A., & Heir, T. (2019). Visual impairment and employment in Norway. *Springer Open Journal*, 22(1), 1-9.
- Brussino, O. (2020). *Mapping policy approaches and practices for the inclusion of students with special education needs*. OECD Education Working Papers, No. 227, OECD Publishing, <https://doi.org/10.1787/19939019>.
- Bryant, D. P., Bryant, B. R., & Smith, D. D. (2019). *Teaching students with special needs in inclusive classrooms*. Sage Publications.

- Bryman, A. (2010). Quantitative vs. qualitative methods. *Sociology: introductory readings*, 47.
- Budiarti, E., Jamiatun, J., Udjir, N., Rohana, R., & Rahayu, T. (2022). Improving Children's Pre-Reading Ability through Smartphone Based Learning Video Media in RA Mutiara Ambon. *Edumaspul Journal Pendidikan*, 6(2), 3206-3210.
- Buthelezi, M. M. (2014). Exploring challenges experienced by physically challenged students at a Further Education and Training College in KwaZulu-Natal Province, *Journal of Educational and Social Research*, 4(3), 421.
- Butler, M., Holloway, L., Marriott, K., & Goncu, C. (2017). Understanding the graphical challenges faced by vision-impaired students in Australian universities. *Higher Education Research & Development*, 36(1), 59-72.
- Button, P., Collins, L. A., Denteh, A., García-Pérez, M., Harrell, B., Isaac, E., & Ziedan, E. (2021). Teaching controversial and contemporary topics in economics using a jigsaw literature review activity. *The Journal of Economic Education*, 52(4), 286-295.
- Cabero Almenara, J., Guillén Games, F. D., Ruiz Palmero, J., & Palacios Rodríguez, A. (2022). Teachers' digital competence to assist students with functional diversity: Identification of factors through logistic regression methods. *British journal of educational technology*, 53(1), 41-57.
- Cain, M., & Fanshawe, M. (2019). Opening eyes to vision impairment: Inclusion is just another way of seeing. In Carter, S. (Ed.). *Opening eyes onto inclusion and diversity*. Chapter 8.
- Cainé, L., Costa, S., & Pinheiro, M. F. (2013). "Population data of 12 X-STR loci in a North of Portugal sample." *International journal of legal medicine*, 127(1), 63-64.
- Cajandig, A. J. S., & Lomibao, L. S. (2020). 5I's Learning Path with Cultural Approach Embedded to CAI on Student's Conceptual Understanding. *American Journal of Educational Research*, 8(10), 772-778.
- Cañadas, L. (2023). Contribution of formative assessment for developing teaching competences in teacher education. *European Journal of Teacher Education*, 46(3), 516-532.
- Canessa, A. (2023). "Learning ignorance and illiteracy through education: reflections on Highland Bolivia". *Culture & Psyche*, 1-13.

- Casey, J. E., Kirk, J., Kuklies, K., & Mireles, S. V. (2023). Using the technology acceptance model to assess how preservice teachers' view educational technology in middle and high school classrooms. *Education and Information Technologies*, 28(2), 2361-2382.
- Cashmore, J., Kong, P., & McLaine, M. (2023). Children's Participation in Care and Protection Decision-Making Matters. *Laws*, 12(3), 49.
- Cheema, S. M., Tariq, S., & Pires, I. M. (2023). A natural language interface for automatic generation of data flow diagram using web extraction techniques. *Journal of King Saud University - Computer and Information Sciences*, 35(2), 626-640.
- Cappagli, G., Finocchietti, S., Cocchi, E., Giammari, G., Zumiani, R., ... & Gori, M. (2019). Audio motor training improves mobility and spatial cognition in visually impaired children. *Scientific reports*, 9(1), 1-9.
- Carqueja, I. M., Sousa, J., & Mansilha, A. (2018). Vascular malformations: classification, diagnosis, and treatment. *International angiology: a journal of the International Union of Angiology*, 37(2), 127-142.
- Carr, M., & Lee, W. (2019). *Learning stories in practice*, New Delhi: Sage Publications.
- Carroll, C., Guinan, N., Kinneen, L., Mulheir, D., Loughnane, H., ... & Lyons, R. (2018). Social participation for people with communication disability in coffee shops and restaurants is a human right. *International Journal of Speech-Language Pathology*, 20(1), 59-62.
- Carter, R. (2019). *The human brain book: An illustrated guide to its structure, function, and disorders*. Penguin.
- Casale-Giannola, D., Delisio, L., Sardo, L., & Kline, K. (2023). Research and Reality: A Survey of Educators' Perceptions about Evidence-Based Practices in Inclusive Settings for Students with Intellectual Disabilities. *Education Sciences*, 13(6), 558.
- Castle, C. L., Greasley, A. E., & Burland, K. (2022). The Musical Experiences of Adults with Severe Sight Impairment: An Interpretative Phenomenological Analysis. *Music & Science*, 5. 20592043221083296.
- Charmaz, K. (2020). Experiencing stigma and exclusion: The influence of neoliberal perspectives, practices, and policies on living with chronic illness and disability. *Symbolic Interaction*, 43(1), 21-45.

- Chander, H., Shojaei, A., Deb, S., Kodithuwakku Arachchige, S. N., Hudson, C., Knight, A. C., & Carruth, D. W. (2021). Impact of Virtual Reality–Generated Construction Environments at Different Heights on Postural Stability and Fall Risk. *Workplace Health & Safety*, 69(1), 32-40.
- Chang, C. H. S., Kuo, C. C., Hou, H. T., & Koe, J. J. Y. (2022). Design and evaluation of a multi-sensory scaffolding gamification science course with mobile technology for learners with total blindness. *Computers in Human Behaviour*, 128. 107085.
- Chang, M. Y., & Borchert, M. S. (2021). Methods of visual assessment in children with cortical visual impairment. *Current Opinion in Neurology*, 34(1), 89-96.
- Charmaz, K. (2015). Grounded theory. *Qualitative psychology: A practical guide to research methods*, 3, 53-84.
- Cheek, A. E., Harris, B. A., Koppenhaver, D. A., Garwood, J. D., & Laws, B. R. (2022). Technology-Supported Shared Storybook Reading in a Rural Classroom Serving Students with Severe Intellectual Disabilities and Complex Communication Needs. *Rural Special Education Quarterly*, DOI 4187568705221075758.
- Chen, H., Zhao, Y., Wu, X., Sun, P., Feng, J., Xie, R., & Wang, (2023). "Effects of phonological awareness and morphological awareness on blind students' reading comprehension". *British Journal of Psychology*, 114(2), 415-429.
- Chen, X., Liu, Z., Lu, M. H., & Yao, X. (2022). The recognition of emotional prosody in students with blindness: Effects of early visual experience and age development. *British Journal of Developmental Psychology*, 40(1), 112-129.
- Cheng, S. C., & Lai, C. L. (2020). Facilitating learning for students with special needs: a review of technology-supported special education studies. *Journal of computers in education*, 7(2), 131-153.
- Cherawati, C., Musthafa, B., & Cahyani, I. (2019). Literacy in Storytelling Model Teacher with Learning in Primary Circuit City Bandung. *International Journal of Science and Applied Science: Conference Series*, 3(1), 1-11.
- Chi, Z., Niu, Z., & Sawabe, T. (2022). *Enabling Augmented Reality Incorporate with Audio on Indoor Navigation for People with Low Vision*. 2022 IEEE Conference on Virtual Reality and 3D

User Interfaces Abstracts and Workshops (VRW), 2022, pp. 882-883, Doi: 10.1109/VRW55335.2022.00292.

Chitanana, L. (2022). Enhancing Student Engagement and Active Learning in Online Learning Environments: Lesson Learnt During the COVID-19 Lockdown. In *Handbook of Research on Active Learning and Student Engagement in Higher Education* (pp. 128-152). IGI Global.

Chizhik, E. W., & Chizhik, A. W. (2018). Using activity theory to examine how teachers' lesson plans meet students learning needs. *The Teacher Educator*, 53(1), 67–85.

Chokron, S., Kovarski, K., & Dutton, G. N. (2021). Cortical Visual Impairment and Learning Disabilities. *Frontiers in Human Neuroscience*, 15(1), 1-13.

Chow, J. C., Senter, R., & Morse, A. (2022). Speech-language pathologists' experiences with challenging behaviours in practice. *Communication Disorders Quarterly*, 44(2). DOI 15257401211073456.

Chun, S., Son, W., Kim, H., Lim, S. K., Pang, C., & Choi, C. (2019). Self-powered pressure-and vibration-sensitive tactile sensors for learning technique-based neural finger skin. *Nano letters*, 19(5), 3305-3312.

Clandinin, D. J. (2019). *Teacher education as narrative inquiry*. Routledge.

Closs, L., Mahat, M., & Imams, W. (2022). Learning environments' influence on students' learning experience in an Australian Faculty of Business and Economics. *Learning Environments Research*, 25(1), 271-285.

Coburn, C. E. (2005). Shaping teacher sensemaking: School leaders and the enactment of reading policy. *Educational policy*, 19(3), 476-509.

Cohen, J. E. (2020). Property and the construction of the information economy: A neo-Polanyian ontology. In *Routledge Handbook of Digital Media and Communication* (pp. 333-349). Routledge.

Collier-Meek, M. A., Johnson, A. H., Senetti, L. H., & Minami, T. (2019). Identifying critical components of classroom management implementation. *School Psychology Review*, 48(4), 348-361.

Collins, A., Azmat, F., & Rentschler, R. (2019). Bringing everyone on the same journey: revisiting inclusion in higher education. *Studies in Higher Education*, 44(8), 1475-1487.

- Columna, L., Dillon, S. R., Dolphin, M., Streete, D. A., Hodge, S. R., ... & Heffernan, K. S. (2019). Physical activity participation among families of children with visual impairment and blindness. *Disability and rehabilitation*, *41*(3), 357-365.
- Con Aguilar, E. (2019). Heritage education - Memories of the past in the present: Caribbean social studies curriculum: A view from teacher practice. Doctoral Dissertation. Leiden University, The Hague (Netherlands).
- Cooper, R., Kuh, D., & Hardy, R. (2010). Objectively measured physical capability levels and mortality: systematic review and meta-analysis. *British Medical Journal*, *341*(7774), 1-4.
- Corby, D., King, E., Petrie, M., Reddy, S., Callan, A., & Andersen, T. (2022). Making a Case for the Inclusion of People with Intellectual Disabilities in Higher Education. *Disabilities*, *2*(3), 415-427.
- Cortini, M., Galanti, T., & Fantinelli, S. (2019). Focus Group Discussion: How many Participants in a Group? *Encyclopaideia*, *23*(54), 29-43.
- Costela, F. M., Saunders, D. R., Rose, D. J., Katjezovic, S., Reeves, S. M., & Woods, R. L. (2019). People with central vision loss have difficulty watching videos. *Investigative Ophthalmology & Visual Science*, *60*(1), 358-364.
- Cotán, A., Aguirre, A., Morgado, B., & Melero, N. (2021). Methodological Strategies of Faculty Members: Moving toward Inclusive Pedagogy in Higher Education. *Sustainability*, *13*(6), 3031-3032.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). p. 14. Sage Publications.
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The counseling psychologist*, *35*(2), 236-264.
- Critten, S., Connelly, V., Dockrell, J. E., Mundy, I. R., O'Rourke, L., Callaghan, L., & Walter, K. (2023). Handwriting processes when spelling morphologically complex words in children with and without Developmental Language Disorder. *Frontiers in Psychology*, *14*, 1112462.
- Curwen, M. S., Ardell, A., & MacGillivray, L. (2019). Hopeful discourse: Elementary children's activist responses to modern-day slavery grounded in systems thinking. *Literacy Research: Theory, Method, and Practice*, *68*(1), 139-161.

- Dalton, L., Rapa, E., Ziebland, S., Rochat, T., Kelly, B., ... & Betancourt, T. (2019). Communication with children and adolescents about the diagnosis of a life-threatening condition in their parent. *The Lancet*, 393(10176), 1164-1176.
- Dangoisse, F., Clercq, M. D., Meenen, F. V., Chartier, L., & Nils, F. (2020). When disability becomes ability to navigate the transition to higher education: a comparison of students with and without disabilities. *European Journal of Special Needs Education*, 35(4), 513-528.
- Daniela, L., Strods, R., & France, I. (2019). Activities with educational robotics: research model and tools for evaluation of progress. In *Smart Learning with Educational Robotics* (pp. 251-266). Springer.
- Daroni, G. A., Gunarhadi, G., & Legowo, E. (2018). Assistive technology in mathematics learning for visually impaired students. *Tadris: Jurnal Keguruan dan Ilmu Tarbiyah*, 3(1), 1-5.
- Das, M., Tang, X., Mohapatra, S. S., & Mohapatra, S. (2019). Vision impairment after traumatic brain injury: present knowledge and future directions. *Reviews in the Neurosciences*, 30(3), 305-315.
- Dawle, S., & Ahmed, S. (2022). Thinkerbelle Annie: World's First Self-Learning Braille Literacy Device - Supported by Mada Innovation Programme. *Nafath*, 6(19).
- Dawson, K. (2021). Stamping Out Disease: Health Education and Promotion by Miniature Messengers. Open Access Victoria University of Wellington.
- De Castro, E. V. (2019). Exchanging perspectives: the transformation of objects into subjects in Amerindian ontologies. *Common knowledge*, 25(1-3), 21-42.
- De Oliveira, B. (2023). Participatory action research as a research approach: Advantages, limitations and criticisms. *Qualitative Research Journal*, 23(3), 287-297.
- De Sousa, A. A., Todorov, O. S., & Proulx, M. J. (2022). A natural history of vertebrate vision loss: Insight from mammalian vision for human visual function. *Neuroscience & Bio-behavioural Reviews*. doi: 10.1016/j.neubiorev.2022.104550. Epub 2022 Jan 21. PMID: 35074313.
- Decker, D. M., Wolfe, J. L., & Belcher, C. K. (2022). A 30-year systematic review of professional ethics and teacher preparation. *The Journal of Special Education*, 55(4), 201-212.

- Degener, T. (2017). A new human rights model of disability. In *The United Nations convention on the rights of persons with disabilities* (pp. 41-79). UN Press.
- Deolia, S., Johny, J., Patil, M. S., Lanje, N. R., & Patil, A. V. (2019). Effectiveness of “Audio-tactile Performance Technique” to improve the oral hygiene status of visually impaired schoolchildren. *Journal of Indian Society of Pedodontics and Preventive Dentistry*, 37(2), 172.
- Deslauriers, L., McCarty, L. S., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Sciences*, 116(39), 19251–19257.
- Dhaded, S. S., Krishnan, S., Ganapathy, M. P., Rajesh, P. C., & Ramaiah, S. (2022). Mishathi-A Smart Vision System. 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM),
- Diel-Amen, R. (2011). Socio-academic integrative moments: Rethinking academic and social integration among two-year college students in career-related programmes. *The Journal of Higher Education*, 82(1), 54-91.
- Douglas, S. N., Uitto, D. J., Reinfelds, C. L., & D’Agostino, S. (2019). A systematic review of paraprofessional training materials. *The Journal of Special Education*, 52(4), 195-207.
- Drake, S., & Reid, J. (2020). How education can help shape a new story in a post-pandemic world. *Brock Education Journal*, 29(2), 6-6.
- Du Plessis, A., Muller, H., & Prinsloo, P. (2005). Determining the profile of the successful first-year accounting student. *South African Journal of Higher Education*, 19(4), 684-698.
- Du, K., Huang, J., Guan, H., Zhao, J., Zhang, Y., & Shi, Y. (2022). Teacher-to-parent communication and vision care-seeking behaviour among primary school students. *Hong Kong Medical Journal*, 28(2), 152-160.
- Due, B. L., & Lange, S. B. (2019). Troublesome objects: Unpacking ocular-centrism in urban environments by studying blind navigation using video ethnography and ethnomethodology. *Sociological Research Online*, 24(4), 475-495.
- Dumitru, C. (2023). Supporting Students with Specific Learning Disorders Through Higher Education: Pedagogical Framework for Online Teaching. In *Engaging Students with Disabilities in Remote Learning Environments* (pp. 186-206). IGI Global.

- Duijzer, C., Den Heuvel-Panhuizen, V., Veldhuis, M., Doorman, M., & Leseman, P. (2019). Embodied learning environments for graphing motion: A systematic literature review. *Educational Psychology Review*, 31(3), 597-629.
- Edirisinghe, C., Podari, N., & Cheok, A. D. (2022). A multi-sensory interactive reading experience for visually impaired children; a user evaluation. *Personal and Ubiquitous Computing*, 26(3), 807-819.
- Ejiakor, I., Achigbu, E., Onyia, O., Edema, O., & Florence, U. N. (2019). Impact of visual impairment and blindness on quality of life of patients in Owerri, Imo State, Nigeria. *Middle East African journal of ophthalmology*, 26(3), 127.
- Elam, A. R., Nwanyanwu, K. H., & Scott, A. W. (2022). Elevating Social Determinants of Health and Community Engagement in Eye Care - The Time is Now. *JAMA ophthalmology*.
- Eneizan, B., Alsaad, A., Abdelbaset Alkhalwaldeh, H. N., & Rawash, O. E. (2020). E-wom, trust, usefulness, ease of use, and online shopping via websites: The moderating role of online shopping experience. *Journal of Theoretical and Applied Information Technology*, 98(13), 2554–2565.
- Eneya, D., & Mostert, B. (2019). The application of the social model of disability and Wilson's model of information behaviour towards effective service delivery for students with disabilities within an academic library context. *Inkanyezisi*, 11(1), 69-79.
- Ensimau, N. K., Hamzah, M. I., Yassin, M. H. M., Tahar, M. M., Haron, Z., ... & Samah, A. A. (2019). Teacher's Ability in Identifying Students with Disability in Classroom. Kapit, Sarawak. Proceedings of the 3rd International Conference on Special Education (ICSE 2019), Surabaya, Indonesia,
- Eriksen, C. (2019). Coping, caring, and believing: The embodied work of disaster recovery workers. *Emotion, Space, and Society*, 32, 100592.
- ESCAP. (2022). Framework for disability policies and strategies in Asia and the Pacific. ESCAP Press.
- Esoimeme, E. E. (2021). Identifying and reducing the money laundering risks posed by individuals who have been unknowingly recruited as money mules. *Journal of Money Laundering Control*, 24(1), 201-212.

- Establish, A., Zelinger, L., Zeitz, C., Hendler, K., Namburi, P., ... Banin, E. (2019). TRPM1 mutations are the most common cause of autosomal recessive congenital stationary night blindness (CSNB) in the Palestinian and Israeli populations. *Scientific reports*, 9(1), 1-6.
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4.
- Evans, P. K., Stokes, D. W., & Craig, C. J. (2021). A narrative inquiry into teaching physics as inquiry: One teacher's journey. In *Preparing teachers to teach the STEM disciplines in America's urban schools*. Emerald Publishing.
- Færøyvik Karlsen, A. M. (2022). Investigating teacher learning in Lesson Study: the important link between reported observations and change of plans. *Professional development in education*, 48(1), 53-69.
- Fajriah, A. N. I., Haryanti, E., & Siswayani, P. (2021). The Implementation of Audio Storytelling Activities in Teaching Speaking for Visual Impaired Students: A Narrative Inquiry Study in SLBN Handayani Sukabumi. *Elite Journal*, 3(2), 117-128.
- Fakhri, B. (2020). *Modern Sensory Substitution for Vision in Dynamic Environments*. Arizona State University Press.
- Fakolade, A., Finlayson, M., & Plow, M. (2017). Using tele-rehabilitation to support people with multiple sclerosis: A qualitative analysis of interactions, processes, and issues across three interventions. *British Journal of Occupational Therapy*, 80(4), 259-268.
- Fakolade, O. A. & Bamidele, O. (2017). "Self-esteem and peer influence as predictors of learning outcomes in mathematics among high ability students in Ibadan, Oyo State, Nigeria". *Sokoto Educational Review*, 17(2), 13-13.
- Falkenberg, H. K., Langaas, T., & Svarverud, E. (2019). Vision status of children aged 7 - 15 years referred from school vision screening in Norway during 2003–2013: A retrospective study. *BMC ophthalmology*, 19(1), 1-9.
- Fansury, A. H., Lutfin, N., & Arsyad, S. N. (2019). Audio books as teaching media to blind students in learning EFL. *Klasikal: Journal of Education, Language Teaching and Science*, 1(1), 1-9.

- Faralli, J. A., Filla, M. S., & Peters, D. M. (2019). Role of fibronectin in primary open angle glaucoma. *Cells*, 8(12), 1518.
- Farrow, R., Iniesto, F., Weller, M., & Pitt, R. (2020). GO-GN research methods handbook.
- Fauzi, K., Amin, M., Dirgeyase, I. W., & Priyatno, A. (2019). Building Learning Path of Mathematical Creative Thinking of Junior Students on Geometry Topics by Implementing Metacognitive Approach. *International Education Studies*, 12(2), 57-66.
- Feine, J., et al. (2019). A taxonomy of social cues for conversational agents. *International Journal of Human-Computer Studies*, 132, 138-161.
- Febtiningsih, P., & Wibowo, A. P. (2021). Teachers' Challenges in Teaching English Writing Skills for Visually Impaired Students at Indonesian Special Senior High Schools. *ELT-Lecture*, 8(1), 90-98.
- Felix, S. M., Kumar, S., & Veeramuthu, A. (2018). A smart personal AI assistant for visually impaired people. 2nd International Conference on Trends in Electronics and Informatics (ICOEI).
- Ferguson, B. T., McKenzie, J., Dalton, E. M., & Lyner-Cleophas, M. (2019). Inclusion, universal design, and universal design for learning in higher education: South Africa and the United States. *African journal of disability*, 8(1), 1-7.
- Fernández Batanero, J. M., Cabero, J., & López, E. (2019). Knowledge and degree of training of primary education teachers in relation to ICT taught to students with disabilities. *British journal of educational technology*, 50(4), 1961-1978.
- Fettig, A., Artman-Meeker, K., Jeon, L., & Chang, H. C. (2022). Promoting a person-centered approach to strengthening early childhood practices that support social-emotional development. *Early Education and Development*, 33(1), 75-91.
- Filipek, J., Patrick, M., & Stienstra, W. (2022). Situating Classroom Management in English Language Arts, Math, and Social Studies. In *the Complexities of Authority in the Classroom* (pp. 141-153). Routledge.
- Flavian, H. (2024). *Transdisciplinary Teaching in Inclusive Schools: Promoting Transdisciplinary Education for Learners with Special Needs* (pp. 81-110). Springer.

- Flensner, K. K. & Von der Lippe, M. (2019). Being safe from what and safe for whom? A critical discussion of the conceptual metaphor of 'safe space'. *Intercultural Education*, 30(3), 275-288.
- Flick, U. (2017). Mantras and myths: The disenchantment of mixed-methods research and revisiting triangulation as a perspective. *Qualitative inquiry*, 23(1), 46-57.
- Fokaidou, M., & Loizidou, P. H. (2019). Reflections on Resilience. A Teacher's Professional Learning Journey. *Journal of Curriculum and Teaching*, 8(3), 171-183.
- Fougeyrollas, P., Boucher, N., Edwards, G., Grenier, Y., & Noreau, L. (2019). The disability creation process model: a comprehensive explanation of disabling situations as a guide to developing policy and service programmes. *Scandinavian Journal of Disability Research*, 21(1).
- Francis, G. L. (2021). Solute carrier proteins and their role in thyroid hormone synthesis. *Clinical Thyroid ology*, 33(3), 107-109.
- Francisco, G. T., Abequibel-Encarnacion, B., Asid, B., & Saavedra, A. (2023). Prospective Language Teachers' Beliefs and Attitudes towards the Inclusion of Special Learners in Regular Classrooms. *Specialusis Ugdymas*, 1(44), 20-43.
- Fraser, A. (2021). Safety Analysis of Battery-Powered Adaptive Ride-on Toys for Children with Disabilities. University of North Florida Press.
- Freed, A., Benavides, A., & Huffling, L. (2019). Teaching, reflecting and learning: Exploring teacher education study abroad programmes as transformational learning opportunities. In *Pedagogy in Basic and Higher Education-Current Developments and Challenges*. Intech Open.
- French, S. S., Hudson, S. B., Webb, A. C., Knapp, C. R., Virgin, E. E., ... & DeNardo, D. F. (2022). Glucose tolerance of iguanas is affected by high-sugar diets in the lab and supplemental feeding by ecotourists in the wild. *Journal of Experimental Biology*, 225(8), jeb243932.
- Frisén, L., & Holmegaard, L. (1978). Spectrum of optic nerve hypoplasia. *British Journal of Ophthalmology*, 62(1), 7-15.
- Frost, N., Nolas, S. M., Brooks-Gordon, B., Esin, C., Holt, A., Mehdizadeh, L., & Shinebourne, P. (2010). Pluralism in qualitative research: The impact of different researchers and qualitative approaches on the analysis of qualitative data. *Qualitative research*, 10(4), 441-460.

- Fullan, M., Rincón-Gallardo, S., & Hargreaves, A. (2015). Professional capital as accountability. *Education policy analysis archives*, 23, 15-15.
- Fuller, S. D., Hu, J., Liu, J. C., Gibson, E., Gregory, M., Kuo, J., & Rajagopal, R. (2022). Five-year cost-effectiveness modelling of primary care-based, nonmydriatic automated retinal image analysis screening among low-income patients with diabetes. *Journal of Diabetes Science and Technology*, 16(2), 415-427.
- Gadiraju, V., Doyle, O., & Kane, S. (2021, May). Exploring technology design for students with vision impairment in the classroom and remotely. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-13).
- Gagnier, K. M., Holochwost, S. J., & Fisher, K. R. (2022). Spatial thinking in science, technology, engineering, and mathematics: Elementary teachers' beliefs, perceptions, and self-efficacy. *Journal of research in science teaching*, 59(1), 95-126.
- Gangl, A., Deutschmann, H. A., Portugaller, R. H., & Stücklschweiger, G. (2022). Influence of safety glasses, body height and magnification on the occupational eye lens dose during pelvic vascular interventions: a phantom study. *European Radiology*, 32(3), 1688-1696.
- Gao, Y., & Latif, F. (2022). An Intelligent Teaching Strategy of Cross-Cultural Business Communication Course Based on Big Data. *Security and Communication Networks*.
- Gao, Y., Liu, G., & Ma, C. (2018). Dense hazy image enhancement based on generalized imaging model. *IEEE 3rd International Conference on Image, Vision and Computing (ICIVC)*.
- Garcez, A., Silva, R., & Franco, M. (2022). Digital transformation shaping structural pillars for academic entrepreneurship: A framework proposal and research agenda. *Education and Information Technologies*, 27(1), 1159-1182.
- Gardner, H. (2021). *Disciplined mind: What all students should understand*. Simon & Schuster.
- Gcezengana, G., Peter, B., Rulashe, T., & Coka, Z. (2022). An investigation of a nexus between employee skills development and competence in the Eastern Cape Department of Education. *Africa's Public Service Delivery & Performance Review*, 10(1), 9.
- Getnet, M., Akalu, Y., Dagneu, B., Gela, Y. Y., Belsti, Y., ... Seid, M. A. (2021). Visual impairment and its associated factors among medical and health sciences students at the University of Gondar, Northwest Ethiopia. *Plots one*, 16(8), e0255369.

- Ghafoorianfar, S., Ghorani-Azam, A., Mohajeri, S. A., & Farzin, D. (2020). Efficiency of nanoparticles for treatment of ocular infections: Systematic literature review. *Journal of Drug Delivery Science and Technology*, 57, 101765.
- Ghodke, U., Yusim, L., Somanath, S., & Copping, P. (2019). The cross-sensory globe: participatory design of a 3D audio-tactile globe prototype for blind and low-vision users to learn geography. *Proceedings of the 2019 on Designing Interactive Systems Conference*, 18 June 2019, New York, New York, USA.
- Giese, M., Greisbach, M., Meier, M., Neusser, T., & Wetekam, N. (2022). 'I usually never got involved': understanding reasons for secondary students with visual impairment leaving mainstream schooling in Germany. *European Journal of Special Needs Education*, 37(2), 264-277.
- Giovanna, A., Chiara, C., Chiara, T., Paola, F., & Chiara, F. (2019). The narrative interview for the assessment of the assisted person: structure, method, and data analysis. *Acta Bio Medica: Atenei Parmensis*, 90(6), 7-8.
- Goh, A. Y. S. (2022). Learning journey: Conceptualising "change over time" as a dimension of workplace learning. *International Review of Education*, 68(1), 81-100.
- Goh, P. S. C. (2019). Implementing narrative-pedagogical approaches in a teacher education classroom. *The qualitative report*, 24(7), 1731-1746.
- Goldin, T., Rauch, E., Pacher, C., & Woschank, M. (2022). Reference Architecture for an Integrated and Synergetic Use of Digital Tools in Education 4.0. *Procedia Computer Science*, 200, 407-417.
- Goldkuhl, G. (2019). The generation of qualitative data in information systems research: The diversity of empirical research methods. *Communications of the Association for Information Systems*, 44, 572-599.
- Gorbunova, I. B., & Morozov, S. A. (2021). On Teaching Visually Impaired Students in Russian Educational Institutions of Music. *Journal of Contemporary Issues in Business and Government*, 27(1), 3244-3266.

- Govero, P. B. Z. C. C. (2019). Assessment Experiences of Students with Disabilities in Higher Education: A Case of Students with Disabilities at one Higher Education Institution in Masvingo District of Zimbabwe. *Assessment*, *10*(18).
- Gray, P. W. (2014). Vanguardism, sacralisation of politics, and totalitarianism: category-based epistemology and political religion. *Politics, Religion & Ideology*, *15*(4), 521-540.
- Griffin-Shirley, N., Bozeman, L., Okungu, P., Ihenagwam, C., & Nguyen, T. (2023). Teaching Strategies and Nonvisual Skills Used by Orientation and Mobility Specialists Who Are Visually Impaired. *Journal of Visual Impairment & Blindness*, *117*(1), 40-49.
- Griffith, S. F., & Arnold, D. H. (2019). Home learning in the new mobile age: parent-child interactions during joint play with educational apps in the US. *Journal of Children and Media*, *13*(1), 1-19.
- Griffo, G. (2014). Models of disability, ideas of justice, and the challenge of full participation. *Modern Italy*, *19*(2), 147-159.
- Gutiérrez, J. A. T. (2022). Stimulation of Numerical Skills in Children with Visual Impairment Using Image Recognition. *Procedia Computer Science*, *198*, 179-184.
- Haberlin, S. (2019). Something always works: a self-study of strengths-based coaching in supervision. *Journal of Educational Supervision*, *2*(1), 38-39.
- Hackl, E., & Ermolina, I. (2019). Inclusion by design: Embedding inclusive teaching practice into design and preparation of laboratory classes. *Currents in Pharmacy Teaching and Learning*, *11*(12), 1323-1334.
- Hada, A., Jack, L., & Coyer, F. (2019). Using a knowledge translation framework to identify barriers and supports to effective nursing handover: A focus group study. *Heliyon*, *5*(6), 1-7.
- Hadwen-Bennett, A., Sentence, S., & Morrison, C. (2018). Making programming accessible to learners with visual impairment: a literature review. *International Journal of Computer Science Education in Schools*, *2*(2), 3-13.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*, 275-285.

- Haimson, O. L., & Marathe, M. (2023). Uncovering personal histories: A technology-mediated approach to eliciting reflection on identity transitions. *ACM Transactions on Computer-Human Interaction*, 30(2), 1-28.
- Hamid, M. S., & Mohamed, N. I. A. (2021). Empirical Investigation into Teachers' Attitudes towards Inclusive Education: A Study of Future Faculty of Qatari Schools. *Cypriot Journal of Educational Sciences*, 16(2), 580-593.
- Hammond, M., & Wellington, J. (2012). *Research methods: The key concepts*. Routledge.
- Haque, M. (2020). Disability brief in single chapter and Bangladesh perspectives: A rapid overview. *Advances in Human Biology*, 10(2), 41.
- Haris, E. M., McGraw, P. V., Webb, B. S., Chung, S. T., & Astle, A. T. (2020). The Effect of Perceptual Learning on Face Recognition in Individuals with Central Vision Loss. *Investigative Ophthalmology & Visual Science*, 61(8), 2-2.
- Harlacher, J., & Marx, T. (2022). Classroom Management for Special Education Providers. In *New Considerations and Best Practices for Training Special Education Teachers* (pp. 83-100). IGI Global.
- Harris, B. N., McCarthy, P. C., Wright, A. M., Schutz, H., Boersma, K. S., ... & Ellington, R. M. (2020). From panic to pedagogy: Using online active learning to promote inclusive instruction in ecology and evolutionary biology courses and beyond. *Ecology and evolution*, 10(22), 12581-12612.
- Hayashi Jr, P., Abib, G., & Hoppen, N. (2019). Validity in qualitative research: A processual approach. *The Qualitative Report*, 24(1), 98–112.
- Haze, A., Gavish, L., Elishoov, O., Shorka, D., Tushar, T., Gellman, Y. N., & Liebergall, M. (2022). Treatment of diabetic foot ulcers in a frail population with severe co-morbidities using at-home photo biomodulation laser therapy: a double-blind, randomized, sham-controlled pilot clinical study. *Lasers in Medical Science*, 37(2), 919-928.
- Heller, J., Chylinski, M., de Ruyter, K., Mahr, D., & Keeling, D. I. (2019). Touching the untouchable: exploring multi-sensory augmented reality in the context of online retailing. *Journal of Retailing*, 95(4), 219-234.

- Hennink, M. M., Kaiser, B. N., & Weber, M. B. (2019). What influences saturation? Estimating sample sizes in focus group research. *Qualitative health research*, 29(10), 1483-1496.
- Herpich, F., Melnick, M. D., Agosta, S., Huxlin, K. R., Tadin, D., & Battelli, L. (2019). Boosting learning efficacy with noninvasive brain stimulation in intact and brain-damaged humans. *Journal of Neuroscience*, 39(28), 5551–5561.
- Hirsch, S. E., Lloyd, J. W., & Kennedy, M. J. (2019). Professional development in practice: Improving novice teachers' use of universal classroom management. *The Elementary School Journal*, 120(1), 61-87.
- Hlalele, D., & Mashiya, N. (2019). Understanding women teacher transnational migration: A narrative inquiry from Southern Africa. *SAGE Open*, 9(3), 1-8.
- Hodge, S. (2019). Transformative learning for knowledge: From meaning perspectives to threshold concepts. *Journal of Transformative Education*, 17(2), 133-153.
- Holloway, L. M., Goncu, C., Isler, A., Butler, M., & Marriott, K. (2022). Infosonics: Accessible Infographics for People who are Blind using Sonification and Voice. *CHI Conference on Human Factors in Computing Systems*, 29 April 2022, New York, New York, USA.
- Holt, A. (2010). Using the telephone for narrative interviewing: a research note. *Qualitative Research*, 10(1), 113-121.
- Hong, T., Yan, Y., Li, J., Radovanovic, I., Ma, X., ... & Ling, F. (2019). High prevalence of KRAS/BRAF somatic mutations in brain and spinal cord arteriovenous malformations. *Brain*, 142(1), 23-34.
- Huang, C. Y., Wu, C. K., & Liu, P.Y. (2022). Assistive technology in smart cities: A case of street crossing for the visually impaired. *Technology in Society*, 68, 101805.
- Huang, L. S. (2022). The Stories of My Life: A Task-Based, Oral Narrative Lesson for Employment Purposes for Learners with Refugee Backgrounds. *BC TEAL Journal*, 7(1), 42-54.
- Hughes, C., Costley, J., & Lange, C. (2019). The effects of multimedia video lectures on extraneous load. *Distance Education*, 40(1), 54-75.

- Hughes, G. D. (2012). Teacher retention: Teacher characteristics, school characteristics, organizational characteristics, and teacher efficacy. *The Journal of Educational Research*, 105(4), 245-255.
- Hung, D., Lee, S. S., & Vishnu Ahanti, S. (2014). Adaptivity in teacher learning within the context of communities of practice: A school district's learning journey. In *Adaptivity as a Transformative Disposition* (pp. 137-155). Springer.
- Hurst, C., Weston, K. L., & Weston, M. (2019). The effect of 12 weeks of combined upper-and lower-body high-intensity interval training on muscular and cardiorespiratory fitness in older adults. *Aging Clinical and Experimental Research*, 31(5), 661–671.
- Hussin, H. B. M. (2021). Why Special Education is Always in Our Hearts? *Turkish Journal of Computer and Mathematics Education*, 12(11), 5202-5210.
- Hutzler, Y., Meier, S., Reuker, S., & Zitomer, M. (2019). Attitudes and self-efficacy of physical education teachers toward inclusion of children with disabilities: a narrative review of international literature. *Physical Education and Sport Pedagogy*, 24(3), 249-266.
- Hyry Beihammer, E. K., Jokikokko, K., & Uitto, M. (2019). Emotions involved in encountering classroom diversity: Beginning teachers' stories. *British Educational Research Journal*, (6), 1124-1139.
- Ikhwan, M., Hamid, N., & Izwana, N. (2022). Factors associated with unsuccessful quitters in stop smoking services in Perlis, Malaysia. *The Medical Journal of Malaysia*, 77(1), 47-52.
- Iqbal, K., & Ashraf, S. (2023). Perspective chapter: the barriers in inclusive set-up for students with visual impairment at higher education level-Pakistan scenario. In *Higher Education Reflections from the Field*. IntechOpen.
- Islam, M. K., Sarker, M. F. H., & Islam, M. S. (2022). Promoting student-centred blended learning in higher education: A model. *E-Learning and Digital Media*, 19(1), 36-54.
- Jamil, M. G., & Isiaq, S. O. (2019). Teaching technology with technology: approaches to bridging learning and teaching gaps in simulation-based programming education. *International Journal of Educational Technology in Higher Education*, 16(1), 1-21.

- Jdaitawi, M. T., & Kanaan, A. F. (2022). A Decade of Research on the Effectiveness of Augmented Reality on Students with Special Disability in Higher Education. *Contemporary Educational Technology, 14*(1).
- Jenkins, G. R. (2022). *Assets and Knowledge: Narratives of Success by Latina Graduates from the Nursing Programme at a Midwestern Private College*. Benedictine University.
- Jennings, A. L. (2019). Not the Economy: Feminist Theory, Institutional Change, and the State. In *the Stratified State* (pp. 117-148). Routledge.
- Jhetam, S., & Mashige, K. P. (2019). Ocular findings and vision status of learners with oculocutaneous albinism. *African Vision and Eye Health, 78*(1), 6-7.
- Jiwane, V., Datta Gupta, A., Chauhan, A., & Patil, V. (2022). Detecting Diabetic Retinopathy Using Deep Learning Technique with Resnet-50. In *ICDSMLA 2020* (pp. 45-55). Springer.
- Johnson, N., & Brawand, A. (2021). Increasing Problem-Solving Ability for Students with Visual Impairment and Intellectual Disabilities, *Journal of Blindness Innovation and Research, 11*(1), 1-47.
- Jones, I. (2022). Delivering universal eye health coverage: a call for more and better eye health funding. *International Health, 14*(1), 6-8.
- Jones, N., Bartlett, H. E., & Cooke, R. (2019). An analysis of the impact of visual impairment on activities of daily living and vision-related quality of life in a visually impaired adult population. *British Journal of Visual Impairment, 37*(1), 50-63.
- Joseph, R. M., Skwerer, D. P., Eggleston, B., Meyer, S. R., & Tager-Flusberg, H. (2019). A Scholarship and Open Access Repository experimental study of word learning in minimally verbal children and adolescents with autism spectrum disorder. *Autism & developmental language impairment. Sage Journal, 4*(1), 1-13.
- Joshi, A. & S. L. Ray (2019). Facilitators and barriers to education for chiropractic students with visual impairment. *Journal of Chiropractic Education, 34*(2), 116-124.
- Juárez, J., & Comboni, S. (2016). Education inclusive: retros y perspectives. *Revista de evaluation para docents y adults, 2*(5), 46-60.

- Judd, A. E. (2020). An Occupational Therapy Approach to Education for Foster Parents, Scholarship and Open Access Repository. [Online]. <https://doi.org/10.46409/sr.GUVH6953>.
- Kacheri, A., Mudhol, R., Chougule, S., Reny, R., Kamath, S., & Kamath, R. (2022). Eye Donation: Awareness, Knowledge, Willingness, and Barriers among Paramedical and Allied Health Science Students at a Tertiary Care Teaching Hospital in South India. *The Scientific World Journal*. <https://doi.org/10.1155/2022/5206043>.
- Kaewkungwal, J., & Adams, P. (2019). Ethical consideration of the research proposal and the informed-consent process: An online survey of researchers and ethics committee members in Thailand. *Accountability in Research*, 26(3), 176–197.
- Kaltenegger, K., Kuester, S., Altpeter-Ott, E., Eschweiler, G., Cordey, A., Ivanov, I., Martus, P., Knipp, C., & Trauzettel-Klosinski, S. (2019). Effects of home reading training on reading and quality of life in AMD - a randomized and controlled study. *Graefe's Archive for Clinical and Experimental Ophthalmology*, 257(7), 1499-1512.
- Kanari, C., & Souliotou, A. Z. (2021). The Role of Museum Education in Raising Undergraduate Pre-Service Teachers' Disability Awareness: The Case of an Exhibition by Disabled Artists in Greece. *Higher Education Studies*, 11(2), 99-119.
- Kandiko Howson, C., & Kingsbury, M. (2021). Curriculum change as transformational learning. *Teaching in Higher Education*, 27(5), 1-20.
- Kankam, P. K. (2019). The use of paradigms in information research. *Library & Information Science Research*, 41(2), 85-92.
- Karaduman, H., Alan, Ü., & Yiğit, E. Ö. (2022). Beyond “do not touch”: the experience of a three-dimensional printed artifacts museum as an alternative to traditional museums for visitors who are blind and partially sighted. *Universal Access in the Information Society*, 1-14. [Online]. <https://doi.org/10.1007/s10209-022-00880-0>.
- Karakoç, T. & C. Aslan (2022). Teaching Experiences of Science Teachers Working in Schools for the Visually Impaired. *International Journal of Progressive Education*, 18(1), 128-146.
- Karuhawe, C. D. (2021). Provision of necessary teaching and learning needs for improving academic performance of students with visual impairment in a Tanzania Inclusive Secondary School. *International Journal of Research - Granthaalaya*, 9(4), 303-323.

- Kasneji, E., Kasneji, G., Trautwein, U., Appel, T., Tibus, M., Jaeggi, S. M., & Gerjets, P. (2022). Do your eye movements reveal your performance on an IQ test? A study linking eye movements and socio-demographic information to fluid intelligence. *PloS one, Journal Pone*, 17(3), 1-23.
- Kaunda, N., & Chizwina, S. (2019). Providing access to students with print disabilities: The case of the North-West University in South Africa. *Journal of Access Services*, 16(1), 6-20.
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for social work research. *Social sciences*, 8(9), 255.
- Kaya, Z., Kaya, O. N., Aydemir, S., & Ebenezer, J. (2022). Knowledge of student learning difficulties as a plausible conceptual change pathway between content knowledge and pedagogical content knowledge. *Research in Science Education*, 52(2), 691-723.
- Kelly, S. M. (2019). Special Education Transition Services for Students with Visual Impairment. In *Special Education Transition Services for Students with Disabilities* (pp. 83-97).. Emerald Publishing Limited.
- Kennedy, A., du Plessis, A., Fowler, R., Hamman, E., & Warnock, C. (2021). *Teaching and Learning in Environmental Law: Pedagogy, Methodology and Best Practice*. Edward Elgar Publishing.
- Keown, S., Smothers, M., & Colson, T. (2021). Preservice Teachers' Attitudes and Knowledge towards Assistive Technology: Exploring and In-Class Workshop Approach. *Kentucky Teacher Education Journal: The Journal of the Teacher Education Division of the Kentucky Council for Exceptional Children*, 8(1), 1.
- Kertes, J., Stein Reisner, O., Grunhaus, L., Nezry, R., Alcalay, T., Azuri, J., & Neumark, Y. (2022). Comparison of Smoking Cessation Programme Registration, Participation, Smoking Cessation Medication Utilization, and Abstinence Rates Between Smokers with and Without Schizophrenia, Schizo-affective Disorder, or bipolar disorder. *Nicotine and Tobacco Research*, 24(5), 670-678.
- Khan, S. A., Kabir, G., Billah, M., & Dutta, S. (2023). An integrated framework for bridge infrastructure resilience analysis against seismic hazard. *Sustainable and Resilient Infrastructure*, 8(1), 5-25.

- Khan, S., & Abdullah, N. N. (2019). The impact of staff training and development on teachers' productivity. *Economics, Management and Sustainability*, 4(1), 37-45.
- Khoza, S. B. (2015). Using a curricular spider web to explore a research facilitator's and students' experiences. *South African Journal of Higher Education*, 29(2), 122-143.
- Khribi, M. K. (2022). Toward Accessible Online Learning for Visually Impaired and Blind Students. *Nafath*, 6(19), 96.
- Khumalo, Z. P. (2019). *Teaching students with visual 'disability': The experiences of technical and vocational education and training (TVET) lecturers*. Master's Dissertation. University of KwaZulu-Natal, Durban. <https://researchspace.ukzn.ac.za/handle/10413/17722>
- Kim, D. (2022). Promoting professional socialization: A synthesis of Durkheim, Kohlberg, Hoffman, and Haidt for professional ethics education. *Business and Professional Ethics Journal*, 41(1), 93-114.
- Kim, G., Molina, U. S., & Saadi, A. (2019). Should immigration status information be included in a patient's health record? *AMA journal of ethics*, 21(1), 8-16.
- Kim, H. N. (2021). Characteristics of Technology Adoption by Older Adults with Visual Disabilities. *International Journal of Human-Computer Interaction*, 37(13), 1256-1268.
- King, E., & Alperstein, N. (2014). *Best practices in online programme development: Teaching and learning in higher education*. Routledge.
- Kisanga, S. E., & Kisanga, D. H. (2022). The role of assistive technology devices in fostering the participation and learning of students with visual impairment in higher education institutions in Tanzania. *Disability and Rehabilitation: Assistive Technology*, 17(7), 791-800.
- Kistoro, C. A. (2021). Teachers' Experiences in Character Education for Autistic Children. *International Journal of Evaluation and Research in Education*, 10(1), 65-77.
- Kivunja, C., & Kuyini, A. B. (2017). Understanding and applying research paradigms in educational contexts. *International Journal of higher education*, 6(5), 26-41.
- Kizilaslan, A. (2019). Linking Theory to Practice: Science for Students with Visual Impairment. *Science Education International*, 30(1), 56-64.

- Kizilaslan, A., Zorluoglu, S. L., & Sozbilir, M. (2021). Improve learning with hands-on classroom activities: science instruction for students with visual impairment. *European Journal of Special Needs Education, 36*(3), 371-392.
- Klingenberg, O. G., Holkesvik, A. H., & Augestad, L. B. (2019). Research evidence for mathematics education for students with visual impairment: A systematic review. *Cogent Education, 6*(1), 1626322.
- Kohler, K. E. & Wild, T. A. (2019). Students with visual impairment' access and participation in the science curriculum: Views of teachers of students with visual impairment. *Journal of Science Education for Students with Disabilities, 22*(1), 8.
- Köhler, T., Smith, A., & Bhakoo, V. (2022). Templates in qualitative research methods: Origins, limitations, and new directions. *Organizational Research Methods, 25*(2), 183-210.
- Kong, L., Gao, Z. X. N., Shao, S. M. H. H. Q., Zhang, D. X. H., & Ma, Q. H. (2021). The relation between self-stigma and loneliness in visually impaired college students: Self-acceptance as mediator. *Disability and Health Journal, 14*(2), 101054.
- Kornbluh, M. (2015). Combatting challenges to establishing trustworthiness in qualitative research. *Qualitative Research in Psychology, 12*(4), 397-414.
- Kou, J., Xin, T. Y., McCarron, P., Gupta, G., Dureja, H., ... & Collet, T. (2020). Going beyond antibiotics: natural plant extracts as an emergent strategy to combat biofilm-associated infections. *Journal of Environmental Pathology, Toxicology and Oncology, 39*(2), 125-136.
- Kowalski, R. P., Nayyar, S. V., Romanowski, E. G., & Jhanji, V. (2022). Anti-Infective Treatment and Resistance Is Rarely Problematic with Eye Infections. *Antibiotics, 11*(2), 204.
- Kran, B. S., Lawrence, L., Mayer, D. L., & Heidary, G. (2019). Cerebral/cortical visual impairment: a need to reassess current definitions of visual impairment and blindness. *Seminars in paediatric neurology, 31*(1), 30-40.
- Krol, C. (2019). A human rights and social justice perspective of disability and participation in higher education. Doctoral Dissertation. Western Sidney University, Sidney (Australia).
- Kruger, S., & Steyn, A. A. (2021). A conceptual model of entrepreneurial competencies needed to utilise technologies of Industry 4.0. *The International Journal of Entrepreneurship and Innovation, 22*(1), 56-67.

- Kuanar, S., Mahapatra, D., Bilas, M., & Rao, K. (2022). Multi-path dilated convolution network for haze and glow removal in night-time images. *The Visual Computer*, 38(3), 1121-1134.
- Kullan, M., Muthu, R., Mervin, J. B., & Subramanian, V. (2016). Design of DSTATCOM controller for compensating unbalances. *Circuits and Systems*, 7(9), 2362-2372.
- Kuriakose, B., Shrestha, R., & Sandnes, F. E. (2022). Tools and technologies for blind and visually impaired navigation support: a review. *IETE Technical Review*, 39(1), 3-18.
- Kurtović, A., & Ivančić, H. (2019). Predictors of depression and life satisfaction in visually impaired people. *Disability and rehabilitation*, 41(9), 1012-1023.
- Kvikne, B., & Berget, G. (2021). In search of trustworthy information: A qualitative study of the search behaviours of people with dyslexia in Norway. *Universal Access in the Information Society*, 20(1), 1-12.
- Kwafoa, P. (2019). Visually impaired access to library services: The role of library infrastructure. *Library Philosophy and Practice*, 3545, 1-18.
- Laing, K. (2022). The contribution of a synergic theory of change approach to democratizing evaluation. *Research for All*, 6(1), 7-27.
- Lane, K. L., Cabell, S. Q., & Drew, S. V. (2021). A productive scholar's guide to respectful, responsible inquiry during the COVID-19 pandemic: Moving forward. *Journal of Learning Disabilities*. DOI 00222194211023186.
- Lang, R., Schneider, M., Kett, M., Cole, E., & Groce, N. (2019). Policy development: An analysis of disability inclusion in a selection of African Union policies. *Development Policy Review*, 37(2), 155-175.
- Larsen, D. P., London, D. A., & Emke, A. R. (2016). Using reflection to influence practice: Student perceptions of daily reflection in clinical education. *Perspectives on Medical Education*, 5(5), 285–291.
- Latifah, N., & Rahmawati, I. N. (2019). Teaching and Learning Narrative Text Writing Through Story Mapping. *English Education*, 12(1), 78-96.

- Latipah, E., Kistoro, H. C. A., & Putranta, H. (2021). How are the parents' involvement, peers and agreeableness personality of lecturers related to self-regulated learning? *European Journal of Educational Research*, 10(1), 413–425.
- Lee, A. Q. N. A., & Hock, K. E. (2023). Need Analysis of Pre-Braille Skills Module as The Pedagogical Support in Early Braille Literacy Learning. *South Asian Journal of Social Sciences and Humanities*, 4(1), 90-111.
- Lee, J. C. K. (2019). Teachers' work, change and learning: Roles, contexts, and engagement. *Journal homepage*, 25(4), 399-403.
- Lee, K. H., Na, G., Song, C. G., & Jung, H. Y. (2020). How Does Pedagogical Flexibility in Curriculum Use Promote Mathematical Flexibility? An Exploratory Case Study. *Mathematics*, 8(11), 1987.
- Lee, S. Y., & Mesfin, F. B. (2017). *Blindness*. Stat Pearls Publishing.
- Lee, W. K. (2019). *A narrative inquiry study of two piano teachers' perceptions on later career creativity and sustainability in music teaching*/Lee Wai Kin. Master's thesis. University of Malaya, Kuala Lumpur. <http://studentsrepo.um.edu.my/id/eprint/10985>.
- Leitão, R., Maguire, M., Turner, S., & Guimarães, L. (2022). A systematic evaluation of game elements effects on students' motivation. *Education and Information Technologies*, 27(1), 1081-1103.
- Leont'ev, A. N. (1978). *Activity, consciousness, and personality*. Prentice-Hall Englewood.
- Lester, J. N., Cho, Y., & Lochmiller, C. R. (2020). Learning to do qualitative data analysis: A starting point. *Human Resource Development Review*, 19(1), 94-106.
- Li, L., Xu, L. D., He, Y., He, W., Pribesh, S., Watson, S. M., & Major, D. A. (2021). Facilitating online learning via zoom breakout room technology: A case of pair programming involving students with learning disabilities. *Communications of the Association for Information Systems*, 48(1), 12.
- Lieberman, L. J., Ball, L., Beach, P., & Perreault, M. (2022). A Qualitative Inquiry of a Three-Month Virtual Practicum Programme on Youth with Visual Impairment and Their Coaches. *International Journal of Environmental Research and Public Health*, 19(2), 841.

- Liu, T., Hernandez, J., Gonzalez-Franco, M., Maselli, A., Kneisel, M., Glass, A., Chudge, J., & Miller, A. (2022). Characterizing and Predicting Engagement of Blind and Low-Vision People with an Audio-Based Navigation App. *CHI Conference on Human Factors in Computing Systems Extended Abstracts*, April 2022, Stanford University, United States.
- Lhadon, P. (2023). Implementation of Place Based Education in Lower Primary English Class in Southern Part of Trashigang Dzongkhag, Bhutan. *Asian Journal of Education and Social Studies*, 43(2), 41-71.
- Lopez-Gavira, R., Orozco, I., & Doménech, A. (2021). Is pedagogical training an essential requirement for inclusive education? The case of faculty members in Social and Legal Sciences in Spain. *Plops one*, 16(7), 1-16.
- Love, H. R., & Horn, E. (2021). Definition, context, quality: Current issues in research examining high-quality inclusive education. *Topics in Early Childhood Special Education*, 40(4), 204–216.
- Lumadi, T. G., & Matlala, M. S. (2019). Perceptions of midwives on shortage and retention of staff at a public hospital in Tshwane District. *Curations*, 42(1), 1-10.
- Lupton, D., & Watson, A. A. (2020). Towards more-than-human digital data studies: Developing research-creation methods. *Sage Qualitative Research Journal*, 21(4), 464-480.
- Ma, X., Wang, Q., Tong, X., & Atkinson, P. M. (2022). A deep learning model for incorporating temporal information in haze removal. *Remote Sensing of Environment*, 274(2), 12-48.
- Machmud, H., Alim, N., Hewi, L., & Saputri, M. (2020). Children Based Development of Local Membership the Time of Covid 19 Using Websites: Teacher Collaboration and Parenting in Online Learning in Wakatobi Sulawesi Tenggara. *Psychology and Education Journal*, 57(9), 1211-1220.
- MacKay, J. R. (2019). Show and ‘tool’: How lecture recording transforms staff and student perspectives on lectures in higher education. *Computers & Education*, 140, 1-30.
- Maher, A. J., (2022). "Stop fearing blindness! Visually impaired people reflect on the ethics of sighted prospective teachers simulating visual impairment". *Adapted physical Activity Quarterly*, 37(2), 1-19.

- Maher, A (2023). "Assessing the learning of students with special educational needs and disabilities in mainstream school physical education". *British Educational Research Journal*, 49(1), 110-125.
- Mahmood, U., Méjécase, C., Ali, S., Moosajee, M., & Kozak, I. (2021). A Novel Splice-Site Variant in CACNA1F Causes a Phenotype Synonymous with Åland Island Eye Disease and Incomplete Congenital Stationary Night Blindness. *Genes*, 12(2), 171.
- Makalela, L. (2023). Merging English Home Language and First Additional Language curricula: Implications for future quality assurance practices. *Southern African Linguistics and Applied Language Studies*, 41(1), 76-87.
- Manis, M., Ferreira, R., Sefotho, M., & Mampane, R. (2021). Utilising PRA to develop a postgraduate qualification in visual impairment studies. *South African Journal of Higher Education*, 35(2), 93-122.
- Manitsa, I., & Doikou, M. (2022). Social support for students with visual impairment in educational institutions: An integrative literature review. *British Journal of Visual Impairment*, 40(1), 29-47.
- Manion, L. (2018). The Crusading Romance in Early Modern England: Converting the Past in Berners's *Huon of Bordeaux* and Johnson's *Seven Champions of Christendom*. *Journal of Medieval and Early Modern Studies*, 48(3), 491-517.
- Manrique, A. L., Dirani, E. A., Frere, A. F., Moreira, G. E., & Arezes, P. M. (2019). Teachers' perceptions on inclusion in basic school. *International Journal of Educational Management. Discover journal*, 33(2), 409-419.
- Mansour, M. B., Crone, M. R., Van Weert, H. C., Chavannes, N. H., & Van Asselt, K. M. (2022). Stop smoking advice by practice assistants after routine cervical screening in general practice: A qualitative exploration of potential barriers and enablers. *European Journal of General Practice*, 28(1), 56-65.
- Mansurjonovich, J. M., & Sattorovich, Y. S. (2023). Important Advantages of Organizing the Educational Process using special applications. *Open Access Repository*, 4(3), 126-133.
- Mantagos, I. (2022). Pupil Examination in Children. In *the Pediatric Eye Exam Quick Reference Guide: Office and Emergency Room Procedures* (pp. 86-96). IGI Global.

- Marée, R., Rollus, L., Stévens, B., Hoyoux, R., Louppe, G., ... & Wehenkel, L. (2016). Collaborative analysis of multi-gigapixel imaging data using Cytomine. *Bioinformatics*, 32(9), 1395-1401.
- Mares, J. A., Millen, A. E., Lawler, T. P., & Blomme, C. K. (2017). Diet and supplements in the prevention and treatment of eye diseases. In *Nutrition in the Prevention and Treatment of Disease* (pp. 393-434). Elsevier.
- Marichal, S., Rosales, A., González Perilli, F., Pires, A. C., & Blatt, J. (2022). Auditory and haptic feedback to train basic mathematical skills of children with visual impairment. *Behaviour & Information Technology*, 41(8), 1-29.
- Marjanovic-Shane, A., Kullenberg, T., & Gradovski, M. (2023). Scandinavian Experiments in Democratic Education. *Dialogic Pedagogy*, 11(2).
- Maryanti, R., Hufad, A., Sunardi, S., & Nandiyanto, A. B. D. (2021). Analysis of curriculum for science education for students with special needs in vocational high schools. *Journal of Technical Education and Training*, 13(3), 54-66.
- Martyniuk, I., Fedosenko, K., Shchyhelska, H., Burlaka, A., & Voropayeva, T. (2023). Trends and Vectors of Development of Information Educational Resources in the Context of Military Aggression. *Journal of Higher Education Theory and Practice*, 23(5), 202-209.
- Mashiloane, T. M. (2019). Stories of experience: lecturers' pathways of learning to teach in Technical and Vocational Education and Training (TVET) Colleges. [Online]. <https://researchspace.ukzn.ac.za/handle/10413/18959>
- Mason, D. M., & Ide, B. (2014). Adapting qualitative research strategies to technology savvy adolescents. *Nurse researcher*, 21(5), 24-134.
- Massoumeh, Z., & Leila, J. (2012). An investigation of medical model and special education methods. *Procedia - Social and Behavioural Sciences*, 46(1), 5802-5804.
- Matshedisho, K. R. (2018). When rights are discretionary: Policy and practice of support provision for disabled students in southern Africa. In *the Routledge handbook of disability in Southern Africa* (pp. 139–152). Routledge.
- Mayan, M. J. (2023). *Essentials of qualitative inquiry*. Taylor & Francis.

- Mberimana, E. (2018). *Factors that hinder academic performance of learners with visual impairment in two selected special schools of Rwanda*. Master's Thesis. University of Rwanda, Kigali. <http://hdl.handle.net/123456789/347>.
- Mboshi, N. S. (2018). Teaching learners with visual impairment in an inclusive education setting: The Cameroon perspective. *International Journal of Education and Research*, 6(2), 109-118.
- McDowell, N. (2021). A review of the literature to inform the development of a practice framework for supporting children with cerebral visual impairment (CVI). *International Journal of Inclusive Education*, 26(9), 1-21.
- McDowell, N. (2023). A review of the literature to inform the development of a practice framework for supporting children with cerebral visual impairment (CVI). *International Journal of Inclusive Education*, 27(6), 718-738.
- McGreevy, K. M., & Church, F. C. (2020). Active learning: Subtypes, intra-exam comparison, and student survey in an undergraduate biology course. *Education Sciences*, 10(7), 185.
- McGuire, S. N., & Meadan, H. (2022). General Educators' Perceptions of Social Inclusion of Elementary Students with Emotional and Behavioural Disorders. *Sage Journal of Behavioural Disorders*, 47(4), 223-293.
- McKinney, E. L., & Swartz, L. (2020). Integration into higher education: experiences of disabled students in South Africa. *Studies in Higher Education*, 47(2), 1-11.
- McLain, M. (2021). Developing perspectives on 'the demonstration' as a signature pedagogy in design and technology education. *International Journal of Technology and Design Education*, 31(1), 3-26.
- McLinden, M., Douglas, G., Hewett, R., Lynch, P., & Thistlethwaite, J. (2020). Teaching Learners with Vision Impairment: An Analysis of Evidence-Based Practice. In *Oxford Research Encyclopaedia of Education*. Doi 10.1093/9780190264093.013.1233.
- McNamara, S. W., Brian, A., & Bittner, M. (2021). Content Acquisition Podcasts and Preservice Physical Educators' Knowledge and Self-Efficacy Toward Teaching Students with Visual Impairment. *Journal of Teaching in Physical Education*, 41(3), 1-8.

- Meeks, L. M., Stergiopoulos, E., & Petersen, K. H. (2022). Institutional accountability for students with disabilities: a call for liaison committee on medical education action. *Academic Medicine*, 97(3), 341-345.
- Meiring, A. (2019). *Facilitation of educators to manage their lived experiences of aggression at a technical vocational education and training (TVET) College*. Doctoral Thesis. University of Johannesburg, Johannesburg (South Africa).
- Mendelsohn, C. (2022). Optimal use of smoking cessation pharmacotherapy. *Australian Prescriber*, 45(1), 10.
- Mendonca, C. R., Souza, K. T. D. O., Arruda, J. T., Noll, M., & Guimarães, N. N. (2021). Human anatomy: Teaching-learning experience of a support teacher and a student with low vision and blindness. *Anatomical sciences education*, 14(5), 682-692.
- Mensah, I., Badu, E., Awini, A., Gyamfi, N., Amisah, J., & Abodey, E. (2021). Teachers' experiences of classroom behaviour problems and mitigation strategies among students with visual disabilities in Ghana. *International Journal of Inclusive Education*, 26(9), 1–22.
- Meraz, R. L., Osteen, K., & McGee, J. (2019). Applying multiple methods of systematic evaluation in narrative analysis for greater validity and deeper meaning. *International Journal of Qualitative Methods*, 18(2), 1-6.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*, Jossey-Bass.
- Merugu, S., & Ghinea, G. (2022). A Review of Some Assistive Tools and their Limitations for Visually Impaired. *Helix - The Scientific Explorer| Peer Reviewed Bimonthly International Journal*, 12(1), 1-9.
- Micheletti, S., et al. (2023). Visual intervention in early onset visual impairment: A review. *European Journal of Neuroscience*, 57(12), 1998-2016.
- Min Htike, H. H., Margrain, T., Lai, Y.K., & Eslambolchilar, P. (2021). Augmented reality glasses as an orientation and mobility aid for people with low vision: A feasibility study of experiences and requirements. [Conference session]. 2021 *CHI Conference on Human Factors in Computing Systems*, 06 May 2021, Parisa Eslambolchilar.

- Miyaguchi, T. (2022). Importance and Utilization of Theory-Based Evaluations in the Context of Sustainable Development and Social-Ecological Systems. In *Transformational Change for People and the Planet* (pp. 223-235). Springer.
- Miyauchi, H. (2020). A systematic review on Inclusive Education of students with visual impairment. *Education Sciences, 10*(11), 346.
- Mlambo, F. (2022). Impact of resources on the teaching and learning of English Language of learners with visual impairment at 'O' Level in an inclusive set-up: The case of Musimeki High School. *NAWA Journal of Language and Communication, 16*(1), 109-117.
- Mncube D. W., Hadebe-Ndlovu B., & Uleanya C. Novice Teachers' Experiences of Teaching Visually Impaired Learners in the Foundation Phase: A Case of Inclusive KwaNyuswa Rural Schools. *Universal Journal of Educational Research, 9*(6), 1179-1187.
- Modiba, M. R., & Sefotho, M. M. (2019). Life orientation teacher training needs in career guidance at rural high schools. *South African Journal of Education, 39*(2), 1–8.
- Moganashwari, K., Melor, M. Y., & Mohamed, A. C. (2018). Pedagogical content knowledge: A case study of ESL teachers. *Journal of Teaching & Learning, 2*(1), 1–12.
- Mohanty, S., Venkataraman jam, S., Pradhan, B., & Hankey, A. (2019). Development and validation of a yoga module for children with visual impairment: A feasibility study. *British Journal of Visual Impairment, 37*(1), 64-73.
- Moller, N. P., Clarke, V., Braun, V., Tischner, I., & Vossler, A. (2021). Qualitative story completion for counselling psychology research: A creative method to interrogate dominant discourses. *Journal of Counselling Psychology, 68*(3), 286-287.
- Morales, M. P. E. (2017). Cultural historical activity theory: Influenced case research of a Philippine physics class. *Asia-Pacific Educational Research, 26*(2), 85-96.
- Morelle, M. & Tabane, R. (2019). Challenges experienced by learners with visual impairment in South African township mainstream primary schools. *South African Journal of Education, 39*(3), 1-6.
- Moretti, V. D. (2016). Dialectical and historical method cultural-historical theory and education: Some appropriation in research on education of teachers who teach mathematics. *International Journal for Research in Mathematics Education, 6*(1), 54-72.

- Moriña, A. (2019). Learning from experience: training for faculty members on disability. *Perspectives: Policy and Practice in Higher Education*, 23(2-3), 86-92.
- Morris, N. P., Swinnerton, B., & Coop, T. (2019). Lecture recordings to support learning: A contested space between students and teachers. *Computers & Education*, 140, 1-27.
- Mosleh, R., Qadhi, S., Al-Ahmadi, A. M., & Jalalah, R. A. (2023). Unveiling Novice Teachers' Teaching Competencies: Challenges and Pathways to Professional. *Journal of Namibian Studies: History Politics Culture*, 33, 5067-5103.
- Mountapmbeme, A., Okafor, O., & Ludi, S. (2022). Addressing Accessibility Barriers in Programming for People with Visual Impairment: A Literature Review. *ACM Transactions on Accessible Computing*, 15(1), 1-26.
- Moye, J. N. (2021). *Learning Experience*. Emerald Publishing Limited.
- Murthy, G. V., Vashist, P., John, N., Pokharel, G., & Ellwein, L. B. (2010). Prevalence and causes of visual impairment and blindness in older adults in an area of India with a high cataract surgical rate. *Ophthalmic epidemiology*, 17(4), 185-195.
- Muthukrishna, M. & Henrich, J. (2019). A problem in theory. *Nature Human Behaviour*, 3(3), 221-229.
- Muylaert, C. J., Sarubbi, V., Gallo, P. R., Neto, M. L. R., & Reis, A. O. A. (2014). Entrevistas narrativas: Um important recurso em pesquisa qualitativa. *Revista da Escola de Enfermagem da USP*, 48(2), 184-189.
- Muzata, K. K., Simalalo, M., Kasonde_Ng'andu, S., Mahlo, D., Banja, M. K., & Mtonga, T. (2019). Perceptions of Students with Visual Impairment towards their Inclusion in the Faculty of Education at the University of Zambia: A phenomenological study. *Multidisciplinary Journal of Language and Social Sciences Education*, 2(2), 170-210.
- Mzangwa, S. T. (2019). The effects of higher education policy on transformation in post-apartheid South Africa. *Cogent Education*, 6(1), 1-27.
- Najjar, A. B., Al-Issa, A. R., & Hosny, M. (2022). Dynamic indoor path planning for the visually impaired. *Journal of King Saud University-Computer and Information Sciences*. [Online]. <http://creativecommons.org/licenses/by-nc-nd/4.0>.

- Nantwi, W. K., Essel, H. B., & Osei-Poku, P. (2023). Assessing Creative Arts Teachers' Competence in the Implementation of Inclusive Creative Arts Education Using Universal Design for Learning Framework. *ADRRJ Journal (Multidisciplinary)*, 32(2), 1-24.
- Nasution, Y. I. S. (2019). A teacher's strategies in teaching English to visually impaired students at Yaketunis Junior High School: Case study research. [Online]. <https://dspace.uui.ac.id/handle/123456789/13336>
- Ndlovu, S. (2020). Provision of Assistive Technology for Students with Disabilities in South African Higher Education: A Decolonial Perspective, Doi: 10.20944/preprints202012.0634.
- Nel, N. M., Tlale, L. D. N., Engelbrecht, P., & Nel, M. (2016). Teachers' perceptions of education support structures in the implementation of inclusive education in South Africa. *Koers*, 81(3), 1-14.
- Ngubane-Mokiwa, S. A. (2013). Information and Communication Technology as a learning tool: experiences of students with blindness. UNISA Press.
- Niemeier, U., & Timmreck, C. (2015). What is the limit of climate engineering by stratospheric injection of SO₂? *Atmospheric Chemistry and Physics*, 15(16), 9129-9141.
- Niemiro, G. M., Rewane, A., & Algotar, A. M. (2019). *Exercise and fitness effect on obesity*. Stat Pearls Publishing.
- Nieuwenhuis, J., & Hooimeijer, P. (2016). The association between neighbourhoods and educational achievement, a systematic review and meta-analysis. *Journal of Housing and the Built Environment*, 31(2), 321-347.
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-based nursing*, 18(2), 34-35.
- Noreen, H., Intizar, F., & Gulzar, S. (2019). Teachers' multidimensional attitude towards inclusive education. *UMT Education Review*, 2(2), 72-89.
- Ntinda, K. (2019). Narrative research. In *Handbook of research methods in health social sciences*. (p. 412). Springer.
- Ntombela, G. N. N. (2019). The dynamics of inclusive education in further education and training in South Africa: A case study of two technical and vocational education and training colleges in

Pietermaritzburg. Doctoral Thesis. [Online].
<https://researchspace.ukzn.ac.za/handle/10413/17245>.

Nugraha, J. E. (2021). *The Effectiveness of Using Demonstration Method in Teaching Writing Procedure Text: An Experimental Research at the Seventh Grade of MTs at Al-Rahmah Islamic Boarding School in Walantaka-Serang*. A Paper submitted to the English Education Department as a Partial fulfilment of the Requirements for the Sarjana Degree.

Nuttavuthisit, K. (2019). Focus group interview. In *Qualitative consumer and marketing research* (pp. 141-164). Springer.

Ocete, C., Pérez-Tejero, J., Coterón, J., & Reina, R. (2022). How do competitiveness and previous contact with people with disabilities impact on attitudes after an awareness intervention in physical education? *Physical Education and Sport Pedagogy*, 27(1), 19-31.

Ochieng, N., Wilson, K., Derrick, C., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods Ecology and Evolution*, 9(1), 20–32.

O'Connor Jr, J. R. (2022). Setting a Framework of Inclusive Support for Students with Disabilities. In *Research Anthology on Physical and Intellectual Disabilities in an Inclusive Society* (pp. 327-339). IGI Global.

Odame, L., Opoku, M. P., Nketsia, W., & Nanor, B. (2021). University experiences of graduates with visual impairment in Ghana. *International Journal of Disability, Development and Education*, 68(3), 332-346.

Odame, L., Osei-Hwedie, B., Nketsia, W., Opoku, M. P., & Nanor Arthur, B. (2021). University preparation and the work capabilities of visually impaired graduates in Ghana: A tracer study. *International Journal of Inclusive Education*, 25(11), 1287-1304.

Odebode, T., Ademola-Popoola, D. S., Ojo, T., & Ayanniyi, A. (2005). Ocular and visual complications of head injury. *Eye*, 19(5), 561-566.

Ohba, A., & Malenya, F. L. (2022). Addressing inclusive education for learners with disabilities in the integrated education system: the dilemma of public primary schools in Kenya. *A Journal of Comparative and International Education*, 52(1), 19-36.

- Okonji, P. E., & Ogwezzy, D. C. (2019). Awareness and barriers to adoption of assistive technologies among visually impaired people in Nigeria. *Assistive Technology*, 31(4), 209-219.
- Okop, K. J., Levitt, N., & Puoane, T. (2019). Weight underestimation and body size dissatisfaction among black African adults with obesity: Implications for health promotion. *African journal of primary health care & family medicine*, 11(1), 1-8.
- O'Leary, D. (2021). Smart Lawyering: Integrating Technology Competence into the Legal Practice Curriculum. *University of New Hampshire Law Review*, 9(2).
- Oliver, M. (2013). The social model of disability: Thirty years on. *Disability & Society*, 28(7), 1024-1026.
- Olney, S., & Dickinson, H. (2019). Australia's new National Disability Insurance Scheme: Implications for policy and practice. *Policy Design and Practice*, 2(3), 275-290.
- Olugu, F. (2020). Availability and utilization of assistive technology devices for improved teaching and learning among students with learning disabilities in Ohafia, Abia State. Abia State Press.
- Omar, M. K., Rauf, M. A., Ismail, N., Rashid, A. M., Puad, H. M., & Zakaria, A. (2020). Factors on Deciding TVET for First Choice Educational Journey among Pre-Secondary School Students. *European Journal of Molecular & Clinical Medicine*, 7(3), 609-627.
- Onuigbo, L. N., Eseadi, C., Ebifa, S., Ugwu, U. C., Onyishi, C. N., & Oyeoku, E. K. (2019). Effect of rational emotive behaviour therapy programme on depressive symptoms among university students with blindness in Nigeria. *Journal of Rational-Emotive & Cognitive-Behaviours Therapy*, 37(1), 17-38.
- Onyekwelu, O. M.A., Aribaba, O. T., Musa, K. O., Idowu, O. O., Salami, M. O., & Odiaka, Y. N. (2019). Ocular morbidity and utilisation of protective eyewear among carpenters in Mushin local government, Lagos, Nigeria. *Nigerian Postgraduate Medical Journal*, 26(4), 199.
- Oppermann, K. & Spencer, A. (2023). Narrative Analysis. In *Routledge Handbook of Foreign Policy Analysis Methods* (pp. 117-132). Routledge.
- Opoku, O. G., Adamu, A., & Daniel, O. (2023). Relation between students' personality traits and their preferred teaching methods: Students at the university of Ghana and the Huzhou Normal University. *Heliyon*, 9(1).

- Overton, J., Stupples, P., Murray, W. E., Gamlen, A., & Palomino Schalscha, M. (2020). Learning journeys: Five paradigms of education for development. *Asia Pacific Viewpoint*, 61(2), 366-380.
- Pacheco, E., Yoong, P., & Lips, M. (2021). Transition issues in higher education and digital technologies: the experiences of students with disabilities in New Zealand. *Disability & Society*, 36(2), 179-201.
- Padgett, D. K. (2016). *Qualitative methods in social work research* (Vol. 36, pp.1-24). Sage Publications.
- Paju, P. (2019). International collaboration and Finland in the early years of computer-assisted history research: Combining influences from Nordic and Soviet Baltic historians. *Digital Humanities in the Nordic Countries*, 2364, 349-357.
- Papavlasopoulou, S., Giannakos, M. N., & Jaccheri, L. (2019). Exploring children's learning experience in constructionism-based coding activities through design-based research. *Computers in Human Behaviours*, 99, 415-427.
- Papier, J. (2022). A Foundation for Practitioner-Based Research in TVET: The New Postgraduate Diploma: TVET. In *Teacher Educators in Vocational and Further Education* (pp. 45-61). Springer.
- Patton, C. V., Sawicki, D. S., & Clark, J. J. (2015). *Basic methods of policy analysis and planning*. Routledge.
- Paul, A., Krishnan, N. C., & Munjal, P. (2019). Semantically aligned bias reducing zero shot learning. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 16 June 2019. Long Beach, California.
- Pellerin, S., Wilson, W. J., & Haegele, J. A. (2022). The experiences of students with disabilities in self-contained physical education. *Sport, Education and Society*, 27(1), 14-26.
- Peng, Y., & Pyper, J. S. (2021). Finding success with pedagogical innovation: A case from CSL teachers' experiences with TBLT. *Language Teaching Research*, 25(4), 633-655.
- Pereira, L. P., Wetzel, C., Pavani, F. M., Olschowsky, A., Moraes, B. M., & Klein, E. (2021). Narrative interview with homeless persons with mental illness: Experience report. *Escola Anna Nery*, 25(3), 25-26.

- Periša, M., Peraković, D., Cvitić, I., & Krstić, M. (2022). Innovative ecosystem for informing visual impaired person in smart shopping environment: InnIoTShop. *Wireless Networks*, 28(1), 469-479.
- Petridou, A., Siopi, A., & Mougios, V. (2019). Exercise in the management of obesity. *Metabolism*, 92, 163-169.
- Pharis, T. J., Wu, E., Sullivan, S., & Moore, L. (2019). Improving teacher quality: Professional development implications from teacher professional growth and effectiveness system implementation in rural Kentucky high schools. *Educational research quarterly*, 42(3), 29-48.
- Phillips, A. J., Vidafar, P., Burns, A. C., McGlashan, E. M., Anderson, C., ... & Cain, S. W. (2019). High sensitivity and inter-individual variability in the response of the human circadian system to evening light. *Proceedings of the National Academy of Sciences*, 116(24), 12019-12024.
- Pietarinen, J., Pyhältö, K., & Soini, T. (2017). Large-scale curriculum reform in Finland—exploring the interrelation between implementation strategy, the function of the reform, and curriculum coherence. *The Curriculum Journal*, 28(1), 22-40.
- Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. *International journal of qualitative studies in education*, 8(1), 5-23.
- Porter, S. G. (2022). It takes a well-organised village: Implementing RTI/MTSS models in secondary schools. In *Research Anthology on Inclusive Practices for Educators and Administrators in Special Education* (pp. 339-368). IGI Global.
- Powell, R. M. and O. Murray (2012). Using Storytelling Strategies to Improve Student Comprehension in Online Classes. *Journal of Effective Teaching*, 12(1), 46-52.
- Prasetyo, T., & Putri, A. A. (2022). Challenges in the implementation of instructional strategy model based on the brain natural learning systems for inclusive classroom, *International Journal of Teaching, Education and Learning*, 5(3), 1-17.
- Pueyo, V., Pérez-Roche, T., Prieto, E., Castillo, O., Gonzalez, I., Alexandre, A., Pan, X., Fanlo-Zarazaga, A., Pinilla, J., & Echevarria, J. I. (2020). Development of a system based on artificial intelligence to identify visual problems in children: study protocol of the TrackAI project. *British Medical Journal*, 10(2), 1-7.

- Pulungan, S. A. (2021). Application of Demonstration Method to improve mathematics learning achievement of class 1 students ds 0511 batang tangle Jas to 2020/2021. *Indonesian Journal of Basic Education*, 4(2), 247-254.
- Purwana, R. (2021). The Correlation of Students' Perceptions About Speaking Skills Demonstration Method with Learning Outcomes of English Subject in Binjai "Ex School" Tutoring. *International Journal of Cultural and Social Science*, 2(2), 91-98.
- Qu, X., Liu, Y., Liu, Z., & Li, Z. (2021). Assistive devices for the people with disabilities enabled by triboelectric nanogenerators. *Journal of Physics*, 4(3), 1-18.
- Qutishat, Y., Shublaq, S., Masoud, M., & Alnuman, N. (2021). Low vision profile in Jordan: A vision rehabilitation centre-based study. *Healthcare*, 9(1), 1-2.
- Rafiee Komachi, S., Siahpoosh, Z., & Salehi, M. (2022). Retinitis pigmentosa: A Case Report with Thr17Arg as a Novel Mutation in RHO Gene. *Journal of Epigenetics*, 3(1), 1-6.
- Rahayu, D. C., Suryani, S., & Zainiyati, H. S. (2020). Identification of vacuum learning styles (visual, auditory, kinaesthetic) primary school students in Indonesia. *International Journal of Education and Research*, 8(9), 181-190.
- Raikou, N. (2019). Teacher Education at the forefront: Long-term study through the prism of University Pedagogy and Transformative Learning theory. *European Journal of Education Studies*, 6(3), 1-15.
- Ralejoe, M. (2021). A study to understand the inclusion of learners with and without visual impairment in a secondary school in Lesotho. *South African Journal of Education*, 41(1), 1-12.
- Ramadan, B., Fink, W., Nuncio Zuniga, A., Kay, K., Powers, N., Fuhrman, C., & Hong, S. (2022). VISTATM: Visual Impairment Subtle Touch AID – a range detection and feedback system for sightless navigation. *Journal of medical engineering & technology*, 46(1), 59-68.
- Ramadhan, S., Sukma, E., & Indriyani, V. (2019). Environmental education and disaster mitigation through language learning. *IOP conference series: Earth and environmental science*, 314, 1-10.
- Ramsook, L. (2018). A methodological approach to hermeneutic phenomenology. *International Journal of Humanities and Social Sciences*, 10(1), 14-24.

- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Post digital science and education*, 2(3), 923-945.
- Rasooli, A., Razmjoo, M., Cumming, J., Dickson, E., & Webster, A. (2021). Conceptualising a Fairness Framework for Assessment Adjusted Practices for Students with Disability: An Empirical Study. *Assessment in Education: Principles, Policy & Practice*, 28(1), 1-21.
- Ravenscroft, J., Davis, J., Bilgin, M., & Wazni, K. (2019). Factors that influence elementary school teachers' attitudes towards inclusion of visually impaired children in Turkey. *Disability & Society*, 34(4), 629-656.
- Ravindran, V. (2019). Data analysis in qualitative research. *Indian Journal of Continuing Nursing Education*, 20(1), 40.
- Razmjoo, A., Østergaard, P. A., Denai, M., Nezhad, M. M., & Mirjalili, S. (2021). Effective policies to overcome barriers in the development of smart cities. *Energy Research & Social Science*, 79, 102175.
- Read, L. A. (2023). *Resources for Inclusivity in High School US History Classrooms*. Sage.
- Reese, E., Haden, C. A., Baker-Ward, L., Bauer, P., Fivush, R., & Ornstein, P. A. (2011). Coherence of personal narratives across the lifespan: A multidimensional model and coding method. *Journal of cognition and development*, 12(4), 424-462.
- Regagliolo, A. (2023). Developing and creating didactic proposals for Latin and Classical Culture Training course with the educational centre CEFIRE. *Journal of Classics Teaching*, 1-10.
- Reid, A. J., Eckert, L. E., Lane, J. F., Young, N., Hinch, S. G., ... & Marshall, A. (2021). "Two-Eyed Seeing": An indigenous framework to transform fisheries research and management. *Fish and Fisheries*, 22(2), 243–261.
- Reilly, C. (2020). *Defining Active Learning in Online Courses Through Principles for Design*. Doctoral Dissertation. University of Minnesota, Minnesota.
- Remillard, J. T. (2013). Examining resources and re-sourcing as insights into teaching. *Review of Educational Research*, 75(2), 211-246.

- Ren, K., & McGuckin, C. (2022). *Using Theory of Change as Both Theory and Method in Educational Research*. DOI:10.4135/9781529601596
- Reyes-Cruz, G., Fischer, J. E., & Reeves, S. (2020). Reframing disability as competency: Unpacking everyday technology practices of people with visual impairment. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 23 April 2020, New York, New York, USA.
- Richardson, S., McNeill, A., & Brose, L. S. (2019). Smoking and quitting behaviours by mental health conditions in Great Britain (1993–2014). *Addictive behaviours*, *90*, 14-19.
- Rice, M. F., & Smith, E. (2023). Special education teachers' entangled agencies, intersectional identities, and commitments to equity and inclusion. *Journal of Special Education Technology*, *38*(1), 37-49.
- Rigotti, N. A., Kruse, G. R., Livingstone-Banks, J., & Hartmann-Boyce, J. (2022). Treatment of tobacco smoking: *A review*. *JAMA*, *327*(6), 566-577.
- Rihter, J., & Potočnik, R. (2022). Preservice teachers' beliefs about teaching students with special educational needs in visual art education. *European Journal of Special Needs Education*, *37*(2), 235-248.
- Rishes, E., Lukin, S. M., Elson, D. K., & Walker, M. A. (2013). Generating different story telling from semantic representations of narrative. *International Conference on Interactive Digital Storytelling*, November 2013, 2 Columbia University.
- Roberts, D. (2019). Higher education lectures: from passive to active learning via imagery? *Active Learning in Higher Education*, *20*(1), 63-77.
- Robinson, L. (2021). Investigating Critical Thinking Disposition, Self-Efficacy, Self-Regulation, and Self-Identity amongst Online Students. *College student journal*, *55*(3), 325-337.
- Rombout, F., Schuitema, J., & Volman, M. (2022). Teaching strategies for value-loaded critical thinking in philosophy classroom dialogues. *Thinking Skills and Creativity*, *43*, 1-16.
- Romero, L., Saucedo, C., Caliusco, M. L., & Gutiérrez, M. (2019). Supporting self-regulated learning and personalization using portfolios: a semantic approach based on learning paths. *International Journal of Educational Technology in Higher Education*, *16*(1), 16.

- Rosdiana, M. P. M., Muslimin, M., & Firmansyah, F. (2022). The use of visual, auditory, kinesthetic (VAK) learning to increase student learning outcomes. *Inornatus: Biology Education Journal*, 2(2), 85-93.
- Rosenblum, L.P., Zebehazy, K.T., Gage, N., & Beal, C.R. (2021). Experiences building graphics literacy skills: Interviews with teachers and students. *Journal of Visual Impairment & Blindness*, 115 (6), 538-549.
- Ross, P. T., & Zaidi, N. L. B. (2019). Limited by our limitations. *Perspectives on medical education*, 8(4), 261-264.
- Rule, A. C., Stefanich, G. P., Boody, R. M., & Peiffer, B. (2011). Impact of adaptive materials on teachers and their students with visual impairment in secondary science and mathematics classes. *International Journal of Science Education*, 33(6), 865-887.
- Rushe, S., & Salter, D. (2020). Exploring the impact of a task-based faculty development certificate programme. *Collected Essays on Learning and Teaching*, 13, 131-139.
- Sánchez-García, D. (2023). Potential professional growth of English-medium education teachers in a transnational teacher education programme. *International Journal of Instruction*, 16(3), 1-24.
- Samarawickrama, C., Lenadora, D., Ranathunge, R., De Silva, Y., Perera, I., & Welivita, K. (2021). Comic-based learning for students with visual impairment. *International Journal of Disability, Development and Education*, 69(3), 1-19.
- Sannino, A., & Engestrom, Y. (2018). Cultural-historical activity theory: Founding insights and new challenges. *Cultural-Historical Psychology*, 14(3), 43-56.
- Santra, S., & Deyasi, A. (2022). Prototype Implementation of Innovative Braille Translator for the Visually Impaired with Hearing Deficiency. In *Emerging Trends in IoT and Integration with Data Science, Cloud Computing, and Big Data Analytics* (pp. 272-290). IGI Global.
- Sardana, D., Goyal, A., Gauba, K., Kapur, A., & Manchanda, S. (2019). Effect of specially designed oral health preventive programme me on oral health of visually impaired children: use of audio and tactile aids. *International Dental Journal*, 69(2), 98-106.
- Sato, T. (2019). An investigation of factors involved in Japanese students' English learning behaviour during test preparation. *Papers in Language Testing and Assessment*, 8(1), 69-95.

- Saunders, M. N., & Townsend, K. (2016). Reporting and justifying the number of interview participants in organization and workplace research. *British Journal of Management*, 27(4), 836-852.
- Schaefer, L., & Clandinin, D. J. (2019). Sustaining teachers' stories to live by: Implications for teacher education. *Teachers and Teaching*, 25(1), 54–68.
- Schles, R. A. & M. Chastain (2023). Teachers of students with visual impairment: Motivations for entering the field of visual impairment and reflections on pre-service training. *Journal of Visual Impairment & Blindness*, 117(1), 62-73.
- Schles, R. A., McCarthy, T., Blankenship, K., & Coy, J. (2021). A mixed-methods analysis of state-level population data for students with visual impairment and blindness. *Exceptional Children*. DOI 00144029211017463.
- Schumacher, J. (2010). The Phenomenology of Color [As a Working Methodology for Design Practice]. In *Art Inspiring Transmutations of Life* (pp. 383-391). Springer.
- Schwab, S., Sharma, U., & Hoffmann, L. (2022). How inclusive are the teaching practices of my German, Maths and English teachers? – psychometric properties of a newly developed scale to assess personalisation and differentiation in teaching practices. *International Journal of Inclusive Education*, 26(1), 61-76.
- Selepe, M., & Molelemane, M. (2022). The Challenges of Students with Disabilities Access and Participation in Higher Education in South Africa. *African Journal of Development Studies (formerly AFRICA Journal of Politics, Economics and Society)*, 12(1), 111-133.
- Sengo, D. B., Marraca, N. A., Muaprato, A. M., García-Sanjuan, S., Caballero, P., & López-Izquierdo, I. (2022). Barriers to Accessing Eye Health Services in Suburban Communities in Nampula, Mozambique. *International Journal of Environmental Research and Public Health*, 19(7), 3916.
- Senjam, S. S. (2019). Assistive technology for students with visual disability: classification matters. *Kerala Journal of Ophthalmology*, 31(2), 86.
- Senjam, S. S., Foster, A., & Bascaran, C. (2020). Barriers to using assistive technology among students with visual disability in schools for the blind in Delhi, India. *Disability and Rehabilitation: Assistive Technology*, 88(4), 1-5.

- Setona, K. R., Sehularo, L. A., & Mokgaola, I. O. (2020). Challenges faced by mental health nurse specialists in North-West Province, South Africa. *Africa Journal of Nursing and Midwifery*, 22(2), 1-5.
- Seufert, C., Oberdorfer, S., Roth, A., Grafe, S., Lugrin, J.-L., & Latoschik, M. E. (2022). Classroom management competency enhancement for student teachers using a fully immersive virtual classroom. *Computers & Education*, 179, 104410.
- Sgambi, L., Kubiak, L., Basso, N., & Garavaglia, E. (2019). Active learning for the promotion of students' creativity and critical thinking: an experience in structural courses for architecture. *International Journal of Architectural Research*, 13(2), 386-407.
- Shafiq, A., Pourteimour, S., & Mazloumi, A. (2022). Comparing the Relationship between Iranian Clinical Educators' Teaching Behaviours and Undergraduate Nursing Students' Professional Behaviours. *Iranian Journal of Nursing and Midwifery Research*, 27(1), 54-59.
- Sharp, N. L., Bye, R. A., & Cusick, A. (2019). Narrative inquiry and narrative analysis: Practical application of techniques for occupational therapy research. [Conference session]. Australia 28th National Conference and Exhibition on Occupational therapy, 10-12 July 2019, International Convention Centre, Sydney. *Australian Occupational Therapy Journal*, 66(1), 137.
- Shi, X., Chai, X., Yang, C., Xia, X., & Sun, T. (2022). Vision-based apple quality grading with multi-view spatial network. *Computers and Electronics in Agriculture*, 195, 106793.
- Shiels, A., & Hejtmancik, J. F. (2019). Biology of inherited cataracts and opportunities for treatment. *Annual review of vision science*, 5, 123-149.
- Shoaib, M., Khan, S., Fitzpatrick, D., & Pitt, I. (2023). A mobile e-learning application for enhancement of basic mathematical skills in visually impaired children. In *Universal Access in the Information Society* (pp. 1-11). Cambridge.
- Sibanda, L., & Mathwasa, J. (2020). Promoting Inclusivity Through Quality Assessment in Rural Secondary Schools. In *the Education Systems of Africa* (pp. 1-18). Springer.
- Simalalo, M. (2017). Assessing the expanded core curriculum for learners with visual impairment in special schools. Doctoral Thesis. University of South Africa, Pretoria.

- Singh, R. K., Agrawal, S., Sahu, A., & Kazancoglu, Y. (2023). Strategic issues of big data analytics applications for managing health-care sector: a systematic literature review and future research agenda. *The TQM Journal*, 35(1), 262-291.
- Singh, S., Bhatkoti, M., & Thakur, P. (2018). Approach in Ayurveda to keep healthy eye–preventive aspects. *World Journal of Pharmaceutical Research*, 7(7), 699-707.
- Sithole, H. L. (2022). Eye health promotion-oriented policy statements in various national and provincial health policy documents in South Africa. *African Vision and Eye Health*, 81(1), 7.
- Sithole, M., Wissink, H., & Chiwawa, N. (2022). Enhancing the Management Systems and Structures of Technical Vocational Education and Training Colleges in South Africa. *Administration Public*, 30(3), 86-105.
- Smith, B. (2016). Narrative analysis. In E. Lyons & A. Coyle (Eds.). *Analysing Qualitative Data in Psychology* (2nd ed., pp.202-221). Sage.
- Smith, C. R., Julie, C., Nel, B. P., & Gierdien, F. (2022). Mathematics teachers' preferences regarding continuous professional development activities. *Book of proceedings – long papers*, 18–20 January 2022, Cape Peninsula University of Technology.
- Smith, K., *et al.* (2022). How primary school curriculums in 11 countries around the world deliver food education and address food literacy: a policy analysis. *International Journal of Environmental Research and Public Health*, 19(4), 2019.
- Sodhi, P. K. (2020). Seeing World from The Eyes of Low Vision Subject. *The Official Scientific Journal of Delhi Ophthalmological Society*, 31(2), 23-29.
- Spinczyk, D., Maćkowski, M., Kempa, W., & Rojewska, K. (2019). Factors influencing the process of learning mathematics among visually impaired and blind people. *Computers in biology and medicine*, 104, 1-9.
- Stake, R. E. (2010). Qualitative research: *Studying how things work*. Guilford Press.
- Steinmetz, J. D., Bourne, R. R., Briant, P. S., Flaxman, S. R., Taylor, H. R., Jonas, J. B., Abdoli, A. A., Abrha, W. A., Abualhasan, A., & Abu-Gharbieh, E. G. (2021). Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: The Right to Sight: an analysis for the Global Burden of Disease Study. *The Lancet Global Health*, 9(2), 144-160.

- Stone, B. W., & Brown, D. (2021). Changing Attitudes About Visual Impairment in the College Classroom, *Journal of Blindness Innovation and Research*, 11(1), 1-66.
- Stone, B. W., Kay, D., & Reynolds, A. (2019). Teaching visually impaired college students in introductory statistics. *Journal of Statistics Education*, 27(3), 225-237.
- Straub, R., & U. Vilsmaier (2020). Pathways to educational change revisited – controversies and advances in the German teacher education system. *Teaching and Teacher Education*, 96, 103140.
- Strydom, H., & Delport, C. S, L. (2011). Sampling and pilot study in qualitative research. In *Research at grass roots: for the social sciences and human service professions* (pp. 376-389). Van Schaik.
- Susana, E., Ramli, K., Murfi, H., & Apriantoro, N. H. (2022). Non-Invasive Classification of Blood Glucose Level for Early Detection Diabetes Based on Photoplethysmography Signal. *Information*, 13(2), 59.
- Svendby, R. (2021). Learning by doing it wrong: an autoethnography inviting critical reflection of lecturers' disability awareness. *Teaching in Higher Education*, 26(4), 636-643.
- Swarts, P. (2022). Connecting embodied learning to social and environmental responsibility for the realisation of Life Orientation outcomes. *Perspectives in Education*, 40(2), 84-96.
- Tabuena, A. C., Hilario, Y. M. C., & Buenaflor, M. P. (2021). Overview and exemplar components of the research methodology on the research writing process for senior high school students. *International Journal of Trends in Scientific Research and Development*, 5(3), 117-126.
- Tadros, E. (2019). The Tadros theory of change: An integrated structural, narrative, and solution-focused approach. *Contemporary Family Therapy*, 41(4), 347-356.
- Tan, Y. S. M., & Amiel, J. J. (2022). Teachers learning to apply neuroscience to classroom instruction: case of professional development in British Columbia. *Professional development in education*, 48(1), 70-87.
- Taneja-Johansson, S., Singal, N., & Samson, M. (2023). Education of children with disabilities in rural Indian government schools: A long road to inclusion. *International Journal of Disability, Development and Education*, 70(5), 735-750.

- Taole, M. J. (2020). Diversity and inclusion in rural South African multigrade classrooms. *International Journal of Inclusive Education*, 24(12), 1268-1284.
- Taribagil, P., Thomas, S., & Mathew, R. G. (2022). Glaucoma Health Coaching: A Survey of Eye Drop Instillation Education. *Journal of Glaucoma*, 31(5), 351-355.
- Tavakoli, A., & Flanagan, J. L. (2022). Dry eye disease: an (in) convenient truth. *Clinical and Experimental Optometry*, 105(2), 222-229.
- Tawfik, A. A., Gatewood, J., Gish-Lieberman, J. J., & Hampton, A. J. (2022). Toward a definition of learning experience design. *Technology, Knowledge, and Learning*, 27(1), 309-334.
- Teane, F. M., & Gombwe, R. (2022). Self-Efficacy as a Tool to Enhance Students' Classroom Participation: TVET/FET College's Student Views on the Causes of Student Passivity. *Community College Journal of Research and Practice*, 1-13.
- Teke, D., & Sozbilir, M. (2019). Teaching energy in living systems to a blind student in an inclusive classroom environment. *Chemistry Education Research and Practice*, 20(4), 890-901.
- Theelen, H., Van den Beemt, A., & den Brok, P. (2019). Classroom simulations in teacher education to support preservice teachers' interpersonal competence: A systematic literature review. *Computers & Education*, 129, 14-26.
- Theron, P. M. (2015). Coding and data analysis during qualitative empirical research in Practical Theology. *In die Skriflig*, 49(3), 1-9.
- Tipán, J. F. C., Escola, DIB, Mantilla, LAM, & Matamoros, JAS (2023). Didactic module for teaching reading and writing to visually impaired children. *Journal of Positive Psychology and Wellbeing*, 7(2), 168-178.
- Tierney, L., MacAndrew, M., Doherty, K., Fielding, E., & Beattie, E. (2023). Characteristics and value of 'meaningful activity' for people living with dementia in residential aged care facilities: "You're still part of the world, not just existing". *Dementia*, 22(2), 305-327.
- Titchkosky, T. (2020). *Reading and writing disability differently*. University of Toronto Press.
- Triayomi, R. (2019). The effect of interactive demonstration method on heat energy learning. *Journal of Physics: Conference Series*, 1282, 1-7.

- Tuttle, M., & Carter, E. W. (2022). Systematic Review of Studies Addressing Computer-Assisted Instruction for Students with Visual Impairment. *Journal of Special Education Technology*. DOI 01626434221088026.
- Urai, S., Hashimoto, N., Takabe, M., Kawashima, M., Satake, Y., ... & Murakami, H. (2022). Dynamic changes in insulin requirements with post-operative time using bedside artificial pancreas to maintain normoglycemia without hypoglycaemias after cardiac surgery. *Journal of Artificial Organs*, 25(1), 72-81.
- Valensi, P., Prévost, G., Schnell, O., Standl, E., & Ceriello, A. (2019). Targets for blood glucose: what have the trials told us. *European Journal of Preventive Cardiology*, 26(1), 64-72.
- Valsecchi, M., & Codispoti, M. (2022). Eye tracking applied to tobacco smoking: current directions and future perspectives. *Journal of Eye Movement Research*, 15(1), 1-19.
- Van Kessel, R., Hrzic, R., Cassidy, S., Brayne, C., Baron-Cohen, S., Czabanowska, K., & Roman-Urrestarazu, A. (2021). Inclusive education in the European Union: A fuzzy-set qualitative comparative analysis of education policy for autism. *Social Work in Public Health*, 36(2), 286–299.
- Van Mieghem, A., Struyf, E., & Verschueren, K. (2022). The relevance of sources of support for teachers' self-efficacy beliefs towards students with special educational needs. *European Journal of Special Needs Education*, 37(1), 28-42.
- Van Munster, E. P., Van der Aa, H., Verstraten, P., Heymans, M. W., & Van Nispen, R. (2022). Improved intention, self-efficacy and social influence in the workspace may help low vision service workers to discuss depression and anxiety with visually impaired and blind adults. *BMC health services research*, 22(1), 1-11.
- Vanassche, E., & Kelchtermans, G. (2016). A narrative analysis of a teacher educator's professional learning journey. *European Journal of Teacher Education*, 39(3), 355-367.
- Vardar, M., & Sharma, P. (2022). An Optimized Object Detection System for Visually Impaired People. *Second International Conference on Sustainable Technologies for Computational Intelligence*, 1235, 25-38.

- Varin, J., Bouzidi, N., Gauvain, G., Joffrois, C., Desrosiers, M., ... & Nassisi, M. (2021). Substantial restoration of night vision in adult mice with congenital stationary night blindness. *Molecular Therapy-Methods & Clinical Development*, 22, 15-25.
- Vartiainen, H., Leinonen, T., & Nissinen, S. (2019). Connected learning with media tools in kindergarten: an illustrative case. *Educational Media International*, 56(3), 233-249.
- Vasyuta, V., & Pedachenko, Y. E. (2019). Study of etiologic factors for optic atrophy, *Journal of Ophthalmology*, 487(2), 44-49.
- Verver, S. H., Vervloed, M. P., & Steenbergen, B. (2020). Facilitating play and social interaction between children with visual impairments and sighted peers by means of augmented toys. *Journal of Developmental and Physical Disabilities*, 32(1), 93-111.
- Viskupic, K., Earl, B., & Shadle, S. E. (2022). Adapting the CACAO model to support higher education STEM teaching reform. *International Journal of STEM Education*, 9(1), 1-20.
- Vithayathil Varghese, N., & Mahmoud, Q. H. (2020). A survey of multi-task deep reinforcement learning. *Electronics*, 9(9), 1363.
- Vuorinen, K., Erikivi, A., & Uusitalo-Malmivaara, L. (2019). A character strength intervention in 11 inclusive Finnish classrooms to promote social participation of students with special educational needs. *Journal of Research in Special Educational Needs*, 19(1), 45-57.
- Vygotsky, L. S. (1978). Socio-cultural theory. *Mind in society*, 6, 52-58.
- Wahyuni, D. (2012). The research design maze: Understanding paradigms, cases, methods, and methodologies. *Journal of applied management accounting research*, 10(1), 69-80.
- Wakeman, S. E., Rigotti, N. A., Herman, G. E., Regan, S., Chang, Y., Snow, R., ... & Metlay, J. P. (2021). *The effectiveness of post-discharge navigation added to an inpatient addiction consultation for patients with substance use disorder; a randomized controlled trial*. *Substance Abuse*, 42(4), 646-653.
- Walther, G., Zimmermann, A., Theuersbacher, J., Kaerger, K., Von Lilienfeld-Toal, M., ... & Kurzai, O. (2021). Eye infections caused by filamentous fungi: Spectrum and antifungal susceptibility of the prevailing agents in Germany. *Journal of Fungi*, 7(7), 511.

- Walton, E. (2018). Decolonising (through) inclusive education? *Educational research for social change*, 7(SPE), 31-45.
- Warda, O., Naeem, Z., Roelofs, K. A., Sagoo, M. S., & Reddy, M. A. (2022). Retinoblastoma and vision. *Eye*, 37, 797-808.
- Warren, A., Buckingham, K., & Parsons, S. (2020). Everyday experiences of inclusion in primary resourced provision: The voices of autistic students and their teachers. *European Journal of Special Needs Education*, 36(5), 1-16.
- Watermeyer, B., Lourens, H., Botha, M., Khumalo, B., Kelly, J., & Shanda, N. (2023). Emotional and embodied aspects in the education of learners with visual impairment: The use of standpoint 'panel chats' in teacher training. *International Journal of Disability, Development and Education*, 70(2), 169-185.
- Watermeyer, B., Lourens, H., Botha, M., Khumalo, B., Kelly, J., & Shanda, N. (2021). Emotional and embodied aspects in the education of learners with visual impairment: The use of standpoint 'panel chats' in teacher training. *International Journal of Disability, Development and Education*, 70(3), 1-17.
- Watson, S., & Bell, J. (2022). Accommodating Visually Impaired Students in Secondary Science Breadcrumb. *The Science Teacher*, 90(2).
- Weight, H. (2022). Health Tips for Adults. *Health*, 18, 11-19.
- Welter, V. D. E., Herzog, S., Harms, U., Steffensky, M., & Großschedl, J. (2022). School subjects' synergy and teacher knowledge: Do biology and chemistry teachers benefit equally from their second subject? *Journal of research in science teaching*, 59(2), 167-326.
- Werner, A., & Risius, A. (2021). Motives, mentalities, and dietary change: An exploration of the factors that drive and sustain alternative dietary lifestyles. *Appetite*, 165, 105425.
- Wessels, L. (2020). How South African universities can contribute to preparing the future workforce for the Fourth Industrial Revolution. Master's Dissertation. Stellenbosch University, Stellenbosch (RSA).
- White, P., Marston, H. R., Shore, L., & Turner, R. (2020). Learning from COVID-19: design, age-friendly technology, hacking and mental models. *Emerald Open Research*, 2(21), 21.

- Whiteway, S. (2019). A Narrative Exploration of the Impact of Belonging on the Educational Experiences of Teenage Fathers. *Educational & Child Psychology, 36*(2), 34-49.
- Wieman, C. E. (2019). Expertise in university teaching & the implications for teaching effectiveness, evaluation & training. *Daedalus, 148*(4), 47-78.
- Wilder, J., & Lillvist, A. (2018). Learning journey: A conceptual framework for analyzing children's learning in educational transitions. *European Early Childhood Education Research Journal, 26*(5), 688-700.
- Wildman, W. J. (2022). Out with the Old, In with the New? From Conceptual Reconstruction in Philosophical Anthropology to a Realistic Theory of Change. In *Relational Anthropology for Contemporary Economics* (pp. 181-199). Springer.
- Wilhelm, S., Förster, R., & Zimmermann, A. B. (2019). Implementing competence orientation: Towards constructively aligned education for sustainable development in university-level teaching-and-learning. *Sustainability, 11*(7), 1891.
- Wilhelmsen, G. B., Eide, M. G., & Felder, M. (2021). Assessment of eye movements and selected vision function tests in three students with albinism: A case study in Tanzania. *British Journal of Visual Impairment, 40*(2), 1-3.
- Willis, R. (2019). The use of composite narratives to present interview findings. *Qualitative research, 19*(4), 471-480.
- Wium, A. M., & Louw, B. (2018). Mixed-methods research: A tutorial for speech-language therapists and audiologists in South Africa. *South African Journal of Communication Disorders, 65*(1), 1-13.
- Wood, J. M. (2020). Night-time driving: visual, lighting and visibility challenges. *Ophthalmic and physiological optics, 40*(2), 187-201.
- Woreta, A. N., Kebede, H. B., Tilahun, Y., Teklegiorgis, S. G., & Abegaz, W. E. (2022). Antibiotic susceptibility pattern and bacterial spectrum among patients with external eye infections at Menelik II Referral Hospital in Addis Ababa, Ethiopia. *Infection and drug resistance, 15*, 765.
- Wortman, A., & Ito, M. (2019). Connected learning. In *the International Encyclopaedia of Media Literacy* (pp. 1-18). Wiley Online Library.

- Wray, M. & Houghton, A. M. (2019). Implementing disability policy in teaching and learning Contexts: shop floor constructivism or street level bureaucracy? *Teaching in Higher Education*, 24(4), 510-526.
- Xie, I., Babu, R., Lee, T. H., Castillo, M. D., You, S., & Hanlon, A. M. (2020). Enhancing usability of digital libraries: Designing help features to support blind and visually impaired users. *Information Processing & Management*, 57(3), 102110.
- Yadav, K. S., Rajpurohit, R., & Sharma, S. (2019). Glaucoma: Current treatment and impact of advanced drug delivery systems. *Life sciences*, 221, 362-376.
- Yao, X., Son, T., & Ma, J. (2022). Developing portable widefield fundus camera for teleophthalmology: Technical challenges and potential solutions. *Experimental Biology and Medicine*, 247(4), 289-299.
- Yeager, D. S., Carroll, J. M., Buontempo, J., Campion, A., Woody, S., ... & Kersting, N. (2022). Teacher Mindsets Help Explain Where a Growth-Mindset Intervention Does and Doesn't Work. *Psychological science*, 33(1), 18-32.
- Yeye-Agba, O. O., Obasuyi, O. C., Dana Gundi, M. B., & Eze, U. A. (2022). The world is bright, save your sight: Why you should take your eye checks seriously? *Nigerian Journal of Medicine*, 31(2), 119.
- Yin, S., Wang, G., & Karimi, H. R. (2014). Data-driven design of robust fault detection system for wind turbines. *Mechatronics*, 24(4), 298-306.
- Young, K. (2023). Exclusive humanitarianism: Policy recommendations for genuine inclusion of persons with disabilities in humanitarian action. *International Review of the Red Cross*, 105(922), 396-415.
- Young, T. C., & Malone, K. (2023). Reconfiguring environmental sustainability education by exploring past/present/future pedagogical openings with preservice teachers. *Teaching in Higher Education*, 28(5), 1077-1094.
- Younis, O., Al-Nuaimi, W., Rowe, F., & Alomari, M. H. (2019). A smart context-aware hazard attention system to help people with peripheral vision loss. *Sensors*, 19(7), 1630.
- Yungungu, A. (2021). Disability, Ability and Productivity: A Personal Experience in Moi University, Kenya. *African Journal of Education, Science and Technology*, 6(3), 190-199.

- Yusefzadeh, H., Rashidi, A., & Rahimi, B. (2019). Economic burden of obesity: A systematic review. *Social Health and Behaviour*, 2(1), 7.
- Zakaria, G., Wilkie, S., & Learning, C. (2020). Applications for virtual reality experiences in tertiary education. Ascilite's First Virtual Conference. Proceedings Ascilite, University of New England.
- Zakiah, L., Supena, A., & Wulandari, N. (2022). Parents Collaborative Approach to Handle Slow Learners in The Inclusive Elementary School. *Jurnal Ilmiah Sekolah Dasar*, 6(1), 116-124.
- Zebehazy, K. T., Correa-Torres, S. M., & Botsford, K. D. (2022). Developing pre-service O&M specialists' reflective practices to improve problem-solving opportunities during instruction. *British Journal of Visual Impairment*, 40(1), 75-82.
- Zhang, X., Shen, M., Li, X., & Feng, F. (2022). A deformable CNN-based triplet model for fine-grained sketch-based image retrieval. *Pattern Recognition*, 125, 108508.
- Zhang, Y., & Li, H. (2021). Case-based teaching research of media management course. *SHS Web of Conferences*, 99, 2021, Jiangxi Province, China.
- Zhou, S., Carroll, E., Nicholson, S., & Vize, C. J. (2020). *Blurred vision*. British Medical Journal 368. Published 04 March 2020, Queen Mary University of London.
- Zhou, Y., & Standaert, F. X. (2020). Deep learning mitigates but does not annihilate the need of aligned traces and a generalized resent model for side-channel attacks. *Journal of Cryptographic Engineering*, 10(1), 85-95.
- Zhou, Y., Osuji, E., & Beal, C. (2022). Ocular injury from plastic airsoft bullet through protective steel mesh mask. *American Journal of Ophthalmology Case Reports*, 101567.
- Zhu, M., Bonk, C. J., & Berri, S. (2022). Fostering Self-Directed Learning in MOOCs: Motivation, Learning Strategies, and Instruction. *Online Learning*, 26(1), 153-173.
- Zilka, A., Grinshtain, Y., & Bogler, R. (2022). Fixed or growth: teacher perceptions of factors that shape mindset. *Professional development in education*, 48(1), 149-165.

APPENDICES

Appendix A: Ethical Clearance Letter



**UNIVERSITY OF
KWAZULU-NATAL**
INYUVESI
YAKWAZULU-NATALI

11 April 2023

Zwethanda Derrick Msimango (218068190)
School Of Education
Edgewood Campus

Dear ZD Msimango,

Protocol reference number: HSSREC/00005356/2023
Project title: Lecturers learning journeys to teaching students with visual impairment: a narrative inquiry
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 14 September 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 11 April 2024.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Health Research Ethics Council (REC-040414-040).

Yours sincerely,

Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 8350/4557/3587 Email: hssrec@ukzn.ac.za Website: <http://research.ukzn.ac.za/research-ethics>

Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

INSPIRING GREATNESS

Appendix B: Gatekeeper's Permission Letter



higher education
& training
Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA



15/11/2021

TO WHOM IT MAY CONCERN:

The purpose of this letter is to grant permission to **Msimango Zwethanda Derrick (218068190)**

As per the request to conduct the research project :

Research Project Title: Lecturer's learning journeys of teaching students with visual impairments: a narrative inquiry.

Aim of the Research: To explore lecturer's learning journeys to teaching students with visual impairments. To understand how lecturers' learning journeys shape their teaching of students with visual impairment.

Tertiary Institution : University of KwaZulu Natal

Faculty : Faculty of Humanities, Development and Social Sciences

Qualification: Doctor of Philosophy (PhD)

Name of Supervisor : 1. Prof D.J Hlalele 2. Dr R. Subrayen

Study Site Location: Umfolozi TVET College (Esikhawini Campus)

Consent of participants : All participants must be given consent forms to sign before the commencement of study.

Confidentiality : All participants must be guaranteed confidentiality.

Permission granted by:



EPL du Toit

ACTING PRINCIPAL



Private Bag X5023 Richards Bay 3900, Tel: +27 (35) 902 9501, Fax: +27 (35) 789 2585, www.umfolozicollege.co.za

SERVING COMMUNITIES IN ILENBE, UTHUNGULU & UMKHANYAKUDE DISTRICTS

Appendix C: Informed Consent Letter For Lecturers

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE
(HSSREC)

APPLICATION FOR ETHICS APPROVAL

For research with human participants

INFORMED CONSENT RESOURCE TEMPLATE

Information Sheet and Consent to Participate in Research

Date: 27 January 2023

Dear lecturer

My name is **Zwethanda Derrick Msimango**. I am a Doctor of Philosophy (PhD) student at the University of KwaZulu-Natal, Edgewood Campus, in the Faculty of Education, contact number:0731416816, email address: 218068190@stu.ukzn.ac.za . I would like you to participate in the research study entitled: **Lecturers' learning journeys in teaching students with visual impairment: a narrative inquiry.**

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The aim of the study is to explore lecturers' learning journeys of teaching students with visual impairment. This study sought to understand how and why lecturers learning journeys to teaching students with visual impairment are shaped in particular ways.

The narrative inquiry methodology, which uses stories as a methodological way to develop narratives of lived-experiences, should serve as the foundation for this study. Please bring a copy of your story to the first interview with me (Written narrative reflection). The study will use narrative interviews, narrative focus group interviews and written narrative reflections with language lecturers. Participants will be interviewed for approximately 55 minutes at the times convenient to them which will not disturb teaching and learning. There will be an individual interview which will last for at least 45 minutes in February 2023. Certainly, the narrative focus group interview process will not disrupt teaching and learning. Our discussions/interviews will be audio recorded. The primary benefits of recording an interview (audio) is that it allows the researcher to concentrate on the interview rather than writing notes, which can act as a distraction to both the participants and the researcher asking the questions. It will be conducted when the participants are free or after college hours. However, this will be upon your agreement. The campus name, lecturers' names and site name will not be identified in the study as I will use pseudonyms.

I assure you that there is no clear risk arising from your participation in this study. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose. There will be no direct benefit to you for your participation in this study. However, we hope that the information obtained from this study may assist you in teaching students with visual impairment.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (Tel: 27 31 2604557- Fax: 27 31 2604609).

In the event of any problems or concerns/questions you may contact the researcher at 0731416816 /218068190@stu.ukzn.ac.za or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Your responses to the interviews will be anonymous. For the purposes of this research study, your comments will be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning codes/pseudonyms for participants that will be used on all research notes and documents; and
- Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Participants' data will be kept confidential except in cases where the researcher is legally obliged to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

CONSENT

(To be completed by the participant)

I (**full name of the participant**) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participate to this research project entitled **Lecturers' learning journeys to teaching students with visual impairment: a narrative inquiry**.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time. If I have any further questions/concerns or queries related to the study, I understand that I may contact the researcher at 0731416816 or 218068190@stu.ukzn.ac.za .

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

I hereby provide consent to:

Audio-record our narrative interview YES / NO

Audio-record our focus-group interview YES / NO

Signature of Participant

Date

Signature of Witness

Date

(Where applicable)

Signature of Translator

(Where applicable)

Date

Appendix D: Informed Consent Letter For College Principal



School of Education

Edgewood Campus

Private Bag X03

Ashwood

3605

South Africa

15 November 2021

Dear Mrs E.P.L. Du Toit (Principal)

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT ESIKHAWINI CAMPUS

I am a Doctor of Philosophy (PhD) student at the University of KwaZulu-Natal, Edgewood Campus, in the faculty of education. As part of the requirements for the degree of Doctor of Philosophy, I am required to conduct research and to interview lecturers on the title **Exploring lecturers' teaching of students with visual impairment**. I humbly request permission to conduct research at Esikhawini Campus under the King Cetshwayo District.

The study aims to explore lecturers' learning journeys to teaching students with visual impairment. The study will use narrative interviews, narrative focus-group interview and written narrative reflections with language lecturers. Participants will be interviewed for approximately 30 minutes at the times convenient to them which will not disturb teaching and learning. There will be an

individual interview which will last for at least 45 minutes in January 2023. Each narrative interview will be voice-recorded. Certainly, the narrative focus group interview process will not disrupt teaching and learning. It will be conducted when the participants are free or after college hours.

Supervisors' contact details	UKZN Research Office	Researcher's/Student's contact details
Prof. D.J. Hlalele 031 260 3858 hlaleled@ukzn.ac.za Dr R. Subrayen 031 260 3665 subrayen@ukzn.ac.za	Research Office, Westville Campus Tel: 27 31 2604557 - Fax: 27 31 2604609 Email: HSSREC@ukzn.ac.za	Cell: 073 1416 816, 218068190@stu.ukzn.ac.za

Your positive response in this regard will be highly appreciated. Thanking you in advance.

Yours faithfully

Z.D. Msimango

Appendix E: Prompts (Semi-Structured Narrative Interviews)

GUIDE FOR LECTURERS

DATA GENERATION INSTRUMENTS

This study generates data using three methods, namely: Narrative interviews, Narrative focus-group interviews, and Written Narrative reflections.

Narrative interviews will be used because participants will explain their life experiences in teaching students with visual impairment.

Narrative focus-group interviews will be used as a sharing session for grouped participants regarding their individual experiences of teaching students with visual impairment in the designated programmes.

Written narrative reflections are justified for this study because participants will give a flashback on their experiences (learning journey) of teaching students with visual impairment.

The six participants will be involved by using all three methods. The purpose of involving all the six participants is based on the fact that they possess the relevant characteristics of the study's aim.

purpose.

1. Research introduction

Thank the participant for attending the interview. Explain the rationale for the research project, the objectives of the research project, and the informed consent form. Narrative interviews will be used to generate data for this study. Interviews will be conducted on two separate days. On the first day, participants will be asked to tell a story about their experiences in teaching students with visual impairment. On the second day, the participants will be asked to share their stories of teaching students with visual impairment. We are all storytellers. We tell stories of our present situations, our memories, and our future hopes. It is through re-telling and re-living stories that we begin to make sense of our experiences and position them in a wider personal and social context.

It becomes the articulation of words in a story form that is often an illumination of what we truly think, believe, and assume about our communities and our identities. As a researcher (and a storyteller, story-lover, and story-gatherer), I believe the issues of change teaching students with visual impairment can best be understood through the personal narratives of the lecturers. I want to hear your story about teaching students with visual impairment and listen to how you tell me about your learning journey. This study will involve two interviews that will focus on helping you tell your story: the first interview will be more formal and structured around the elements of the story and the second interview will be a chance to check whether the story you want to tell has emerged.

1.1 Before the First Interview

Before we meet for the first interview, I encourage you to read the questions I will ask during the interview and reflect upon how you might want to respond to them. I do not expect or even want you to take a long time doing this or to prepare any written notes, but perhaps if you have read through the questions once you might think about them while you are doing other things before, we meet. The questions are structured around the teaching of students with visual impairment in TVET College. Try writing your experiences as a very short story. I encourage you to write a very short story about your experiences with the change from teaching students with visual impairment (level 2 to 4) and (N4 to N6). This can be one paragraph to one page in length. You might use the structure of the first interview questions to help you or focus on one learning journey or moment that shares something you feel is interesting or revealing about your change. There is no wrong way to do this. Think about what you might say to a friend or family if they asked you, "How is your first year in teaching students with visual impairment?" or "How is teaching your first-year class going this year?" Please bring a copy of your story to the first interview with me. You could also email me a copy of your story in advance of the interview.

1.2 First Interview Questions

I will describe this project and give you a summary of the purpose, procedures, risk, confidentiality, and consent for you to keep as your records. I will encrypt computer-based files, store documents (i.e. signed consent forms) in a locked file cabinet. I will remind you that your identity will be protected in the reporting of this study by giving you a pseudonym. After transcription, the tape of this interview will be destroyed. Before we begin the interview, let me

remind you of a few important issues. The interview was designed to be open-ended and to focus on your learning journey. The questions follow the structure of a story and will be used to co-author a narrative about your learning journey. Please answer the questions in a way that feels comfortable to you. You are free to withdraw from the study at any time, and/or refrain from answering any questions without prejudice or consequence. Please feel free to ask for clarification or new information throughout your participation in this interview or at any other point in the process.

1.3 Background of participants

Acquiring the participant's background information such as their age, gender, qualifications, teaching experience etc. Discuss the prompts for the study and highlight that all participant's experiences are valuable and valid; therefore, there are no wrong and right opinions.

College or university:

Region:

Anonymous Name:

Gender:

Qualification and field of specialization:

Teaching Experience: (0-5) (6-10) (11-15) (16-24) (25+).

Experience in teaching students with visual impairment.....

Subject:

Date:Start time: End time:

1.4. Narrative interview guide for lecturers

Teaching students with visual impairment is a web resource for all things related to serving individuals who are blind or visually impaired. Students with visual impairment may have difficulty understanding where objects are in the environment and may need to use a white

cane to travel independently. Students with visual impairment are unable to collect information from visual cues. The mission of teaching students with visual impairment is to provide all persons involved in student education with the necessary resources they need to help each student become a successful member of their communities and equip those in the visual impairment field with a readily available resource to meet the wide range of needs of the students they serve. I understand that lecturers are not trained for teaching students with visual impairment, so I will invite lecturers to provide information for the current study, three males and three females teaching NC(V) and Report 191 classes.

1.5. Research questions

1.5.1 First narrative interview questions

I am interested to know about your learning journeys in teaching students with visual impairment to both NC(V) and Report 191 Programmes. Please tell me your story about the following research sub-questions.

1.5.1.1 Students with visual impairment may access information in a variety of ways, for example, Braille, audio-tape, or enlarged print. Braille readers cannot skim read and may take up to three times as long as other students to read a text. Students with some vision may be large-print readers. When did you start teaching students with visual impairment? Please tell me about your learning journey (experiences) since you have started teaching students with visual impairment. Feel free to tell your story.

1.5.1.2 Visual impairment has educational implications on the individual concerned. Providing integration and equal higher educational opportunities for the students with visual impairment in this country is sometimes controversial due to environmental degradation, architectural barriers, negative attitude of the public, inadequate materials/ equipment, cost of education, and high cost of the materials invoiced for the effective teaching and learning. Please share the challenges you face when teaching students with visual impairment in this college.

1.5.1.3 What are some of your experiences with this?

How did these experiences impact on you as a lecturer?

who is teaching students with visual impairment? If experiences were negative, then prompt and probe for solutions for challenges that would have made teaching students with visual impairment more effective and productive. Tell me about a challenge you faced and how you dealt with it.

1.5.1.4 We often take for granted the amount of visual information received every day. Many students with visual impairment do not have a lifetime of visual experiences to draw upon. It may be necessary to consider the amount of assumed visual content in your subject when designing learning tasks. Please share the teaching strategy you use to meet the needs of students with visual impairment.

1.5.1.5 About your teaching of students with visual impairment, tell me about your current experiences with a focus on learning journeys. How has this affected you as a lecturer? What does a learning journey mean to you?

1.5.1.6 Students with visual impairment can do virtually all the activities and tasks that sighted students can do, but they often need to learn to do them differently or use different tools or materials. For instance, your student may need reading materials in braille rather than in print or may need to examine a live rabbit with her/his hands to understand what it is, rather than learning from a picture in a book. Other examples might be arranging a classroom to let your student sit close to the science lecturer who is demonstrating an experiment or allowing her/his extra time to complete a test that the whole class is taking. What do you think needs to be changed to improve your teaching for students with visual impairment?

1.5.1.7 In considering alternative forms of assessment, an equal opportunity not a guaranteed outcome, is the objective. You are not expected to lower standards to accommodate students with impairment, but rather are required to give them a reasonable opportunity to demonstrate what they have learned. Once you have a clear picture of how the impairment impact learning, you can consider alternative assessment strategies. Kindly specify the different assessment

strategies you use to cater to students with visual impairment and share your views about strategies that are necessary to promote more access with success for students with visual impairment.

1.5.1.8 Apart from feelings of hesitation, lecturers also experienced feelings of carefulness.

The lecturer should avoid giving special treatment to students with visual impairment. If their needs are not met, they may need a longer time to finish tasks due to braille reading which requires more time. From your experience of teaching students with visual impairment, please express your attitude toward students with visual impairment.

1.5.1.9 An inclusive TVET College incorporates the needs of students with visual impairment and students who experience barriers to learning in its operations about its policies, practices, infrastructure, and pedagogy. Are there any policies that you think are helping students to do well (having a positive impact) if yes mention those and comment on how to impact students' studies, and are there any policies implemented by the college that you face that are hurting students' studies? If yes, please state how it impacts other students' studies. Please share your experiences with how visual impairment policy has been implemented.

1.5.1.10 Through the discussion, environmental inaccessibility, inflexibility of financial guidelines in college, and lack of training among lecturers were identified as major college challenges for the education of students with visual impairment. If students have challenges with their visual impairment, how do you assist them?

1.5.1.11 Students with visual impairment with appropriate accommodations, like most students with special needs, learn at about the same rate as their peers without visual impairment. Vision loss is not a cognitive matter; it is a sensory issue. Students with visual impairment have reduced access to the visual environment which impacts their ability to engage in incidental learning. Please share how your lectures are accommodating students with visual impairment.

This is the end of your story. I thank you.

1.5.2 Second Interview Question Schedule (Narrative focus-group interviews)

You have been invited to this narrative focus-group interview. I would like to remind you that

all your responses will be treated with strict confidentiality. I would also like to remind you that your participation in this interview is voluntary, and you may decline to answer any questions that you do not wish to answer. The interview will be recorded and transcribed to help me with note-taking. Thank you for agreeing to participate. I have planned this narrative interview to last no more than 30 minutes per participant.

Background of participants

College or university:

Region:

Anonymous Name:

Gender:

Qualification and field of specialization:

Teaching Experience: (0-5) (6-10) (11-15) (16-24) (25+).

Experience in teaching students with visual impairment.....

Subject:

Date:Start time: End time:

1.5.2.1 Being a special lecturer with more than two years of teaching experience. Can you share your learning journeys in teaching students with visual impairment? Please share your story with us as a group. Your story will take 10 minutes of your time.

1.5.2.2 The past two decades, have witnessed a small number of studies that have emerged examining the challenges lecturers face teaching students with visual impairment an inclusive education setting. You have faced various challenges with teaching strategies for students with visual impairment. Could we please discuss those challenges and see if we have any proposed solutions?

1.5.2.3 Students with visual impairment can certainly learn and do learn well, but they lack the easy access to visual learning that sighted students have. The enormous amount of learning that takes place via vision must now be achieved using other senses and methods. Do you feel

there is more that could or should be done to help students with visual impairment? Please share your impression of these teaching methods.

1.5.2.4 In the past, special education to serve this vulnerable group in public colleges was completely neglected. Only well-resourced special schools were privileged to serve the minority in South Africa. The current education system prepares lecturers who are generalists, with very little specialized training to teach students with visual impairment. Please share any training have you received regarding students with visual impairment in this college.

1.5.2.5 Is there anything else we would like to add to our stories?

1.6 Termination

Plans/ideas for all above. Link to plans and priorities for higher education to consider. Pick on any important phenomenon the participant may have raised in the interview and ask if he/she would like to make any other additions around that phenomenon. Ask if the participant would like to raise any further issues or ask any questions and thank participants.

.....
.....

Other.....
.....
.....
.....


Please bring a copy of your story to the first interview. You could also email me a copy of your story in advance of the interview.

zwelidm@gmail.com

Appendix G: Language Editing Certificate

590 Miami Road
Hibberdene
KZN
4220
Cell: 0842648401
brian.naidoo25@gmail

**PROFESSIONAL
LANGUAGE
EDITING SERVICES**




*STRIVING
FOR
EXCELLENCE*

Brian Naidoo (BA Hons. in English; BA Hons in TESOL; BEd Hons.
BA- English major; UDE [English]; UCT Cert. in Legal &
Business Writing; UCT Cert. in Copy-Editing; MA Coursework in Research
UFS. Assessor Cert. UFS; Umalusi Evaluator of Schools.

**SPECIALISING IN THE LANGUAGE EDITING OF THESES, DISSERTATIONS,
JOURNAL ARTICLES, PROPOSALS, BOOKS, POLICIES AND PUBLICATIONS**

CERTIFICATE FOR EDITING A DRAFT DOCTORAL THESIS IN EDUCATION
TOPIC: LECTURERS' LEARNING JOURNEYS OF TEACHING STUDENTS WITH VISUAL IMPAIRMENT:
A NARRATIVE INQUIRY

ZWETHANDA DERRICK MSIMANGO
UNIVERSITY OF KWAZULU-NATAL



10/05/2024

TO WHOM IT MAY CONCERN

This certificate confirms that the above-mentioned student submitted his draft doctoral thesis to me for language-editing, which included correcting in-text citations and the list of references. This was duly edited and returned to the student for revisions as per suggestions from me. I make no claim as to the accuracy of the research content. The text, as edited by me, is grammatically correct. After completion of the language editing, the student has the option to accept or reject suggestions/changes prior to re-submission to the supervisor. The editor is not accountable for any additional content and changes that may have been executed post-editing.

Professional
EDITORS
30+ Guild
Est. 1993
Promoting excellence in editing

Brian Naidoo
Associate Member
Membership number: MA1001
Membership year: March 2024 to February 2025
084 264 8401
brian.naidoo25@gmail.com
www.editors.org.za

THANK YOU FOR YOUR SUPPORT

Appendix H: Turnitin Report

6/7/24, 10:29 AM

Turnitin - Originality Report - Lecturers' learning journeys of teaching students with visual impairments: a narrative inquiry.

Turnitin Originality Report					
Processed on: 04-Jun-2024 12:54 PM CAT ID: 2395322202 Word Count: 76086 Submitted: 1	<table border="1"> <thead> <tr> <th>Similarity Index</th> <th>Similarity by Source</th> </tr> </thead> <tbody> <tr> <td>15%</td> <td> Internet Sources: 12% Publications: 5% Student Papers: 6% </td> </tr> </tbody> </table>	Similarity Index	Similarity by Source	15%	Internet Sources: 12% Publications: 5% Student Papers: 6%
Similarity Index	Similarity by Source				
15%	Internet Sources: 12% Publications: 5% Student Papers: 6%				
Lecturers' learning journeys of teaching students with visual impairments: a narrative inquiry. By Zwethanda Derrick Msimango					

4% match () Msimango, Zwethanda Derrick... "Teaching visually impaired students: a case study in one technical vocational education and training college in KwaZulu-Natal." 2019
1% match (Internet from 16-Apr-2020) https://researchspace.ukzn.ac.za/bitstream/handle/10413/17722/Khumalo_Zodwa_Prudence_2019.pdf?isAllowed=v&sequence=1
1% match (student papers from 15-Nov-2019) Class: EDRS820 Assignment: Masters In Educational Psychology Paper ID: 1214318030
1% match (student papers from 29-Jan-2019) Submitted to University of KwaZulu-Natal on 2019-01-29
1% match () Ishik, Qender. "An investigation into the balance of the school curriculum content for pupils with a visual impairment in Turkey". 2017
< 1% match (Internet from 24-Sep-2022) https://researchspace.ukzn.ac.za/bitstream/handle/10413/19661/%0A%20Uhle%20Mbejehle_2019.pdf?isAllowed=v&sequence=1
< 1% match (Internet from 24-Sep-2022) https://researchspace.ukzn.ac.za/bitstream/handle/10413/19304/Ntombela_Bongani_FraiseGod_2020.pdf?isAllowed=v&sequence=1
< 1% match (Internet from 11-Nov-2022) https://researchspace.ukzn.ac.za/bitstream/handle/10413/21087/Chipato_Andrew_Hemándishe_2021.pdf?isAllowed=v&sequence=1
< 1% match () Mhense, Sizwe Absal... "The experiences of the physically disabled students in the TVET College." 2019
< 1% match () Mutewari, Evelyn... "Exploring leadership in early childhood development centres: narratives of three principals in two townships." 2020
< 1% match (Internet from 06-Aug-2023) https://researchspace.ukzn.ac.za/bitstream/handle/10413/22064/Muchavi_Lindah_Taqwa_2017.pdf?isAllowed=v&sequence=1
< 1% match (Internet from 16-Dec-2022) https://researchspace.ukzn.ac.za/bitstream/handle/10413/14962/Zulu_Visumani_Patrick_2017.pdf?isAllowed=v&sequence=1
< 1% match (Internet from 24-Sep-2022) https://researchspace.ukzn.ac.za/bitstream/handle/10413/12122/Gumbede_Emelda_Zandile_2013.pdf?isAllowed=v&sequence=1
< 1% match (student papers from 21-Apr-2020) Submitted to University of KwaZulu-Natal on 2020-04-21
< 1% match (student papers from 18-Jul-2021)